AGENDA

Orange City Council

March 10, 2026

5:00 PM Closed Session
6:00 PM Regular Session

City Council Chamber
300 E. Chapman Avenue
Orange, CA 92866

Jarad L. Hildenbrand
City Manager

Nathalie Adourian
City Attorney

Pamela Coleman
City Clerk

DAN SLATER
Mayor

DENIS BILODEAU
Mayor pro tem, District 4

ARIANNA BARRIOS
Councilmember, District 1

JON DUMITRU
Councilmember, District 2

KATHY TAVOULARIS
Councilmember, District 3

ANA GUTIERREZ
Councilmember, District 5

JOHN GYLLENHAMMER
Councilmember, District 6

The City of Orange City Council welcomes you to this meeting and encourages your participation. Regular City Council meetings are held on the second and fourth Tuesday of each month at 6:00 p.m.

Agenda Information

The agenda contains a brief general description of each item to be considered. The City Council may take legislative action deemed appropriate with respect to the item and is not limited to the recommended action indicated in staff reports or the agenda. The agenda and supporting documentation is available after 4:00 p.m. on the Thursday prior to the Council meeting on the City's website at www.cityoforange.org, at the City Clerk's Office located at 300 E. Chapman Avenue, and at the Main Public Library located at 407 E. Chapman Avenue. Written materials relating to an item on the agenda that are provided to the City Council after agenda packet distribution and within 72 hours before Council is to consider the item will be made available for public inspection in the City Clerk's Office during normal business hours; at the City Council meeting; and made available on the City's website.

Public Participation

Regular meetings are televised live on Spectrum Cable Channel 3 and AT&T U-verse Channel 99, and streamed live and on-demand on the City's website at www.cityoforange.org.

Pursuant to Government Code Section 54954.3, members of the public may address the City Council on any agenda item before or during Council's consideration of the item, and on any other matters within the City Council's jurisdiction by using any of the following methods:

1) In-Person

To speak on an item on the agenda, complete a speaker card indicating your name, address, and identify the agenda item number or subject matter you wish to address. The card should be given to the City Clerk prior to the start of the meeting. General comments are received during the "Public Comments" section at the beginning of the Regular Session. No action may be taken on off-agenda items unless authorized by law. Public Comments are limited to three (3) minutes per speaker unless a different time limit is announced. It is requested that you state your name for the record, then proceed to address the City Council. All speakers shall observe civility, decorum, and good behavior.

(Continued on page 2)

2) Written Public Comments via eComment

Members of the public can submit their written comments electronically for City Council consideration by using the eComment feature on the Agenda page of the City's website at www.cityoforange.org. To ensure distribution to the City Council prior to consideration of the agenda, we encourage the public to submit written comments by 3:00 p.m. the day of the meeting. All written comments will be provided to the Council for consideration and posted on the City's website after the meeting.

3) Public Comments via recorded voicemail message

Finally, the public can record their comments by calling (714) 744-2234 no later than 3:00 p.m. the day of the meeting. Recorded messages will not be played at the meeting, but will be provided to the Council.

In accordance with Ordinance No. 10-01, any person making personal, impertinent, slanderous or profane remarks or who becomes boisterous while addressing the Council shall be called to order by the Mayor. If such conduct continues, the Mayor may order the person barred from addressing the City Council further during that meeting, unless permission to continue is granted by a majority vote of the Council.

Please contact the City Clerk's Office at (714) 744-5500 with any questions.

ADA Requirements: In compliance with the Americans with Disabilities Act, if you need accommodations to participate in this meeting, please contact the City Clerk's office at (714) 744-5500. Notification at least 48 hours in advance of meeting will enable the City to make arrangements to assure accessibility to this meeting.

REMINDER: Please silence all electronic devices while City Council is in session.

5:00 PM CLOSED SESSION

1. CALL TO ORDER

1.1 ROLL CALL

2. PUBLIC COMMENTS ON CLOSED SESSION ITEMS

At this time, members of the public may address the Council on Closed Session items only. Public Comments are limited to three (3) minutes per speaker.

3. RECESS TO CLOSED SESSION

a. CONFERENCE WITH LEGAL COUNSEL – EXISTING LITIGATION

Pursuant to Government Code Section 54956.9(a) & (d)(1) - One case
Name of Case: CEM Construction Corporation v. City of Orange
Orange County Superior Court Case No. 30-2025-01536465

b. CONFERENCE WITH LABOR NEGOTIATORS

Pursuant to Government Code Section 54957.6.
City Negotiator: Jarad Hildenbrand, City Manager; Monica Espinoza, Human Resources Director; Cody Kleen, Assistant Human Resources Director
Employee Organizations: Orange Fire Management Association, International Brotherhood of Electrical Workers (IBEW) Local 47 (Maintenance and Crafts and Water Division), Orange Management Association, Orange Municipal Employees' Association, Orange City Firefighters, City of Orange Police Association, City of Orange Police Management Association, Top Management

4. CLOSED SESSION REPORT

5. ADJOURNMENT

The City Council will adjourn to the 6:00 p.m. Regular Session in the Council Chamber.

6:00 PM REGULAR SESSION

1. OPENING/CALL TO ORDER

1.1 INVOCATION

Pastor Jason Park, Lighthouse Bible Church Orange County

1.2 PLEDGE OF ALLEGIANCE

Mayor Dan Slater

1.3 ROLL CALL

1.4 PRESENTATIONS/ANNOUNCEMENTS

Proclamation honoring the Strikers FC Orange Boys U10 division for winning the 2026 Cal South State Cup Champions

Attachments: Staff Report
Draft Proclamation

1.5 REPORT ON CLOSED SESSION ACTIONS

2. PUBLIC COMMENTS

At this time, members of the public may address the Council on matters not listed on the agenda within the subject matter jurisdiction of the City Council, provided that NO action may be taken on off-agenda items unless authorized by law. Public Comments are limited to three (3) minutes per speaker unless a different time limit is announced.

3. CONSENT CALENDAR

All items on the Consent Calendar are considered routine and are enacted by one motion approving the recommended action listed on the Agenda. Any member of the City Council, staff, or the public may request an item be removed from the Consent Calendar for discussion or separate action. Unless otherwise specified in the request to remove an item from the Consent Calendar, all items removed shall be considered immediately following action on the remaining items on the Consent Calendar.

3.1. Waive reading in full of all ordinances on the Agenda.

Recommended Action:

Approve.

Attachments: Staff Report

3.2. Confirmation of accounts payable warrant registers dated February 5, 12, 19, and 26, 2026 and payroll check warrants dated February 13 and 27, 2026

Recommended Action:

Ratify the accompanying registers.

Attachments: Staff Report
February 5, 2026 Accounts Payable Register
February 12, 2026 Accounts Payable Register
February 19, 2026 Accounts Payable Register
February 26, 2026 Accounts Payable Register
February 13 2026 Payroll Register
February 27 2026 Payroll Register

3.3. Approval of minutes of the City of Orange City Council Regular Meeting held on February 24, 2026

Recommended Action:

Approve minutes as presented.

Attachments: Staff Report
February 24, 2026, Regular Meeting minutes

3.4. Cooperative Agreement by and between the cities of Anaheim, Brea, Fullerton and Orange for the State College Boulevard/The City Drive Regional Traffic Signal Synchronization Project

Recommended Action:

1. Approve the Cooperative Agreement with the cities of Anaheim, Brea, and Fullerton for the implementation of State College Boulevard/The City Drive Regional Traffic Signal Synchronization Project; and authorize the City Manager and City Clerk to execute on behalf of the City.
2. Authorize the appropriation of $200,000 from the Measure M - Traffic Improvement (263) unreserved fund balance to:
   263-5704-87101-265105 State College Blvd Traffic Signal Synchronization

Attachments: Staff Report
Attachment 1 Coooperative Agreement
Attachment 2 Project Corridor Map
Attachment 3 Resolution No. 11590

3.5. Production agreement for the inaugural Celebrate Orange event: A collaborative event combining the Orange May Parade, Taste of Orange, and Orange Plaza Rotary Club Car Show

Recommended Action:

Approve the Celebrate Orange Production Agreement (combining the Orange May Parade, Taste of Orange, & Orange Plaza Rotary Car Show); and authorize the Mayor and City Clerk to execute on behalf of the City.

Attachments: Staff Report
Production Agreement for Celebrate Orange

3.6. First Amendment to agreement with HF&H Consultants, LLC for Solid Waste Consulting Services

Recommended Action:

Approve the First Amendment to Agreement No. 7697.A with HF&H Consultants, LLC in the amount of $60,000 for Solid Waste Consulting Services; and authorize the Mayor and the City Clerk to execute on behalf of the City

Attachments: Staff Report
First Amendment to Agreement with HF&H Consultants, LLC

3.7. Approval of plans and specifications for Almond Avenue and Collins Avenue Street Improvements and authorization to advertise for bids; and finding of California Environmental Quality Act (CEQA) exemption

Recommended Action:

1. Approve the plans and specifications and authorize advertising for Bid No. 25-26.13 (SP-4327), Almond Avenue and Collins Avenue Street Improvements.
2. Find that the proposed project is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) per State CEQA Guidelines 15301 (Class 1(c) - Existing Facilities).

Attachments: Staff Report
Location Maps

3.8. Award of contracts to ABM Electrical & Lighting Solutions, Inc. and Interior Resources, Inc., dba Commercial Interior Resources for lighting, paint, and flooring improvements at the Police Department

Recommended Action:

1. Approve the contract with ABM Electrical & Lighting Solutions, Inc. in the total amount of $199,971, representing a cost of $198,971, plus a contingency of $1,000; and authorize the Mayor and City Clerk to execute on behalf of the City.
2. Approve the contract with Interior Resources, Inc., dba Commercial Interior Resources, in the amount of $204,763, representing a cost of $186,148, plus a contingency of 10% or $18,615; and authorize the Mayor and City Clerk to execute

on behalf of the City.

3. Authorize the appropriation of $204,763 from the Developer Impact Fees-Police (570) fund balance to:
   570-5601-84101-255019 Developer Impact Fees-Police
4. Authorize the appropriation of $199,971 from the Merged 2008 Tax Exempt Bonds (954) fund balance to:
   954-5601-84101-255019 Merged 2008 Tax Exempt Bonds

Attachments: Staff Report
Contract with ABM Electrical & Lighting Solutions, Inc.
Contract with Interior Resources, Inc., dba Commercial Interior Resources

3.9. Notice of Completion and Acceptance for Annual Pavement Maintenance at Various Locations, Fiscal Year 2024-2025; Bid No. 24-25.09 (SP-4291)

Recommended Action:

1. Accept the Annual Pavement Maintenance at Various Locations Fiscal Year 2024-25 project as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

Attachments: Staff Report
Notice of Completion and Acceptance

3.10. Notice of Completion and Acceptance for the Multi-Library Improvements at Main, Taft, and El Modena Library branches (SP-4318)

Recommended Action:

1. Accept the Multi-Library Improvements at Main, Taft, and El Modena Library branches as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

Attachments: Staff Report
Notice of Completion and Acceptance

3.11. Notice of Completion and Acceptance for Well No. 28 Equipping Project; Bid No. 22-23.33

Recommended Action:

1. Accept the Well No. 28 Equipping Project as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

Attachments: Staff Report
Notice of Completion and Acceptance

3.12. Notice of Completion and Acceptance for Purchase and Installation of Mixers for Reservoirs 2 and 10A

Recommended Action:

1. Accept the Purchase and Installation of Mixers for Reservoirs 2 and 10A as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

Attachments: Staff Report
Notice of Completion and Acceptance

3.13. Authorize purchase of mobile vehicle barriers and deployment components, and annual certified operator training from Meridian Rapid Defense Group Sales, LLC through General Services Administration Contract No. 47QSWA19D001F

Recommended Action:

1. Approve the purchase of 50 mobile vehicle barriers and components from Meridian Rapid Defense Group Sales, LLC in the amount of $398,599.
2. Authorize the appropriation of $400,000 from Traffic Safety (450) unreserved fund balance to:
   450-5001-80101- Furniture, Fixture, Equipment

Attachments: Staff Report

3.14. Authorize purchase of four message trailers from Applied Concepts, Inc. through the Houston-Galveston Area Council HGACBuy Cooperative Purchasing Program, Contract No. EF04-21

Recommended Action:

1. Approve the purchase of four message trailers from Applied Concepts, Inc. for $77,580.
2. Authorize the appropriation of $77,580 from Traffic Safety (450) undesignated fund balance to expenditure account number 450-4011-80101, Traffic Safety - Furniture, Fixture, Equipment.

Attachments: Staff Report
HGACBuy Contract No. EF04-21
Stalker Quote

3.15. Quitclaim of fire access easement at 500 West Collins Avenue

Recommended Action:

Authorize the Mayor to execute a Quitclaim Deed of the fire access easement to 500 Collins, Inc.

Attachments: Staff Report
Quitclaim Deed

3.16. Designation of April 25, 2026, as Arbor Day in the City of Orange

Recommended Action:

Adopt Resolution No. 11659. A Resolution of the City Council of the City of Orange designating April 25, 2026, as Arbor Day.

Attachments: Staff Report
Resolution No. 11659
Arbor Day Planting Map 2026

END OF CONSENT CALENDAR

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4. REPORTS FROM MAYOR SLATER

An opportunity for the Mayor to make a brief announcement, report, or request. Pursuant to Government Code Section 54954.2(a)(3), no action(s) or discussion(s) shall be undertaken on any item not appearing on the posted agenda.

5. REPORTS FROM COUNCILMEMBERS

An opportunity for Councilmembers to make a brief announcement, report, or request. Pursuant to Government Code Section 54954.2(a)(3), no action(s) or discussion(s) shall be undertaken on any item not appearing on the posted agenda.

5.1. Highlight Local Business (Gutierrez)

6. AB 1234 REPORTS

This is the time for all AB 1234 reports required pursuant to Government Code Section 53232.3(d) on meetings and conferences attended at the City's expense.

7. APPOINTMENTS TO BOARDS, COMMITTEES, AND COMMISSIONS

7.1. Appointment to the City Traffic Commission

Recommended Action:

Confirm Mayor Slater’s recommendation to appoint Steven Freeman to the City Traffic Commission to fill an unexpired term ending June 30, 2027.

Attachments: Staff Report

8. REPORTS FROM CITY MANAGER

8.1. Presentation on standards for paving, driveway widths, and parking within setback areas

9. PUBLIC HEARINGS

9.1. Public Hearing to consider an amendment to the Circulation and Mobility Element of the City of Orange General Plan and finding of CEQA exemption

Recommended Action:

1. Conduct and close the Public Hearing.
2. Adopt Resolution No. 11660. A Resolution of the City Council of the City of Orange approving General Plan Amendment No. 26-0001 amending the City of Orange General Plan Circulation and Mobility Element to conform to the Orange County Transportation Authority's Countywide Master Plan of Arterial Highways.
3. Find the proposal exempt from the California Environmental Quality Act (CEQA) per State CEQA Guidelines Section 15061(b)(3) (Common Sense Exemption).

Attachments:

Staff Report
Attachment 1 Resolution No. 11660
Attachment 2 Planning Commission Staff Report of February 2, 2026
Attachment 3 Proposed City Master Plan of Streets and Highways Amendment Reclassification
Attachment 4 Amended City of Orange General Plan Circulation and Mobility Element (redline version)
Attachment 5 Santiago Canyon Road (Villa Park Road) MPAH Amendment Traffic Study
Attachment 6 County of Orange Board of Supervisors Staff Report of May 6, 2025, for the Santiago Canyon Road (Villa Park Road) reclassification
Attachment 7 Orange County Transportation Authority Staff Report of September 9, 2024, for the Santiago Canyon Road (Villa Park Road) reclassification Master Plan of Arterial Highways Amendment
Attachment 8 City of Santa Ana General Plan Update Appendix K Transportation Impact Study for the Fairhaven Avenue reclassification
Attachment 9 City of Santa Ana Staff Report of April 19, 2022, for the Fairhaven Avenue reclassification
Attachment 10 Adopted City of Santa Ana General Plan Mobility Element
Attachment 11 OCTA Staff Report of November 2, 2020, for the Conditional Amendment of the Fairhaven reclassification in the Countywide Master Plan o

10. ADMINISTRATIVE REPORTS

10.1. Agreement with The HUB OC for youth and teen summer day camp services

Recommended Action:

1. Approve the agreement with The HUB OC for Youth and Teen Summer Day Camp Services; and authorize the Mayor and City Clerk to execute on behalf of the City.
2. Authorize the City Manager to execute necessary renewals as outlined in the agreement.

Attachments: Staff Report
Proposal Abstract Summary
Professional Services Agreement

10.2. Agreement with Premier Aquatic Services, LLC for Hart Park Pool Operations and Aquatic Programming Services

Recommended Action:

1. Approve the agreement with Premier Aquatic Services, LLC for Hart Park Pool Operations and Aquatic Programming Services in the amount of $227,424.00 plus a 10% contingency of $22,742.40 for a total of $250,166.40; and authorize the Mayor and City Clerk to execute on behalf of the City.
2. Authorize the appropriation of $62,600.00 from the General Fund (100) undesignated fund balance to fund the prorated FY2025-26 portion of agreement services:
   100-7103-55000 Contractual Services
3. Authorize the City Manager to execute optional renewals as outlined in the agreement.

Attachments: Staff Report
Attachment 1 - Proposal Abstract Summary
Attachment 2 - Professional Services Agree with Premier Aquatic Services

10.3. Establishment of Permit Parking Area "AF" to be comprised of both sides of Fairmont Way from La Veta Avenue to Delia Lane

Recommended Action:

Adopt Resolution 11658. A Resolution of the City Council of the City of Orange adopting a revised master resolution of designated permit parking areas and established permit parking opportunity areas within the City of Orange.

Attachments:
Staff Report
Attachment 1 Resolution No. 11658
Attachment 2 Proposed Permit Parking Area
Attachment 3 City Traffic Commission Staff Report February 11, 2026
Attachment 4 Draft City Traffic Commission Minutes February 11, 2026
Attachment 5 Notification Letter Fairmont Way

10.4. City Charter Discussion

Recommended Action:

Review and discuss the draft City Charter and provide direction to staff.

Attachments:
Staff Report
Attachment 1 - Draft City Charter for discussion and feedback
Attachment 2 - General Law and Charter City Pros and Cons
Attachment 3 - City Council Drafted Charter: Draft Ballot Measure Timeframe

11. ADJOURNMENT

The City Council will Adjourn in Memory of retired Orange City Fire Department Battalion Chief Scott Conniff.

The next Regular City Council meeting will be held on Tuesday, March 24, 2026, at 6:00 p.m., in the Council Chamber, with Closed Session beginning at 5:00 p.m., if necessary.

I, Pamela Coleman, CMC, City Clerk for the City of Orange, do hereby declare, under penalty of perjury, that a full and correct copy of this agenda was posted pursuant to Government Code Section 54950 et. seq., at the following locations: Orange Civic Center kiosk and Orange City Clerk's Office at 300 E. Chapman Avenue, Orange Main Public Library at 407 E. Chapman Avenue, Police facility at 1107 N. Batavia Street, and uploaded to the City's website www.cityoforange.org.

Date posted: March 5, 2026

Agenda Item

Orange City Council

Item #:	3/10/2026	**File #:** 26-0126

1. SUBJECT

Proclamation honoring the Strikers FC Orange Boys U10 division for winning the 2026 Cal South State Cup Champions

2. SUMMARY

Recognize the Strikers FC Orange Boys U10 team for winning the 2026 Cal South State Cup. This marks the first State Cup title in the club's history and a proud achievement for the Orange community.

3. ATTACHMENTS

- Draft Proclamation

Agenda Item

Orange City Council

Item #:	3/10/2026	**File #:** 26-0126

1. SUBJECT

Proclamation honoring the Strikers FC Orange Boys U10 division for winning the 2026 Cal South State Cup Champions

2. SUMMARY

Recognize the Strikers FC Orange Boys U10 team for winning the 2026 Cal South State Cup. This marks the first State Cup title in the club's history and a proud achievement for the Orange community.

3. ATTACHMENTS

- Draft Proclamation

Proclamation

Honoring

Strikers FC Orange – Boys U10 Division

and

Coach Jesse Ortiz

2026 Cal South State Cup Champions

WHEREAS, Strikers FC Orange, a competitive club program of the Orange Junior Soccer Club, has a long history of empowering young athletes to become confident in themselves to perform at their best while representing their team, Soccer Club, and City in a positive manner; and

WHEREAS, under the expert tutelage of Coach Jesse Ortiz, the Boys U10 division of the Strikers FC Orange was the first of this club program to win the Cal South State Cup Championship and bring home the 2026 title; and

WHEREAS, for the past two years, the team motto has been "On Your Toes." It represents readiness, focus, discipline, and a commitment to continuous improvement in everything the team does. In Coach Ortiz's own words, "Success on the field means very little if they are not growing as students and as young men off the field;" and

WHEREAS, over the past couple of years, this strong team has played together and won many tournament championships, endured long practice sessions and grueling travel miles, injuries, and fatigue to become the 2026 Cal South State Cup Champions. Through their hard work, determination, blood, sweat, and tears, these young players who were greatly influenced by their coaches' teachings have shown tremendous team spirit and sportsmanship both on and off the field; and

WHEREAS, Orange is proud to be home to Strikers FC Orange and is proud of Coach Ortiz's Boys U10 team's outstanding competition season.

NOW, THEREFORE, I, Dan Slater, Mayor of the City of Orange, on behalf of the entire City Council, do hereby congratulate our Strikers FC Orange Boys U10 team and Coach Ortiz on their outstanding competition season leading to a Championship win at the Cal South State Cup for the first time in this division's organization's history.

DATED this 10th day of March 2026.

_____

Daniel R. Slater, Mayor

Draft

Agenda Item

Orange City Council

Item #: 3.1. 3/10/2026 **File #:** 26-0106

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Pamela Coleman, City Clerk/City Clerk Services Director**

1. SUBJECT

Waive reading in full of all ordinances on the Agenda

2. SUMMARY

This item asks the City Council to waive the reading in full of all ordinances on the agenda (if any) and approve their reading by title only.

State law requires that all ordinances be read in full either at the time of the introduction or at the time of passage, unless a motion waiving further reading is adopted by a majority of the City Council (Gov. Code § 36934).

3. RECOMMENDED ACTION

Approve.

4. ATTACHMENTS

- None

Agenda Item

Orange City Council

Item #: 3.1. 3/10/2026 **File #:** 26-0106

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Pamela Coleman, City Clerk/City Clerk Services Director**

1. SUBJECT

Waive reading in full of all ordinances on the Agenda

2. SUMMARY

This item asks the City Council to waive the reading in full of all ordinances on the agenda (if any) and approve their reading by title only.

State law requires that all ordinances be read in full either at the time of the introduction or at the time of passage, unless a motion waiving further reading is adopted by a majority of the City Council (Gov. Code § 36934).

3. RECOMMENDED ACTION

Approve.

4. ATTACHMENTS

- None

Agenda Item

Orange City Council

Item #: 3.2. 3/10/2026 **File #:** 25-0699

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Trang Nguyen, Finance Director**

1. SUBJECT

Confirmation of accounts payable warrant registers dated February 5, 12, 19, and 26, 2026 and payroll check warrants dated February 13 and 27, 2026

2. SUMMARY

Per Government Code Section 37208, the accounts payable and payroll warrant register for the above listed dates are submitted for approval by the City Council.

3. RECOMMENDED ACTION

Ratify the accompanying registers.

4. DISCUSSION AND BACKGROUND

Government Code Section 37208(a) provides that payroll warrants or checks need not be audited by the legislative body prior to payment. Payrolls shall be presented to the legislative body for ratification and approval at the first meeting of the month after delivery of the payroll warrants or checks. The sum of payroll warrants and checks issued is noted in the attachments.

Government Code Section 37208(b) provides that accounts payable warrants or checks drawn in payment of demands certified or approved by the city clerk as conforming to a budget approved by ordinance or resolution of the legislative body need not be audited by the legislative body prior to payment. The checks issued in the attached warrant registers have been certified to be in accordance with the City's approved budget.

5. ATTACHMENTS

- February 5, 2026 Accounts Payable Register
- February 12, 2026 Accounts Payable Register
- February 19, 2026 Accounts Payable Register
- February 26, 2026 Accounts Payable Register
- February 13, 2026 Payroll Register
- February 27, 2026 Payroll Register

Agenda Item

Orange City Council

Item #: 3.2. 3/10/2026 **File #:** 25-0699

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Trang Nguyen, Finance Director**

1. SUBJECT

Confirmation of accounts payable warrant registers dated February 5, 12, 19, and 26, 2026 and payroll check warrants dated February 13 and 27, 2026

2. SUMMARY

Per Government Code Section 37208, the accounts payable and payroll warrant register for the above listed dates are submitted for approval by the City Council.

3. RECOMMENDED ACTION

Ratify the accompanying registers.

4. DISCUSSION AND BACKGROUND

Government Code Section 37208(a) provides that payroll warrants or checks need not be audited by the legislative body prior to payment. Payrolls shall be presented to the legislative body for ratification and approval at the first meeting of the month after delivery of the payroll warrants or checks. The sum of payroll warrants and checks issued is noted in the attachments.

Government Code Section 37208(b) provides that accounts payable warrants or checks drawn in payment of demands certified or approved by the city clerk as conforming to a budget approved by ordinance or resolution of the legislative body need not be audited by the legislative body prior to payment. The checks issued in the attached warrant registers have been certified to be in accordance with the City's approved budget.

5. ATTACHMENTS

- February 5, 2026 Accounts Payable Register
- February 12, 2026 Accounts Payable Register
- February 19, 2026 Accounts Payable Register
- February 26, 2026 Accounts Payable Register
- February 13, 2026 Payroll Register
- February 27, 2026 Payroll Register

City of Orange

Finance Department - Accounts Payable

WW # 0351

WEEKLY WARRANT WRITING CHECK REGISTER

Warrant Writing	Warrant Writing Confirmation Date: 02/05/26 1 of 4 reports for 03/10/26 Council Meeting
Notes:	
Requester Signature: eSigned via GovOS.com Holli Kittleson Key: c75eb71bc2d138050ea61da6a02e3123	Date: 02-05-2026

AGENDA ITEM NO. 3.2

I certify that the attached register of demands has been prepared and audited under my direction and supervision. I also certify that each demand is accurately set forth and correctly stated, that each is a legal obligation of the City, and that there are sufficient funds available for the payment of each demand.

Please review and approve before:

eSigned via GovOS.com Tiffany Dang Key: 255ce3af4128a3a50bd1b4b009bc5bbc Tiffany Dang, Finance	02-06-2026 Date	Comments:
eSigned via GovOS.com Jarad L. Hildenbrand Key: d3b9b88f-da90-4693-bd42-b7973c0a7d37 Jarad Hildenbrand, City Manager	02-09-2026 Date	Comments:
eSigned via GovOS.com Pamela Coleman Key: 52f7c7947ed47a25c77b48742be39aca Pam Coleman, City Clerk	02-09-2026 Date	Comments:

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
5591	02/05/2026	WIRE	001117	PUBLIC EMPLOYEES RETIREME	858,635.24			

DOC	INVOICE NO	ACCOUNT	AMOUNT
13338	CalPERS 202602	100-0000-20414-	808,149.16
13338	CalPERS 202602	760-0000-52001-	50,486.08
2042026 02/04/2026 WIRE 000385 SOUTHERN CALIFORNIA GAS C			1,073.82
13917	02/04/26	100-0000-56203-	1,073.82
8003883 02/05/2026 PRINTED 013658 ABBA TERMITE AND PEST CON			110.00
13311	033060	600-5802-55999-	110.00
8003884 02/05/2026 PRINTED 007831 ADLERHORST INTERNATIONAL			59.26
13228	124376	100-4121-53199-	59.26
8003885 02/05/2026 PRINTED 025299 NARIK AGOUB			143.69
13263	00093115-03	600-0000-11106-	143.69
8003886 02/05/2026 PRINTED 000539 AIR SOURCE INDUSTRIES			1,475.50
13905	00975387	225-3122-53101-	245.05
13905	00975387	225-3215-53101-	245.05
13906	00975470	225-3122-53101-	254.37
13906	00975470	225-3215-53101-	254.38
13907	00975125	225-3122-53101-	77.20
13907	00975125	225-3215-53101-	77.20
13908	00975464	225-3122-53101-	161.13
13908	00975464	225-3215-53101-	161.12
8003887 02/05/2026 PRINTED 002797 ALCO TARGET COMPANY			1,176.74
13424	73344	100-4011-53199-	1,176.74
8003888 02/05/2026 PRINTED 020698 ALL CITY MANAGEMENT SERVI			11,421.02
13456	PS-INV103321	100-4141-55999-	11,421.02
8003889 02/05/2026 PRINTED 001029 ALLSTAR FIRE EQUIPMENT IN			48,593.11
13116	269850	100-3121-54101-	42,900.12
13119	269923	100-3121-54101-	544.78
13127	269922	100-3121-53201-	5,148.21
8003890 02/05/2026 PRINTED 025087 ALOHAT LLC			3,080.80
13207	1949155	100-3011-53102-	3,080.80
8003891 02/05/2026 PRINTED 014656 RENE ALONZO			365.00
13279	26 MEMBERSHIP DUES	601-5301-57104-	251.00
13280	26 CSM-1 RENEWAL	601-5301-57104-	114.00
8003892 02/05/2026 PRINTED 000021 AMERICAN GAGE			78.00
13937	271502	100-5401-56101-	78.00
8003893 02/05/2026 PRINTED 025296 ANGEL MOTEL			194.66
13257	00020362-01	600-0000-11106-	68.48

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13258	00020954-01	600-0000-11106-				126.18	
8003894	02/05/2026	PRINTED	010063	ANIMAL FRIENDS PET HOTEL	1,120.00			
	DOC	INVOICE NO	ACCOUNT				AMOUNT	
	13229	784927279	100-4121-55999-				1,120.00	
8003895	02/05/2026	PRINTED	020247	ELIZABETH JACINTO	164.07			
	13354	EDU25/26-2	100-1401-57102-				164.07	
8003896	02/05/2026	PRINTED	001147	ARCHIE'S TOWING	107.50			
	13936	267874	100-5401-56999-				107.50	
8003897	02/05/2026	PRINTED	002217	AT&T	10,762.28			
	13448	01/15/2026	100-1301-56201-				31.97	
	13448	01/15/2026	100-1801-56201-				95.91	
	13448	01/15/2026	100-2101-56201-				128.82	
	13448	01/15/2026	100-2316-56201-				158.29	
	13448	01/15/2026	100-3011-56201-				3,228.58	
	13448	01/15/2026	100-4011-56201-				2,234.33	
	13448	01/15/2026	100-5601-56101-				62.63	
	13448	01/15/2026	100-7001-56201-				4,633.05	
	13448	01/15/2026	600-5802-56201-				156.73	
	13448	01/15/2026	100-5401-56201-				31.97	
8003898	02/05/2026	PRINTED	005378	AUTO ZONE	642.84			
	13318	05942562111	100-0000-15203-				370.62	
	13319	05527637635	100-0000-15203-				240.33	
	13413	05942571481	100-0000-15203-				116.24	
	13947	CM05942273031	100-0000-15203-				-10.00	
	13948	CM05942511224	100-0000-15203-				-74.35	
8003899	02/05/2026	PRINTED	025209	ROBERT AYON	601.47			
	13356	10/27-31/2025RB	100-4011-57101-				601.47	
8003900	02/05/2026	PRINTED	011201	YOLANDA BAROCIO	105.00			
	13368	PRODV25/26	100-1401-57102-				105.00	
8003901	02/05/2026	PRINTED	001874	DAVID BARR	23.00			
	13287	01/12/2026RB	100-4011-57101-				23.00	
8003902	02/05/2026	PRINTED	020943	BORDIN SEMMER LLP	222,464.07			
	13921	STATEMENT NO. 3 - A	731-1301-55102-				8,564.90	
	13922	STATEMENT NO. 3 - B	731-1301-55102-				62,456.41	
	13923	STATEMENT NO. 4	731-1301-55102-				66,652.66	
	13924	STATEMENT NO. 7	731-1301-55102-				46,995.60	
	13925	STATEMENT NO. 8	731-1301-55102-				24,080.10	
	13928	STATEMENT NO. 9	731-1301-55102-				13,714.40	
8003903	02/05/2026	PRINTED	002089	BOUND TREE MEDICAL	786.76			
	13209	86061121	225-3122-53101-				222.85	

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13327		86068618	225-3122-53101-			564.84	
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	13949	CM70364796		225-3122-53101-				-.93
8003904	02/05/2026	PRINTED	015775	GAGE BOWEN	457.76			
	13361	EDU25/26-2		100-1401-57102-				457.76
8003905	02/05/2026	PRINTED	002313	BURRO CANYON SHOOTING PAR	100.00			
	13421	3737		100-4011-57101-				100.00
8003906	02/05/2026	PRINTED	000784	C A P E INC	60.00			
	13458	15418		100-4134-57104-				60.00
8003907	02/05/2026	PRINTED	001624	C WELLS PIPELINE MATERIAL	4,467.32			
	13216	SINV26-1283		600-5803-81999-				4,467.32
8003908	02/05/2026	PRINTED	016378	C3 OFFICE SOLUTIONS LLC	78.47			
	13450	INV213414		100-1601-56999-				78.47
8003909	02/05/2026	PRINTED	017952	CAL-STATE AUTO PARTS INC	578.32			
	13328	538452		100-0000-15203-				105.27
	13931	537135		100-0000-15203-				218.92
	13934	540622		100-0000-15203-				283.22
	13950	CM571472		100-0000-15203-				-29.09
8003910	02/05/2026	PRINTED	006583	CAM SERVICES	1,335.00			
	13246	124476		100-5301-56999-				750.00
	13247	124475		100-5301-56999-				185.00
	13248	124477		100-5301-56999-				400.00
8003911	02/05/2026	PRINTED	018913	CAPTAIN GRAPHICS	86.20			
	13224	U5711		454-4011-53102-				86.20
8003912	02/05/2026	PRINTED	018974	CHARTER COMMUNICATIONS	950.00			
	13422	189067401012126		100-4011-56201-				950.00
8003913	02/05/2026	PRINTED	018974	CHARTER COMMUNICATIONS	428.59			
	13423	187909301012126		100-4011-56201-				428.59
8003914	02/05/2026	PRINTED	003565	AT & T	320.00			
	13979	604297		100-4131-55999-				320.00
8003915	02/05/2026	PRINTED	019162	CINTAS	138.77			
	13326	4257873251		100-5401-56107-				138.77
8003916	02/05/2026	PRINTED	015299	CLEAN DIESEL SPECIALISTS	90.50			
	13332	3-134501		100-0000-15203-				90.50
8003917	02/05/2026	PRINTED	004588	CODE CONSULTING GROUP LLC	207.50			
	13123	12-25-0186		100-3112-55000-				207.50

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8003918	02/05/2026	PRINTED	001768	ALFRED S CONTRERAS	290.00			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
13308	13308	600-5802-50999-				290.00		
8003919	02/05/2026	PRINTED	018831	UNIVERSAL LOCKSMITH	1,890.00			
13227	1394272	100-4131-53199-				1,890.00		
8003920	02/05/2026	PRINTED	002870	CROSSTOWN ELECTRICAL & DA	2,612.94			
12119	5085003	100-5702-56999-				2,612.94		
8003921	02/05/2026	PRINTED	002513	DELTACARE USA	7,024.47			
13336	BE006901466	100-0000-20415-				7,024.47		
8003922	02/05/2026	PRINTED	000974	DELTA DENTAL OF CALIFORNI	52,609.98			
13914	BE006929177A	100-1401-55999-				6,760.18		
13915	BE006929177C	100-1401-52001-				45,849.80		
8003923	02/05/2026	PRINTED	002199	MICHAEL DIERSING	388.77			
13157	12/08-10/2025RB	100-3121-57101-				388.77		
8003924	02/05/2026	PRINTED	011271	DOERSCHEL AND ASSOCIATES	3,375.00			
13225	111003	200-0000-56999-				3,375.00		
8003925	02/05/2026	PRINTED	017762	DAVID WILSON'S VILLA FORD	33.92			
13317	034289	100-0000-15203-				67.59		
13952	CM089580	100-0000-15203-				-33.67		
8003926	02/05/2026	PRINTED	000846	EMERGENCY MEDICAL SERVICE	814.00			
13154	27682-2505	225-3122-57104-				777.00		
13155	27682-2506	225-3122-57104-				37.00		
8003927	02/05/2026	PRINTED	002741	EMERGENCY RESPONSE CRIME	375.00			
13223	OP2026-132	100-4011-55000-				375.00		
8003928	02/05/2026	PRINTED	001042	ENVIRONMENTAL SYSTEMS RES	42,100.00			
13442	900162738	100-1601-55999-				42,100.00		
8003929	02/05/2026	PRINTED	001990	EYEMED	1,162.29			
13335	167194256	100-0000-20416-				1,162.29		
8003930	02/05/2026	PRINTED	001639	FACTORY MOTOR PARTS CO	69.45			
13315	11-2068806	100-0000-15203-				48.92		
13416	11-2069955	100-0000-15203-				20.53		
8003931	02/05/2026	PRINTED	001900	JOHN FELTON	275.00			
13300	13300	600-5802-57101-				275.00		
8003932	02/05/2026	PRINTED	002278	FERGUSON WATERWORKS #1089	4,635.84			
13238	0068150	600-5802-80101-				662.27		

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13238		0068150	600-5803-80101-			860.94	
	DOC		INVOICE NO	ACCOUNT			AMOUNT	
	13238		0068150	600-5803-81501-			662.26	
	13238		0068150	600-5803-80101-			2,450.37	
8003933	02/05/2026	PRINTED	020516	FIREFIGHTERS SAFETY CENTE	907.35			
	13325		30342	100-3123-57101-			907.35	
8003934	02/05/2026	PRINTED	000002	FLEET SERVICES INC	972.25			
	13321		01P173209	100-0000-15203-			215.29	
	13322		01P173352	100-0000-15203-			787.11	
	13953		CM01P173055	100-0000-15203-			-30.15	
8003935	02/05/2026	PRINTED	001657	FLEETPRIDE INC	536.58			
	13314		131397619	100-0000-15203-			536.58	
8003936	02/05/2026	PRINTED	002958	FORTEL TRAFFIC INC	12,615.37			
	11718		15435-1	500-5704-87101-			12,615.37	
8003937	02/05/2026	PRINTED	000143	FRIENDLY CENTER INC	7,329.00			
	13176		62	310-6411-50102-			7,329.00	
8003938	02/05/2026	PRINTED	002198	GALLS LLC	1,488.26			
	13230		033797878	454-4011-53102-			56.22	
	13231		033837869	454-4011-53102-			158.05	
	13232		033797881	100-4011-53102-			128.70	
	13233		033810979	100-4011-53102-			49.78	
	13234		033837864	100-4011-53102-			49.78	
	13235		033797801	100-4121-59999-			109.11	
	13236		033810923	100-4121-59999-			100.47	
	13237		033837775	100-4121-59999-			100.07	
	13426		033877738	100-4011-53102-			134.88	
	13427		033877740	100-4011-53102-			138.30	
	13428		033877751	100-4011-53102-			171.55	
	13429		033877792	100-4011-53102-			6.44	
	13431		033877857	100-4011-53102-			65.72	
	13432		033891401	100-4011-53102-			112.05	
	13433		033891402	100-4011-53102-			10.88	
	13434		033891530	100-4011-53102-			19.78	
	13436		033918441	100-4011-53102-			10.66	
	13437		033918489	100-4011-53102-			13.30	
	13438		033877771	454-4011-53102-			52.52	
8003939	02/05/2026	PRINTED	012616	BRETT GARRETT	676.00			
	13364		PRODV25/26	100-1401-57102-			676.00	
8003940	02/05/2026	PRINTED	015590	G/M BUSINESS INTERIORS	15,618.85			
	13158		0308456-IN	560-3121-83101-			15,618.85	
8003941	02/05/2026	PRINTED	013976	GOVINVEST INC	18,034.34			

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
		13916	2025-6467	100-1844-55999-			16,230.91	
	DOC	INVOICE NO	ACCOUNT				AMOUNT	
	13916	2025-6467	600-1843-56999-				1,803.43	
8003942	02/05/2026	PRINTED	016318	GRAFIX SYSTEMS	1,086.98			
	13339	34683	100-5401-56999-				1,086.98	
8003943	02/05/2026	PRINTED	020861	GRANICUS LLC	5,016.20			
	13386	214723	200-1601-80299-				5,016.20	
8003944	02/05/2026	PRINTED	005369	JEFFREY D GRAY	643.75			
	13363	PRODV25/26	100-1401-57102-				643.75	
8003945	02/05/2026	PRINTED	025297	MERILEE GREENE	232.72			
	13260	00023693-00	600-0000-11106-				232.72	
8003946	02/05/2026	PRINTED	004835	HF & H CONSULTANTS LLC	2,769.75			
	13281	9722652	100-5001-55999-				2,769.75	
8003947	02/05/2026	PRINTED	005172	AMY Z HARPSTER	215.00			
	13369	PRODV25/26	100-1401-57102-				215.00	
8003948	02/05/2026	PRINTED	025288	BRIAN K HARPSTER	165.00			
	13932	120225-HARPSTER	731-1306-50203-				165.00	
8003949	02/05/2026	PRINTED	001390	HDL COREN & CONE	6,134.10			
	13919	SIN058913	100-0000-55999-				6,134.10	
8003950	02/05/2026	PRINTED	020823	MARK HELLSUND	875.00			
	13370	PRODV25/26	100-1401-57102-				555.00	
	13371	PRODV25/26-2	100-1401-57102-				320.00	
8003951	02/05/2026	PRINTED	025293	RICHARD HOPE	141.11			
	13251	00010023-01	600-0000-11106-				141.11	
8003952	02/05/2026	PRINTED	006309	HUNTINGTON SECURITY SYSTE	71.26			
	13440	0021909-IN	100-5601-56101-				35.63	
	13441	0021910-IN	100-5601-56101-				35.63	
8003953	02/05/2026	PRINTED	012820	INLAND KENWORTH US INC	4,355.61			
	13312	335162MNP	100-0000-15203-				4,353.18	
	13420	337651MNP	100-0000-15203-				57.94	
	13935	337704MNP	100-0000-15203-				10.79	
	13954	CM326080MNP	100-0000-15203-				-66.30	
8003954	02/05/2026	PRINTED	020475	JOE MAR POLYGRAPH	750.00			
	13226	26-005-OPD	100-4011-55000-				250.00	
	13418	26-006-OPD	100-4011-55000-				500.00	
8003955	02/05/2026	PRINTED	016844	KILTER TERMITE AND PEST C	660.00			

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13443		656666	100-5601-56101-		250.00		
	DOC		INVOICE NO	ACCOUNT		AMOUNT		
	13444		656670	100-5601-56101-		250.00		
	13445		656711	100-5601-56101-		160.00		
8003956	02/05/2026	PRINTED	010008	KRONOS INC	37.54			
	13159		I10010050726	100-3011-55999-		37.54		
8003957	02/05/2026	PRINTED	001849	KUSTOM IMPRINTS	6,815.08			
	13215		52849	100-3011-53102-		3,035.86		
	13284		52850	100-3011-53102-		1,271.45		
	13285		52851	100-3011-53102-		450.93		
	13455		52852	100-3011-53102-		2,056.84		
8003958	02/05/2026	PRINTED	000209	L N CURTIS & SONS	4,327.78			
	13129		INV1027518	100-3121-54101-		149.95		
	13146		INV1027946	100-3121-54101-		39.42		
	13147		INV1029074	100-3121-54101-		219.84		
	13148		INV1031089	100-3011-53102-		613.67		
	13358		INV1017365	720-5401-80301-		2,011.06		
	13461		INV1032064	225-3216-53102-		515.54		
	13462		INV1033695	225-3216-53102-		479.99		
	13904		INV1034541	100-3121-54101-		378.10		
	13951		CM51269	720-5401-80301-		-79.79		
8003959	02/05/2026	PRINTED	002806	LATIN PLUMBING INC	2,147.60			
	13425		47157	100-5601-56101-		2,147.60		
8003960	02/05/2026	PRINTED	015166	SARAH LEUNG	970.19			
	13360		EDU25/26	100-1401-57102-		970.19		
8003961	02/05/2026	PRINTED	000222	LIFE-ASSIST INC	10,869.34			
	13125		2044794	100-3122-53101-		51.84		
	13125		2044794	225-3122-53101-		115.21		
	13125		2044794	225-3215-53101-		31.68		
	13245		2055283	100-3122-53101-		2,783.64		
	13245		2055283	225-3122-53101-		6,185.86		
	13245		2055283	225-3215-53101-		1,701.11		
8003962	02/05/2026	PRINTED	021021	LINEGEAR INC	840.46			
	13121		62448	100-3121-54101-		420.23		
	13150		62450	100-3121-54101-		420.23		
8003963	02/05/2026	PRINTED	016948	VERIZON BUSINESS SERVICES	2,072.97			
	13218		73584596	355-4011-56201-		1,907.13		
	13218		73584596	450-4141-56201-		165.84		
8003964	02/05/2026	PRINTED	025302	HOLLY MCMAHON	101.85			
	13266		00019238-02	600-0000-11106-		101.85		

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8003965	02/05/2026	PRINTED	021017	MDJ MANAGEMENT LLC	52,784.94			
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	13162	2		500-5601-84101-				55,563.09
8003966	02/05/2026	PRINTED	001867	MISSION LINEN SUPPLY	3,349.32			
	13333	01/31/26 STMT 134334		100-3121-56107-				523.63
	13334	01/31/26 STMT 134351		100-3121-56107-				214.92
	13341	01/31/26 STMT 134315		100-3121-56107-				506.25
	13344	01/31/26 STMT 134168		100-3121-56107-				199.20
	13345	01/31/26 STMT 134329		100-3121-56107-				619.86
	13346	01/31/26 STMT 217880		100-3121-56107-				579.60
	13350	01/31/26 STMT 134170		100-3121-56107-				199.20
	13351	01/31/26 STMT 134988		100-3121-56107-				199.20
	13417	525416012		100-4011-55999-				307.46
8003967	02/05/2026	PRINTED	025290	CANDICE MORGAN	29.00			
	13933	111825-MORGAN		731-1306-50203-				29.00
8003968	02/05/2026	PRINTED	008006	MYERS & SONS HI-WAY SAFET	1,571.68			
	13331	181877		600-5803-54101-				1,571.68
8003969	02/05/2026	PRINTED	025300	MAI NGUYEN	15.41			
	13264	00013205-05		600-0000-11106-				15.41
8003970	02/05/2026	PRINTED	001987	NIEVES LANDSCAPE LLC	2,953.78			
	13446	83796		291-5501-56103-				322.64
	13447	83797		291-5501-56103-				322.64
	13449	83802		100-5501-56103-				511.21
	13940	83788		263-5201-56103-				1,797.29
8003971	02/05/2026	PRINTED	019237	EDINGER URGENT CARE MEDIC	4,846.80			
	13259	00085288-00		100-1401-55101-				3,651.22
	13911	00085563-00		100-1401-55101-				1,195.58
8003972	02/05/2026	PRINTED	000052	OFFICE DEPOT INC	948.73			
	13453	22986491		100-1801-53101-				39.89
	13453	22986491		100-2101-53101-				38.17
	13453	22986491		100-3011-53101-				160.90
	13453	22986491		100-4011-53101-				99.05
	13453	22986491		100-4131-53101-				13.88
	13453	22986491		100-4141-53101-				96.99
	13453	22986491		100-6001-53101-				135.74
	13453	22986491		600-5802-53101-				364.11
8003973	02/05/2026	PRINTED	099997	BRADEN & TUCCI APLC	173.00			
	13382	13382		100-0000-20105-				173.00
8003974	02/05/2026	PRINTED	099997	DEMPSEY CONSTRUCTION	2,230.21			
	13381	13381		100-0000-20105-				2,230.21

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8003975	02/05/2026	PRINTED	099997	EARTH BASICS CONTRACTING	1,376.25			

DOC	INVOICE NO	ACCOUNT	AMOUNT
13379	13379	100-0000-20105-	1,376.25

8003976	02/05/2026	PRINTED	099997	FIRST LEGAL BUYER INC	173.00			
	13377		13377	100-0000-20105-				173.00
8003977	02/05/2026	PRINTED	099997	JORDAN, JOHN	109.00			
	13384		13384	100-0000-20105-				109.00
8003978	02/05/2026	PRINTED	099997	RAMONA INC	2,453.25			
	13380		13380	100-0000-20105-				2,453.25
8003979	02/05/2026	PRINTED	099997	SOLIS INVESTIGATIONS	71.00			
	13376		13376	100-0000-20105-				71.00
8003980	02/05/2026	PRINTED	099997	USA PROPERTIES FUND INC	11,091.50			
	13375		13375	600-0000-11000-				11,091.50
8003981	02/05/2026	PRINTED	099997	USA PROPERTIES FUND INC	1,500.00			
	13378		13378	100-0000-20105-				1,500.00
8003982	02/05/2026	PRINTED	099997	USA PROPERTIES FUND INC	89.03			
	13383		13383	100-0000-20105-				89.03
8003983	02/05/2026	PRINTED	000928	ORANGE CNTY CHIEFS & SHER	200.00			
	13457		4/14-17/2026 OCCPSA	100-4001-57104-				200.00
8003984	02/05/2026	PRINTED	000096	ORANGE COUNTY HEALTH CARE	381.00			
	13156		IN2789244	100-3011-55999-				381.00
8003985	02/05/2026	PRINTED	000347	ORANGE COUNTY TAX COLLECT	809.19			
	13203		PW260418	100-5702-56999-				809.19
8003986	02/05/2026	PRINTED	001406	ORANGE COUNTY TREASURER	4,464.33			
	13452		PS486	100-4011-55104-				4,464.33
8003987	02/05/2026	PRINTED	000300	ORANGE ELDERLY SERVICES I	47,377.62			
	13297		OES SMP - Dec. 2025	263-7104-55000-				28,702.62
	13342		OES OPS FEB. 2026	100-7104-55999-				18,675.00
8003988	02/05/2026	PRINTED	000570	P J PRINTERS INC	1,086.94			
	13945		234026	100-5401-53101-				77.15
	13945		234026	100-4011-55104-				152.75
	13946		233369	100-7001-55104-				87.68
	13962		232366	100-6001-55104-				87.24
	13962		232366	100-4011-55104-				87.24
	13962		232366	100-5401-53101-				174.49
	13965		234431	100-4011-55104-				84.07
	13965		234431	100-6301-55104-				336.32

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8003989	02/05/2026	PRINTED	019060	PARTS AUTHORITY LLC	2,064.52			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
13391	January Stmt 2026	100-0000-15203-				2,064.52		
8003990	02/05/2026	PRINTED	002210	JORGE PENA	104.98			
13165	01-26 RUNNING SHOES	100-3011-53102-				104.98		
8003991	02/05/2026	PRINTED	012610	AMOS PERRY	900.00			
13357	EDU25/26	100-1401-57102-				900.00		
8003992	02/05/2026	PRINTED	020444	MARIA PRADO FLORES	1,119.50			
13366	PRODV25/26	100-1401-57102-				1,119.50		
8003993	02/05/2026	PRINTED	018028	PRECISION HIGH SPEED DOOR	3,438.44			
13938	OR-012926-1	100-5601-56101-				984.86		
13939	OR-012926-2	100-5601-56999-				2,453.58		
8003994	02/05/2026	PRINTED	020903	QUADIENT FINANCE USA INC	5,108.00			
13463	QUAD01/27/26	100-0000-53104-				5,108.00		
8003995	02/05/2026	PRINTED	025016	RCR TRAFFIC SPECIALIST	73.00			
13249	13577	100-5201-53201-				16.70		
13250	13575	100-5201-53201-				56.30		
8003996	02/05/2026	PRINTED	004788	RCS INVESTIGATIONS AND CO	23,350.00			
13262	7266	100-1401-55101-				23,350.00		
8003997	02/05/2026	PRINTED	002131	RELIANCE STANDARD LIFE IN	20,648.12			
13294	202601 BG #01000001	100-0000-20437-				10,343.41		
13294	202601 BG #01000001	100-0000-20417-				10,304.71		
8003998	02/05/2026	PRINTED	007084	ROADLINE PRODUCTS INC USA	2,193.58			
13253	22216	100-5201-53201-				2,193.58		
8003999	02/05/2026	PRINTED	015620	ROMAINE ELECTRIC CORP	479.44			
13330	12-066207	100-0000-15203-				479.44		
8004000	02/05/2026	PRINTED	012784	S C SIGNS & SUPPLIES LLC	260.76			
13269	266358	100-5201-53201-				131.46		
13270	266399	100-5201-53201-				129.30		
8004001	02/05/2026	PRINTED	025294	RUBEN SANCHEZ	61.77			
13255	00000569-05	600-0000-11106-				61.77		
8004002	02/05/2026	PRINTED	000368	SCHORR METALS INC	253.59			
13271	2043604	270-5201-53299-				178.61		
13272	2043711	270-5201-53299-				74.98		
8004003	02/05/2026	PRINTED	004604	SHRED-WISE INC	50.00			

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13913		4612121125	100-1401-53101-			50.00	
8004004	02/05/2026	PRINTED	015842	LOGAN SHRYOCK	643.75			
	DOC	INVOICE NO		ACCOUNT			AMOUNT	
	13367	PRODV25/26		100-1401-57102-			643.75	
8004005	02/05/2026	PRINTED	007856	SIDEPATH INC	42,927.65			
	13385	25592		100-1601-56999-			42,927.65	
8004006	02/05/2026	PRINTED	025071	SIERRA ANALYTICAL LABS IN	57.50			
	13320	6A25025-		600-5802-55999-			57.50	
8004007	02/05/2026	PRINTED	019934	SOUTH COAST SOLARCLEAN	740.00			
	13435	3563		100-5601-56101-			740.00	
8004008	02/05/2026	PRINTED	000386	SC FUELS	792.45			
	13929	1175282		100-0000-15204-			792.45	
8004009	02/05/2026	PRINTED	000386	SOUTHERN COUNTIES OIL CO	4,735.07			
	13316	IN-0000283621		100-0000-15204-			1,549.15	
	13930	IN-0000289462		100-0000-15204-			3,185.92	
8004010	02/05/2026	PRINTED	016366	SPECIALTY TRUCK COLLISION	3,377.75			
	13403	13989		731-1306-50290-			3,377.75	
8004011	02/05/2026	PRINTED	025295	SUSAN STYGAR	111.64			
	13256	00034285-02		600-0000-11106-			111.64	
8004012	02/05/2026	PRINTED	000402	SUSAN SAXE-CLIFFORD PHD	1,350.00			
	13910	26-0126-4		100-1401-55101-			1,350.00	
8004013	02/05/2026	PRINTED	002294	T-MOBILE	1,150.00			
	13220	L2601290043		100-4131-55999-			600.00	
	13221	L2601210048		100-4131-55999-			550.00	
8004014	02/05/2026	PRINTED	025301	ROBIN TECH	5,906.61			
	13265	00058597-05		600-0000-11106-			5,906.61	
8004015	02/05/2026	PRINTED	011703	TEN-X AMMUNITION INC	754.25			
	13222	12646		100-4011-53199-			754.25	
8004016	02/05/2026	PRINTED	000275	THE NORTHTOWN COMPANY	534.53			
	13329	205030-0		600-5803-56102-			534.53	
8004017	02/05/2026	PRINTED	016551	TIRE HUB LLC	1,385.71			
	13323	56253410		100-0000-15203-			1,385.71	
8004018	02/05/2026	PRINTED	025210	MIGUEL TOLEDO	601.47			
	13359	10/27-31/2025RB		100-4011-57101-			601.47	

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004019	02/05/2026	PRINTED	025106	CESAR TOYOFUKU	120.00			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
13289	00044238--07	600-0000-11106-				120.00		
8004020	02/05/2026	PRINTED	025291	TRAFFIC SAFETY SUPPLY CO	3,579.26			
13282	INV086943	500-5704-87101-				1,383.31		
13283	INV087061	500-5704-87101-				2,195.95		
8004021	02/05/2026	PRINTED	025298	LAURA TRIEU	318.71			
13261	00024842-06	600-0000-11106-				318.71		
8004022	02/05/2026	PRINTED	020135	TRULY NOLAN OF AMERICA IN	159.00			
13439	712146287	100-5601-56999-				159.00		
8004023	02/05/2026	PRINTED	004589	TURNOUT MAINTENANCE COMPA	323.30			
13460	30701	100-3121-56101-				323.30		
8004024	02/05/2026	PRINTED	000419	UNDERGROUND SERVICE ALERT	612.00			
13310	120260521	600-5803-56102-				612.00		
8004025	02/05/2026	PRINTED	000419	DIG SAFE BOARD	198.09			
13309	25-262551	600-5803-56102-				198.09		
8004026	02/05/2026	PRINTED	000944	UNITED PARCEL SERVICE	249.98			
13451	00005733W1046 2026	100-4011-53104-				33.66		
13451	00005733W1046 2026	100-0000-53104-				58.89		
13454	00005733W1056 2026	100-1401-53104-				21.01		
13454	00005733W1056 2026	100-4141-53199-				66.04		
13454	00005733W1056 2026	100-0000-53104-				70.38		
8004027	02/05/2026	PRINTED	019230	UNITED RENTALS INC	1,513.38			
13273	258066867-001	263-5201-53201-				304.87		
13274	258113576-001	263-5201-53201-				528.72		
13275	258064943-001	263-5201-53201-				679.79		
8004028	02/05/2026	PRINTED	000551	V & V MANUFACTURING INC	570.40			
13419	63829	100-4011-53102-				570.40		
8004029	02/05/2026	PRINTED	001845	VERIZON WIRELESS	6,003.59			
13124	6133688781	100-3011-56201-				5,031.33		
13124	6133688781	100-3121-56201-				762.32		
13124	6133688781	400-3011-56201-				209.94		
8004030	02/05/2026	PRINTED	002304	VISION SERVICE PLAN - (CA	6,095.67			
13337	VSP 202602	100-0000-20416-				6,095.67		
8004031	02/05/2026	PRINTED	000431	W W GRAINGER INC	2,819.55			
13373	9782232301	600-5802-56102-				2,819.55		
8004032	02/05/2026	PRINTED	002319	WATERLINE TECHNOLOGIES	3,658.24			

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13239		5778584	600-5802-53201-		357.21		
	DOC		INVOICE NO	ACCOUNT		AMOUNT		
	13240		5778585	600-5802-53201-		605.99		
	13241		5778586	600-5802-53201-		446.52		
	13242		5778587	600-5802-53201-		510.30		
	13243		5778590	600-5802-53201-		727.18		
	13244		5778588	600-5802-53201-		1,011.04		
8004033	02/05/2026	PRINTED	018943	WELLABLE LLC	520.00			
	13912		44250	100-1401-59997-		520.00		
8004034	02/05/2026	PRINTED	000439	WEST COAST ARBORISTS INC	46,078.00			
	13276		239007	291-5501-56999-		16,864.00		
	13277		238446	601-5501-56999-		29,214.00		
8004035	02/05/2026	PRINTED	025211	RYAN WHITE	595.19			
	13362		10/27-31/2025RB	100-4011-57101-		595.19		
8004036	02/05/2026	PRINTED	002111	WILLDAN FINANCIAL SERVICE	1,700.00			
	13918		010-64300	100-0000-55999-		1,200.00		
	13918		010-64300	541-8001-55999-		250.00		
	13918		010-64300	877-1844-55999-		250.00		
8004037	02/05/2026	PRINTED	002801	YO FIRE SUPPLIES	31,984.78			
	13298		1037273	600-5803-80101-		18,576.10		
	13299		1037228	600-5803-80101-		7,277.59		
	13301		1037307	600-5803-81999-		895.92		
	13302		1037085-01	600-5803-81999-		1,038.71		
	13303		1037467	600-5803-81999-		2,171.56		
	13304		1037307-01	600-5803-81999-		452.55		
	13305		1037373	600-5803-81999-		466.56		
	13306		1037380	600-5803-81999-		672.63		
	13307		1037397	600-5803-81999-		433.16		
8004038	02/05/2026	PRINTED	025303	LYNETTE ZORBAS	268.82			
	13267		00055698-00	600-0000-11106-		268.82		
112225	11/22/2025	WIRE	004255	US BANK NATIONAL ASSOC ND	32,695.01			
112425	12/17/2025	WIRE	099999	P-CARD -TRANSACTIONS	75,174.98			

AP CHECK RECONCILIATION REGISTER

		UNCLEARED	CLEARED
160 CHECKS	FINAL TOTAL	1,880,113.22	.00

** END OF REPORT - Generated by Holli Kittleson **

City of Orange

Finance Department - Accounts Payable

WW # 0352

WEEKLY WARRANT WRITING CHECK REGISTER

Warrant Writing	Warrant Writing Confirmation Date: 02/12/26 2 of 4 reports for 03/10/26 Council Meeting
Notes:	
Requester Signature: eSigned via GovOS.com Jocelin Mendez Key: c75eb71bc2d138050ea61da6a02e3123	Date: 02-12-2026

AGENDA ITEM NO. 3.2

I certify that the attached register of demands has been prepared and audited under my direction and supervision. I also certify that each demand is accurately set forth and correctly stated, that each is a legal obligation of the City, and that there are sufficient funds available for the payment of each demand.

Please review and approve before:

eSigned via GovOS.com Tiffany Dang Key: 255ce3af4128a3a50bd1b4b009bc5bbc Tiffany Dang, Finance	02-12-2026 Date	Comments:
eSigned via GovOS.com Jarad L. Hildenbrand Key: d3b9b88f-da90-4693-bd42-b7973c0a7d37 Jarad Hildenbrand, City Manager	02-12-2026 Date	Comments:
eSigned via GovOS.com Pamela Coleman Key: 52f7c7947ed47a25c77b48742be39aca Pam Coleman, City Clerk	02-17-2026 Date	Comments:

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
5586	02/11/2026	WIRE	000261	MUNICIPAL WATER DISTRICT	163,435.36			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
11894	12000	600-5802-53105-				163,435.36		
5595	02/06/2026	WIRE	001117	PUBLIC EMPLOYEES RETIREME	4,500.00			
13959	JUNE 30 2025 GASB 68	100-1844-55999-				2,250.00		
13959	JUNE 30 2025 GASB 68	100-1844-55999-				2,250.00		
5596	02/06/2026	WIRE	003209	PERS REPLACEMENT BENEFIT	79.32			
13961	100000018189832	760-0000-52199-				79.32		
21126	02/11/2026	WIRE	000384	SOUTHERN CALIF EDISON CO	332,722.17			
14598	02/11/26	100-0000-56205-				146,534.37		
14598	02/11/26	601-5301-56205-				63.95		
14598	02/11/26	291-5501-56205-				1,042.57		
14598	02/11/26	291-5902-56205-				16.76		
14598	02/11/26	600-5802-56205-				185,064.52		
8004039	02/12/2026	PRINTED	025063	ACTION WHOLESALE PRODUCTS	7,405.36			
14130	SO-1009263	570-4134-80101-				7,405.36		
8004040	02/12/2026	PRINTED	007831	ADLERHORST INTERNATIONAL	323.25			
13973	124458	100-4121-53199-				323.25		
8004041	02/12/2026	PRINTED	019738	ADVANCED SECURITY SYSTEMS	359.55			
14098	037021	100-5601-56101-				119.85		
14102	037022	100-5601-56101-				119.85		
14106	037038	100-5601-56101-				119.85		
8004042	02/12/2026	PRINTED	019430	ADVEXURE LLC	674.57			
14118	SP-322534	100-4121-53199-				674.57		
8004043	02/12/2026	PRINTED	018555	AGA ENGINEERS INC	3,185.00			
14080	26020-IN	263-5704-87101-				3,185.00		
8004044	02/12/2026	PRINTED	018555	AGA ENGINEERS INC	3,530.00			
14089	26012-IN	550-5703-87101-				3,240.00		
14092	26011-IN	500-5704-87101-				290.00		
8004045	02/12/2026	PRINTED	000539	AIR SOURCE INDUSTRIES	359.55			
14117	00974604	225-3122-53101-				179.77		
14117	00974604	225-3215-53101-				179.78		
8004046	02/12/2026	PRINTED	001029	ALLSTAR FIRE EQUIPMENT IN	260.86			
14119	270111	100-3121-53201-				260.86		
8004047	02/12/2026	PRINTED	002742	ALTERNATIVE HOSE INC	59.98			
14072	6138954	100-0000-15203-				59.98		
8004048	02/12/2026	PRINTED	010063	ANIMAL FRIENDS PET HOTEL	929.00			

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14126	788811399	100-4121-55999-			929.00	
8004049	02/12/2026	PRINTED	019520 ANSWER CALIFORNIA	733.54			
	DOC	INVOICE NO	ACCOUNT				AMOUNT
	14002	000039-082-271	600-5802-55999-				733.54
8004050	02/12/2026	PRINTED	002217 AT&T	2,636.27			
	14141	02/04/2026	100-1502-55999-				31.87
	14141	02/04/2026	100-3011-56201-				31.89
	14141	02/04/2026	100-5601-56101-				31.87
	14141	02/04/2026	100-5601-56999-				505.42
	14141	02/04/2026	100-1601-56201-				2,035.22
8004051	02/12/2026	PRINTED	005378 AUTO ZONE	20.68			
	14068	05942571158	100-0000-15203-				20.68
8004052	02/12/2026	PRINTED	001014 B & M LAWN & GARDEN CENTE	89.95			
	13982	709886	270-5201-53299-				71.07
	13983	710594	270-5201-53299-				127.60
	14607	CM690892	270-5201-53299-				-53.30
	14608	CM689954	270-5201-53299-				-36.02
	14609	CM689952	270-5201-53299-				-19.40
8004053	02/12/2026	PRINTED	020961 BEST DRILLING AND PUMP IN	125,020.00			
	14025	4866	600-5802-85107-				131,600.00
8004054	02/12/2026	PRINTED	018332 BPS SUPPLY GROUP	138.02			
	14031	S3278468.001	600-5802-53199-				138.02
8004055	02/12/2026	PRINTED	002011 BURTONS FIRE INC	2,091.75			
	14041	S70631	100-0000-15203-				2,091.75
8004056	02/12/2026	PRINTED	006583 CAM SERVICES	1,501.00			
	11825	120254	100-7203-56999-				367.00
	11828	121634	100-7203-56999-				367.00
	11829	124478	100-7203-56999-				367.00
	14009	120253	100-5301-56999-				400.00
8004057	02/12/2026	PRINTED	016914 GREGGORY CATES	115.00			
	14036	01/13-14/2026RB	100-4011-57101-				46.00
	14201	01/21-23/2026RB	100-4011-57101-				69.00
8004058	02/12/2026	PRINTED	008463 CELLEBRITE INC	23,155.48			
	13977	INVUS295155	100-4131-53202-				23,155.48
8004059	02/12/2026	PRINTED	018974 CHARTER COMMUNICATIONS	2,441.42			
	14003	114973901121425	100-1601-56201-				134.99
	14004	114973901011426	100-1601-56201-				134.99
	14005	189064601011426	100-1601-56201-				900.00
	14086	189065501020126	100-3011-56201-				40.00

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14087		189065401020126	100-3011-56201-			270.72	
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	14088	188991501020126		100-3011-56201-				270.72
	14090	189065601020126		100-3011-56201-				690.00
8004060	02/12/2026	PRINTED	001530	CHATTEL INC	1,501.00			
	14204	2512-ORG03		100-6102-55999-			1,501.00	
8004061	02/12/2026	PRINTED	001011	WEX BANK	329.00			
	14124	110495072		100-4133-53299-			329.00	
8004062	02/12/2026	PRINTED	019162	CINTAS	138.77			
	14069	4258592814		100-5401-56107-			138.77	
8004063	02/12/2026	PRINTED	018507	CJ CONCRETE CONSTRUCTION	35,976.72			
	1	RETREL AGR 7813		263-0000-20103-			1,132.45	
	1	RETREL AGR 7813		263-0000-20103-			808.67	
	1	RETREL AGR 7813		263-0000-20103-			12,577.74	
	1	RETREL AGR 7813		287-0000-20103-			2,922.44	
	1	RETREL AGR 7813		263-0000-20103-			1,185.54	
	1	RETREL AGR 7813		263-0000-20103-			846.58	
	1	RETREL AGR 7813		263-0000-20103-			13,167.42	
	1	RETREL AGR 7813		287-0000-20103-			3,059.46	
	1	RETREL AGR 7813		263-0000-20103-			17.95	
	1	RETREL AGR 7813		263-0000-20103-			12.82	
	1	RETREL AGR 7813		263-0000-20103-			199.33	
	1	RETREL AGR 7813		287-0000-20103-			46.32	
8004064	02/12/2026	PRINTED	015299	CLEAN DIESEL SPECIALISTS	268.10			
	14050	3-134738		100-0000-15203-			268.10	
8004065	02/12/2026	PRINTED	016793	CROWN CASTLE FIBER LLC	2,400.00			
	14161	2061583		100-1601-56201-			2,400.00	
8004066	02/12/2026	PRINTED	004677	CSA HOLDINGS INC	18,870.00			
	13290	212525		100-7203-56999-			18,870.00	
8004067	02/12/2026	PRINTED	000101	CULLIGAN	116.25			
	13943	2034475		600-5802-53199-			116.25	
8004068	02/12/2026	PRINTED	014203	DIVERSIFIED THERMAL SERVI	2,028.21			
	14189	S412179		100-5601-56101-			965.50	
	14191	S412367		100-5601-56101-			1,062.71	
8004069	02/12/2026	PRINTED	011271	DOERSCHEL AND ASSOCIATES	9,440.00			
	14082	111005		200-0000-56999-			3,500.00	
	14129	162165		100-1601-55999-			5,940.00	
8004070	02/12/2026	PRINTED	001120	DOOLEY ENTERPRISES INC	6,419.75			
	14120	71276		100-4011-53199-			6,419.75	

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FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004071	02/12/2026	PRINTED	017762	DAVID WILSON'S VILLA FORD	389.97			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
14058	034895	100-0000-15203-				389.97		
8004072	02/12/2026	PRINTED	000646	EAST ORANGE COUNTY WATER	215.56			
14176	12/16/25 1409200	263-5201-56999-				215.56		
8004073	02/12/2026	PRINTED	007918	EFFICIENT X-RAY INC	260.00			
13994	432599	100-4134-55999-				260.00		
8004074	02/12/2026	PRINTED	009593	ELITE EQUIPMENT	393.95			
14010	54558	270-5201-53299-				393.95		
8004075	02/12/2026	PRINTED	000127	EMPLOYMENT DEVELOPMENT DE	15,431.00			
14028	L1611365424	760-1401-50205-				15,431.00		
8004076	02/12/2026	PRINTED	001639	FACTORY MOTOR PARTS CO	577.36			
14078	11-2070305	100-0000-15203-				16.16		
14081	11-2070597	100-0000-15203-				85.86		
14083	11-2070882	100-0000-15203-				475.34		
8004077	02/12/2026	PRINTED	017319	FEHR & PEERS	5,061.00			
14039	192493	100-5703-55999-				3,150.00		
14112	192492	100-5703-55999-				1,911.00		
8004078	02/12/2026	PRINTED	001900	JOHN FELTON	60.00			
13909	13909	600-5802-50999-				60.00		
8004079	02/12/2026	PRINTED	000002	FLEET SERVICES INC	375.23			
14061	01P173652	100-0000-15203-				81.46		
14064	01P173839	100-0000-15203-				185.57		
14067	01P173896	100-0000-15203-				108.20		
8004080	02/12/2026	PRINTED	025182	FOUR STAR INVESTIGATIONS	13,885.85			
13145	25-1023	100-1301-55102-				13,885.85		
8004081	02/12/2026	PRINTED	002198	GALLS LLC	715.00			
14132	033943649	100-4011-53102-				188.54		
14133	033955687	100-4011-53102-				91.59		
14134	034003839	100-4011-53102-				141.32		
14135	034003889	100-4011-53102-				39.64		
14136	034003890	100-4011-53102-				253.91		
8004082	02/12/2026	PRINTED	000147	GANAHL LUMBER COMPANY	751.99			
13987	011605845	263-5201-53201-				751.99		
8004083	02/12/2026	PRINTED	012658	HANNA, BROPHY, MACLEAN,	1,720.00			
13394	2362967	730-1306-50299-				18.50		
13395	2363062	730-1306-50299-				1,220.50		

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13396		2363002	730-1306-50299-			407.00	
	DOC		INVOICE NO	ACCOUNT				AMOUNT
	13397		2362929	730-1306-50299-				74.00
8004084	02/12/2026	PRINTED	000175	HI-STANDARD AUTOMOTIVE	1,573.15			
	14043		30568	100-0000-15203-				1,573.15
8004085	02/12/2026	PRINTED	012820	INLAND KENWORTH US INC	1,747.93			
	14052		337619MNP	100-0000-15203-				522.28
	14053		337786MNP	100-0000-15203-				546.34
	14055		338177MNP	100-0000-15203-				29.77
	14056		338210MNP	100-0000-15203-				649.54
8004086	02/12/2026	PRINTED	000183	INTERNATIONAL ASSN OF CHI	220.00			
	13971		0454438	100-4001-57104-				220.00
8004087	02/12/2026	PRINTED	017338	INTRATEK COMPUTER INC	20,693.66			
	14165		20260005	100-1601-55999-				20,693.66
8004088	02/12/2026	PRINTED	000891	J J KELLER & ASSOCIATES I	106.67			
	13387		9110871935	731-1306-55999-				106.67
8004089	02/12/2026	PRINTED	002099	JADTEC SECURITY SERVICES	350.55			
	14192		1900369	100-5601-56101-				116.85
	14193		1900370	100-5601-56101-				116.85
	14194		1900371	100-5601-56101-				116.85
8004090	02/12/2026	PRINTED	001592	JTB SUPPLY CO INC	5,253.89			
	14122		116148	100-5702-53201-				1,310.24
	14127		116233	100-5702-53201-				3,943.65
8004091	02/12/2026	PRINTED	019179	BRIAN KINDER	279.00			
	14034		01/07-09/2026RB	100-4011-57101-				279.00
8004092	02/12/2026	PRINTED	011802	LEOTEK ELECTRONICS USA LL	29,813.36			
	14139		4116172922	100-5702-53199-				29,813.36
8004093	02/12/2026	PRINTED	019944	COLE LIGHT	279.00			
	14032		01/07-09/2026RB	100-4011-57101-				279.00
8004094	02/12/2026	PRINTED	018342	MARK THOMAS & COMPANY INC	26,016.05			
	14038		58584	287-5703-87101-				2,553.76
	14038		58584	550-5703-87101-				18,727.54
	14149		58031	287-5101-87102-				963.69
	14149		58031	550-5101-87102-				2,891.06
	14175		58767	287-5101-87102-				220.00
	14175		58767	550-5101-87102-				660.00
8004095	02/12/2026	PRINTED	000250	MC MASTER-CARR SUPPLY CO	1,667.62			
	13941		59079903	600-5802-53201-				916.30

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13942		59083387	600-5802-53201-			248.42	
	DOC		INVOICE NO	ACCOUNT			AMOUNT	
	14157		58466173	400-3121-53199-			304.51	
	14163		58939637	400-3121-53199-			165.27	
	14184		58993662	400-3121-53199-			33.12	
8004096	02/12/2026	PRINTED	020584	JAMES MCPHERSON	39.22			
	13980		01/28/2026RB	100-5102-57101-			39.22	
8004097	02/12/2026	PRINTED	001867	MISSION LINEN SUPPLY	307.46			
	13993		525456783	100-4011-55999-			307.46	
8004098	02/12/2026	PRINTED	020688	SOUTHERN CALIFORNIA NEWS	3,277.23			
	14008		0000631971	510-7201-84101-			738.11	
	14008		0000631971	510-7201-84101-			752.88	
	14008		0000631971	551-7201-84101-			738.11	
	14008		0000631971	100-7101-55103-			1,048.13	
8004099	02/12/2026	PRINTED	019456	TYLER MOORE	378.33			
	14033		01/07-09/2026RB	100-4011-57101-			378.33	
8004100	02/12/2026	PRINTED	002880	MOORE IACOFANO GOLTSMAN	2,125.00			
	11401		0094616	510-7201-84101-			1,812.50	
	11402		0094617	510-7201-84101-			312.50	
8004101	02/12/2026	PRINTED	002619	MUNICIPAL MAINTENANCE EQU	2,420.23			
	14018		045995	601-5301-56999-			2,420.23	
8004102	02/12/2026	PRINTED	000261	MUNICIPAL WATER DISTRICT	45.00			
	14024		17986	600-5802-53101-			45.00	
8004103	02/12/2026	PRINTED	025213	NATIONAL DATA AND SURVEYI	6,520.00			
	14020		26-010005	287-5704-87101-			6,520.00	
8004104	02/12/2026	PRINTED	016294	TREVOR NELSON	89.88			
	14202		01/21-23/2026RB	100-4011-57101-			89.88	
8004105	02/12/2026	PRINTED	019219	NEW DYNASTY CONSTRUCTION	55,749.29			
	13974		PP11-21.22-13	902-5601-84101-			58,683.46	
8004106	02/12/2026	PRINTED	016585	BRYCE NIELSEN	36.78			
	14197		01/14/2026RB	100-4011-57101-			36.78	
8004107	02/12/2026	PRINTED	019237	EDINGER URGENT CARE MEDIC	618.00			
	13398		00085473-00	731-1306-55999-			165.00	
	13399		00085562-00	731-1306-55999-			110.00	
	14029		00085654-00	100-1401-55101-			93.00	
	14030		00085747-00	100-1401-55101-			250.00	
8004108	02/12/2026	PRINTED	099997	1302 CHAPMAN LLC	2,000.00			

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14215	14215		100-0000-20111-			2,000.00	
8004109	02/12/2026	PRINTED	099997	720 TUSTIN MAYFAIR LLC	394.00			
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	14214	14214		100-0000-20111-				394.00
8004110	02/12/2026	PRINTED	099997	EMPORIO SUSHI Y MARISCOS	456.75			
	14208	14208		100-0000-20111-				456.75
8004111	02/12/2026	PRINTED	099997	HOANG, JOSEPH HUNG	261.50			
	14210	14210		100-0000-20111-				261.50
8004112	02/12/2026	PRINTED	099997	J MILCZEWSKY AND ASSOCIAT	1,766.00			
	14216	14216		100-0000-20111-				1,766.00
8004113	02/12/2026	PRINTED	099997	J MILCZEWSKY AND ASSOCIAT	1,406.00			
	14217	14217		100-0000-20111-				1,406.00
8004114	02/12/2026	PRINTED	099997	KATOPODIS, DEMETRIUS	288.00			
	14213	14213		100-0000-20111-				288.00
8004115	02/12/2026	PRINTED	099997	MCKENZIE, JARED	221.75			
	14209	14209		100-0000-20111-				221.75
8004116	02/12/2026	PRINTED	099997	MENDOZA, ARTHUR	288.00			
	14206	14206		100-0000-20111-				288.00
8004117	02/12/2026	PRINTED	099997	ORANGE GROVE REALTY LLC	182.00			
	14207	14207		100-0000-20111-				182.00
8004118	02/12/2026	PRINTED	099997	ORANGE TOWN & COUNTRY CEN	500.00			
	14211	14211		100-0000-20111-				500.00
8004119	02/12/2026	PRINTED	099997	SOUTHERN COUNTIES LUBRICA	394.00			
	14212	14212		100-0000-20111-				394.00
8004120	02/12/2026	PRINTED	099996	SALT DENTAL COLLECTIVE	280.00			
	14023	BL 219648		100-1842-42110-				200.00
	14023	BL 219648		100-1842-48999-				4.00
	14023	BL 219648		100-1842-47120-				76.00
8004121	02/12/2026	PRINTED	020236	ONYX PAVING COMPANY INC	43,130.00			
	14019	25-035-6		263-5101-87102-				6,596.96
	14019	25-035-6		270-5101-87102-				1,908.77
	14019	25-035-6		274-5101-87102-				25,959.22
	14019	25-035-6		500-5101-87102-				10,935.05
8004122	02/12/2026	PRINTED	000096	ORANGE CNTY TREASURER-TAX	217.70			
	13991	SH73329		100-4011-55104-				217.70

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004123	02/12/2026	PRINTED	000096	ORANGE CNTY TREASURER-TAX	370,700.98			
	DOC	INVOICE NO	ACCOUNT			AMOUNT		
	14600	AC2690047	100-0000-56999-			370,700.98		
8004124	02/12/2026	PRINTED	001406	ORANGE COUNTY TREASURER	2,573.94			
	14040	PS462	100-4011-55104-			2,573.94		
8004125	02/12/2026	PRINTED	002367	GUS ORTIZ	180.00			
	14123	35001	100-4011-55999-			180.00		
8004126	02/12/2026	PRINTED	001325	PEST OPTIONS, INC	5,595.00			
	14066	470191	100-7203-56999-			285.00		
	14074	470256	100-7203-56999-			290.00		
	14075	470271	100-7203-56999-			290.00		
	14079	470444	100-7203-56999-			230.00		
	14144	470936	100-7203-56999-			230.00		
	14145	471520	100-7203-56999-			285.00		
	14150	471583	100-7203-56999-			290.00		
	14151	471598	100-7203-56999-			290.00		
	14154	471720	100-7203-56999-			230.00		
	14155	472185	100-7203-56999-			230.00		
	14158	472766	100-7203-56999-			290.00		
	14160	472781	100-7203-56999-			290.00		
	14162	472899	100-7203-56999-			230.00		
	14164	473024	100-7203-56999-			300.00		
	14166	473912	100-7203-56999-			225.00		
	14167	474084	100-7203-56999-			230.00		
	14168	473931	100-7203-56999-			290.00		
	14171	473916	100-7203-56999-			290.00		
	14172	473330	100-7203-56999-			230.00		
	14173	472703	100-7203-56999-			285.00		
	14174	473857	100-7203-56999-			285.00		
8004127	02/12/2026	PRINTED	001325	PEST OPTIONS, INC	675.00			
	14071	470252	100-7203-56999-			225.00		
	14146	471579	100-7203-56999-			225.00		
	14156	472762	100-7203-56999-			225.00		
8004128	02/12/2026	PRINTED	018185	PREMIER FIRST RESPONDER	1,500.00			
	14109	1934	100-4011-55101-			450.00		
	14110	1894	100-4011-55101-			600.00		
	14111	1922	100-4011-55101-			450.00		
8004129	02/12/2026	PRINTED	017564	PROTELESIS CORP	3,925.42			
	14137	29897834	100-1601-56999-			3,925.42		
8004130	02/12/2026	PRINTED	019534	PVP COMMUNICATIONS	803.17			
	14116	137800	450-4141-53102-			803.17		
8004131	02/12/2026	PRINTED	002251	QUINN GROUP INC-MAINTENAN	142.41			

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14049	PC811066852		100-0000-15203-			142.41	
8004132	02/12/2026	PRINTED	020742	RAPID FIRE SAFETY AND SEC	52.00			
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	14091	706453595		100-5601-56101-				52.00
8004133	02/12/2026	PRINTED	000331	RED WING BUSINESS ADVANTA	738.23			
	13388	192ST1-3416624		730-1306-54101-				492.57
	13389	855ST1-3408710		730-1306-54101-				245.66
8004134	02/12/2026	PRINTED	017584	LEXISNEXIS	1,566.00			
	13958	3096282199		100-1301-55105-				1,566.00
8004135	02/12/2026	PRINTED	020095	MICHAEL RODRIGUEZ	38.23			
	13963	01/15/2026RB		100-4011-57101-				38.23
8004136	02/12/2026	PRINTED	000351	ROSEBURROUGH TOOL INC	338.57			
	13988	833579		263-5201-53201-				338.57
8004137	02/12/2026	PRINTED	001651	RPW SERVICES INC	7,930.00			
	12024	48168		100-7203-56999-				4,225.00
	14011	48204		601-5501-55999-				3,705.00
8004138	02/12/2026	PRINTED	004256	MICHAEL SELLERS	243.00			
	14027	01/12-14/2026RB		100-4011-57101-				243.00
8004139	02/12/2026	PRINTED	007856	SIDEPATH INC	7,049.82			
	14022	25803		100-1601-56999-				7,049.82
8004140	02/12/2026	PRINTED	025071	SIERRA ANALYTICAL LABS IN	1,060.00			
	14046	6B02036-		600-5802-55999-				182.50
	14054	6B02023-		600-5802-55999-				182.50
	14057	6B01002-		600-5802-55999-				57.50
	14059	6B02014-		600-5802-55999-				182.50
	14060	6B01024-		600-5802-55999-				57.50
	14062	6B02029-		600-5802-55999-				182.50
	14063	6B02028-		600-5802-55999-				157.50
	14065	6B02037-		600-5802-55999-				57.50
8004141	02/12/2026	PRINTED	004062	SIGN MART	697.60			
	14601	514455		100-6102-55103-				697.60
8004142	02/12/2026	PRINTED	020023	SIR SPEEDY	846.12			
	14200	49838		100-6102-55104-				846.12
8004143	02/12/2026	PRINTED	001118	SMITHSON ELECTRIC INC	7,625.00			
	14037	65141		100-5702-56999-				7,625.00
8004144	02/12/2026	PRINTED	016994	SOCAL AUTO & TRUCK PARTS	204.96			
	14195	956179		100-5601-56101-				204.96

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004145	02/12/2026	PRINTED	010307	SOUTH COAST LIGHTING & DE	3,687.21			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
14143	S503340	500-5704-87102-				3,687.21		
8004146	02/12/2026	PRINTED	016802	SOUTHERN CALIFORNIA SHRED	130.00			
13996	299908	100-4011-55999-				130.00		
8004147	02/12/2026	PRINTED	000877	ST PAUL STAMP WORKS INC	181.73			
14188	IV00585265	100-4011-53101-				194.95		
8004148	02/12/2026	PRINTED	000877	A & V RUBBER STAMPS	309.20			
13966	IV00585138	100-4011-53104-				332.29		
8004149	02/12/2026	PRINTED	000520	STRYKER MEDICAL	14,370.69			
14125	9211000240	100-3122-56101-				5,000.36		
14131	9211354973	100-3122-56101-				648.00		
14142	800171736	100-3122-56101-				2,137.67		
14148	9211427299	100-3122-56101-				4,218.79		
14152	9211471236	100-3122-56101-				2,365.87		
8004150	02/12/2026	PRINTED	001303	SUNRISE MULTISPECIALIST M	130.00			
13390	00203936-00	731-1306-55999-				40.00		
13392	00203965-00	731-1306-55999-				75.00		
13981	00201946-00	100-4011-55101-				15.00		
8004151	02/12/2026	PRINTED	002294	T-MOBILE	250.00			
13970	L2602040079	100-4131-55999-				50.00		
13992	L2602050082	100-4131-55999-				150.00		
14121	L2602060455	100-4131-55999-				50.00		
8004152	02/12/2026	PRINTED	001619	TERMINIX PROCESSING CENTE	928.00			
14095	468441749	100-3121-56101-				121.00		
14099	468441456	100-3121-56101-				114.00		
14100	468441457	100-3121-56101-				101.00		
14101	468441458	100-3121-56101-				104.00		
14103	468441750	100-3121-56101-				100.00		
14104	468441751	100-3121-56101-				145.00		
14105	468441459	100-3121-56101-				119.00		
14107	468441460	100-3121-56101-				124.00		
8004153	02/12/2026	PRINTED	001919	TETRA TECH INC	113,888.03			
14026	52538206	600-5802-85107-				113,888.03		
8004154	02/12/2026	PRINTED	018234	THE HUB OC	65,047.85			
13160	805	412-6431-55999-				57,132.91		
14593	97	412-6431-55999-				7,914.94		
8004155	02/12/2026	PRINTED	000388	THE STATE BAR OF CALIFORN	1,102.00			
13956	I_DCCF9254_8382_2026	100-1301-57104-				1,102.00		

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004156	02/12/2026	PRINTED	010714	TOTAL CORPORATE SOLUTIONS	5,887.79			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
13393	9746	731-1306-80101-				5,887.79		
8004157	02/12/2026	PRINTED	019538	TOWNER FILTRATION	23,014.64			
14203	181705-001	600-5802-56102-				23,014.64		
8004158	02/12/2026	PRINTED	001353	TOM MALLOY CORP	257.79			
14007	SI20008575	600-5803-56301-				257.79		
8004159	02/12/2026	PRINTED	017374	TRIAD CONSULT & SYSTMS DE	6,402.50			
14170	1215	100-1601-55999-				6,402.50		
8004160	02/12/2026	PRINTED	011609	TRIPAC MARKETING INC	1,318.08			
14035	5835834	600-5803-53201-				1,318.08		
8004161	02/12/2026	PRINTED	017152	TRIPEPI SMITH AND ASSOCIA	7,799.75			
14012	16486	100-5001-55999-				3,533.00		
14013	16485	100-5001-55999-				3,533.00		
14014	16443	100-5001-55999-				733.75		
8004162	02/12/2026	PRINTED	004589	TURNOUT MAINTENANCE COMPA	1,745.55			
14185	30740	100-3121-56101-				1,745.55		
8004163	02/12/2026	PRINTED	002977	TYLER TECHNOLOGIES INC	9,600.00			
14094	045-551299	600-1843-80201-				790.72		
14094	045-551299	790-1601-80299-				2,409.28		
14096	045-551879	600-1843-80201-				1,581.44		
14096	045-551879	790-1601-80299-				4,818.56		
8004164	02/12/2026	PRINTED	013781	ULTIMATE MAINTENANCE SERV	23,516.00			
13365	36190	100-5601-56104-				23,516.00		
8004165	02/12/2026	PRINTED	000944	UNITED PARCEL SERVICE	128.92			
14085	00005733W1066 2026	100-4011-53104-				19.21		
14085	00005733W1066 2026	100-0000-53104-				109.71		
8004166	02/12/2026	PRINTED	019230	UNITED RENTALS INC	1,942.31			
13985	258268204-001	263-5201-53201-				301.91		
13986	258161306-001	263-5201-53201-				318.88		
13990	257338979-001	600-5803-56301-				326.15		
13995	257339157-001	600-5803-56301-				326.15		
14015	257499102-002	263-5201-53201-				5.60		
14016	258319213-001	263-5201-53201-				335.85		
14017	258432733-001	263-5201-53201-				327.77		
8004167	02/12/2026	PRINTED	020753	UNITED SAFETY SERVICES	957.50			
13401	227056	730-1306-54101-				71.19		
13404	227054	730-1306-54101-				70.43		

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	13405		227053	730-1306-54101-			70.36	
	DOC		INVOICE NO	ACCOUNT			AMOUNT	
	13406		227051	730-1306-54101-			43.05	
	13407		227049	730-1306-54101-			71.38	
	13409		227048	730-1306-54101-			71.50	
	13411		227047	730-1306-54101-			215.23	
	13412		227016	730-1306-54101-			86.09	
	13414		227012	730-1306-54101-			86.09	
	13415		227007	730-1306-54101-			172.18	
8004168	02/12/2026	PRINTED	020018	HD SUPPLY INC	1,822.57			
	14006		INV00947396	600-5802-53201-			1,822.57	
8004169	02/12/2026	PRINTED	000551	V & V MANUFACTURING INC	386.81			
	14153		63845	100-3112-53101-			386.81	
8004170	02/12/2026	PRINTED	016163	VERITIV OPERATING COMP	2,330.45			
	14196		069-50228295	100-3121-53101-			676.11	
	14196		069-50228295	100-5201-53201-			676.11	
	14198		069-50228935	100-5601-53201-			978.23	
8004171	02/12/2026	PRINTED	001845	VERIZON WIRELESS	116.49			
	14138		6134650342	731-1306-56201-			116.49	
8004172	02/12/2026	PRINTED	000431	W W GRAINGER INC	486.49			
	14051		9789260586	100-0000-15203-			486.49	
8004173	02/12/2026	PRINTED	002319	WATERLINE TECHNOLOGIES	3,138.37			
	13997		5779409	600-5802-53201-			446.52	
	13998		5779408	600-5802-53201-			491.17	
	13999		5779407	600-5802-53201-			478.41	
	14000		5779410	600-5802-53201-			669.77	
	14001		5779406	600-5802-53201-			1,052.50	
8004174	02/12/2026	PRINTED	000441	WEST PUBLISHING CORP	250.00			
	13967		853121250	100-4001-55105-			250.00	
8004175	02/12/2026	PRINTED	025309	WILTSHIRE URETHANE FOAM C	1,250.00			
	14093		2023	100-5601-56101-			1,250.00	
8004176	02/12/2026	PRINTED	016092	WINZER CORPORATION	372.52			
	14042		3685726	100-0000-15203-			372.52	
8004177	02/12/2026	PRINTED	002801	YO FIRE SUPPLIES	13,801.06			
	14070		1037273-01	600-5803-80101-			11,610.06	
	14073		1037397-01	600-5803-81999-			60.34	
	14076		1037635	600-5803-81999-			2,130.66	
	143 CHECKS			CASH ACCOUNT TOTAL	1,725,520.54	.00		

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
122225	01/17/2026	WIRE	004255	US BANK NATIONAL ASSOC ND	14,709.62			

DOC	INVOICE NO	ACCOUNT	AMOUNT
14140	2025/12-4000	100-4011-57101-	300.00
14140	2025/12-4000	100-4011-57101-	6,626.95
14140	2025/12-4000	355-4121-57101-	1,005.98
14140	2025/12-4000	355-4133-57101-	4,356.28
14140	2025/12-4000	570-4134-80101-	94.08
14140	2025/12-4000	100-4134-53199-	323.21
14140	2025/12-4000	100-4133-53199-	185.48
14140	2025/12-4000	100-4011-53199-	83.65
14140	2025/12-4000	100-4011-56201-	169.99
14140	2025/12-4000	100-4011-55999-	206.65
14140	2025/12-4000	100-4213-53101-	25.43
14140	2025/12-4000	100-4011-53102-	297.95
14140	2025/12-4000	100-4011-53102-	1,033.97

122425	01/17/2026	WIRE	099999	P-CARD -TRANSACTIONS	60,212.69			
14222	1900/01-0301-1	731-1301-55102-	17.50					
14223	1900/01-0301-2	731-1301-55102-	17.50					
14224	1900/01-0301-3	731-1301-55102-	17.50					
14225	1900/01-0301-4	731-1301-55102-	17.50					
14226	1900/01-0301-5	731-1301-55102-	17.50					
14227	1900/01-0301-6	100-1301-55105-	19.99					
14228	1900/01-0301-7	731-1301-55102-	17.50					
14229	1900/01-0301-8	731-1301-55102-	449.14					
14230	1900/01-0401-1	100-1502-55105-	14.00					
14231	1900/01-0401-2	100-1502-55105-	49.99					
14232	1900/01-0401-3	100-1502-53101-	125.64					
14233	1900/01-0401-4	100-1502-55105-	16.15					
14234	1900/01-0401-5	100-1502-53101-	48.47					
14235	1900/01-0401-6	100-1502-53101-	10.18					
14236	1900/01-0201-1	100-1201-53199-	26.00					
14237	1900/01-0201-2	100-1218-57101-	300.00					
14238	1900/01-0201-3	100-1201-53199-	12.98					
14239	1900/01-0201-4	100-1201-53199-	57.34					
14240	1900/01-0201-5	100-1201-53199-	49.05					
14241	1900/01-6000-1	232-6401-80201-	27.25					
14242	1900/01-6000-2	100-6001-54101-	209.90					
14243	1900/01-6000-3	100-6001-55105-	26.00					
14244	1900/01-6000-4	310-6410-55103-	258.34					
14245	1900/01-6000-5	100-6301-57104-	65.00					
14246	1900/01-6000-6	100-6301-53199-	983.25					
14247	1900/01-7000-1	100-7203-53201-	317.86					
14248	1900/01-7000-2	100-7203-53201-	452.16					
14249	1900/01-7000-3	100-7203-53201-	-138.25					
14250	1900/01-7000-4	100-7203-53201-	172.57					
14251	1900/01-7000-5	100-7203-53201-	416.94					
14252	1900/01-7000-6	100-7203-53201-	486.47					
14253	1900/01-7000-7	100-7203-53201-	85.93					
14254	1900/01-7000-8	100-1201-55999-	2,755.61					

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME		UNCLEARED	CLEARED	BATCH	CLEAR DATE
14255		1900/01-7000-9		100-7203-53201-			118.47		

DOC	INVOICE NO	ACCOUNT	AMOUNT
14256	1900/01-7000-10	100-7203-53201-	320.02
14257	1900/01-7000-11	100-7203-53201-	23.14
14258	1900/01-7000-12	100-7203-53201-	22.83
14259	1900/01-7000-13	100-7203-53201-	97.87
14260	1900/01-7000-14	100-7203-53201-	61.42
14261	1900/01-7000-15	100-7203-53201-	958.92
14262	1900/01-7000-16	100-7203-53201-	26.68
14263	1900/01-7000-17	100-7203-53201-	109.97
14264	1900/01-7000-18	100-7203-53201-	13.09
14265	1900/01-7000-19	100-7203-53201-	59.26
14266	1900/01-7000-20	100-7203-53201-	66.78
14267	1900/01-7000-21	100-7203-53201-	226.28
14268	1900/01-7000-22	100-7203-57101-	270.00
14269	1900/01-7000-23	100-7203-53102-	25.55
14270	1900/01-7000-24	100-7203-53102-	59.23
14271	1900/01-7000-25	100-7203-53201-	79.74
14272	1900/01-7000-26	100-7203-53201-	135.52
14273	1900/01-7000-27	100-7203-53201-	19.35
14274	1900/01-7000-28	100-7203-53201-	32.22
14275	1900/01-7000-29	100-7203-53201-	368.15
14276	1900/01-7000-30	100-7203-53201-	251.19
14277	1900/01-7000-31	100-7203-53201-	135.12
14278	1900/01-7000-32	100-7203-53201-	169.94
14279	1900/01-7000-33	100-7203-53201-	188.56
14280	1900/01-7000-34	100-7203-53201-	614.17
14281	1900/01-7000-35	100-7203-53201-	367.54
14282	1900/01-7000-36	100-7203-53201-	291.94
14283	1900/01-7000-37	100-7203-53201-	439.72
14284	1900/01-7000-38	100-7101-53101-	213.36
14285	1900/01-7000-39	100-7101-53101-	654.58
14286	1900/01-7000-40	100-7101-53101-	60.75
14287	1900/01-1200-1	100-1101-53199-	26.00
14288	1900/01-1200-2	100-1101-53199-	21.00
14289	1900/01-1200-3	100-1101-53199-	16.00
14290	1900/01-1200-4	100-1101-53199-	7.00
14291	1900/01-1200-5	100-1101-53199-	8.00
14292	1900/01-1200-6	100-1101-53199-	24.00
14293	1900/01-1200-7	100-1101-53199-	31.59
14294	1900/01-1200-8	100-1101-53199-	11.99
14295	1900/01-1200-9	100-1101-53199-	20.00
14296	1900/01-3000-1	100-3121-57101-	399.89
14297	1900/01-3000-2	100-3011-53101-	310.99
14298	1900/01-3000-3	100-3123-57101-	105.44
14299	1900/01-3000-4	100-3011-53199-	310.91
14300	1900/01-3000-5	100-3001-57101-	98.37
14301	1900/01-3000-6	100-3123-57101-	155.25
14302	1900/01-3000-7	100-3011-53101-	12.91
14303	1900/01-3000-8	100-3011-53101-	5.38

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
14304		1900/01-3000-9		100-3011-56301-		155.25		

DOC	INVOICE NO	ACCOUNT	AMOUNT
14305	1900/01-3000-10	100-3011-53101-	102.43
14306	1900/01-3000-11	100-3011-53101-	41.22
14307	1900/01-3000-12	100-3123-57101-	81.25
14308	1900/01-3000-13	100-3121-53299-	86.08
14309	1900/01-3000-14	100-3121-53299-	-22.60
14310	1900/01-3000-15	100-3121-53199-	75.17
14311	1900/01-3000-16	100-3121-53201-	237.34
14312	1900/01-3000-17	100-3121-53101-	25.34
14313	1900/01-3000-18	100-3121-53199-	25.25
14314	1900/01-3000-19	100-3011-55105-	144.00
14315	1900/01-3000-20	100-3121-57101-	343.44
14316	1900/01-3000-21	100-3121-53199-	28.61
14317	1900/01-3000-22	100-3121-53101-	90.42
14318	1900/01-3000-23	100-3121-57101-	113.45
14319	1900/01-3000-24	100-3121-55101-	80.50
14320	1900/01-3000-25	100-3011-55999-	295.00
14321	1900/01-3000-26	100-3011-55999-	275.00
14322	1900/01-3000-27	100-3112-53199-	59.80
14323	1900/01-3000-28	225-3215-55999-	85.00
14324	1900/01-3000-29	100-3121-53299-	62.40
14325	1900/01-3000-30	100-3122-57101-	9.00
14326	1900/01-3000-31	225-3122-53101-	358.64
14327	1900/01-3000-32	225-3122-57104-	250.00
14328	1900/01-3000-33	100-3121-53299-	51.71
14329	1900/01-3000-34	100-3011-54101-	861.99
14330	1900/01-3000-35	100-3112-53101-	186.19
14331	1900/01-3000-36	100-3121-53199-	43.85
14332	1900/01-3000-37	100-3011-53199-	10.83
14333	1900/01-3000-38	100-3121-53199-	71.54
14334	1900/01-3000-39	100-3011-55105-	48.00
14335	1900/01-3000-40	100-3121-53299-	16.84
14336	1900/01-3000-41	100-3112-53101-	343.72
14337	1900/01-3000-42	100-3121-53201-	30.50
14338	1900/01-3000-43	100-3121-53201-	30.50
14339	1900/01-3000-44	100-3121-53201-	109.74
14340	1900/01-3000-45	100-3121-53201-	25.85
14341	1900/01-3000-46	100-3121-54101-	286.50
14342	1900/01-3000-47	100-3121-53201-	598.02
14343	1900/01-3000-48	100-3112-53101-	68.97
14344	1900/01-3000-49	100-3112-53101-	421.74
14345	1900/01-3000-50	100-3121-53201-	37.98
14346	1900/01-3000-51	100-3011-55999-	299.98
14347	1900/01-3000-52	100-3011-53102-	109.20
14348	1900/01-3000-53	100-3123-57101-	82.67
14349	1900/01-3000-54	100-3011-55999-	60.00
14350	1900/01-3000-55	100-3011-54101-	346.73
14351	1900/01-3000-56	100-3121-53199-	31.98
14352	1900/01-3000-57	100-3011-53101-	154.40

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
14353		1900/01-3000-58	100-3123-53101-				13.99	

DOC	INVOICE NO	ACCOUNT	AMOUNT
14354	1900/01-3000-59	100-3121-53199-	4.30
14355	1900/01-3000-60	100-3112-55105-	.99
14356	1900/01-3000-61	100-3011-55105-	119.88
14357	1900/01-3000-62	100-3121-53199-	22.00
14358	1900/01-3000-63	100-3121-57101-	32.98
14359	1900/01-3000-64	100-3121-53199-	139.50
14360	1900/01-3000-65	100-3112-53101-	37.34
14361	1900/01-3000-66	100-3112-57101-	130.20
14362	1900/01-3000-67	100-3112-57101-	37.89
14363	1900/01-3000-68	225-3122-57104-	250.00
14364	1900/01-3000-69	100-3121-53101-	56.87
14365	1900/01-3000-70	100-3121-53101-	116.32
14366	1900/01-3000-71	100-3121-53201-	151.22
14367	1900/01-3000-72	100-3121-53101-	29.35
14368	1900/01-3000-73	100-3121-53201-	125.19
14369	1900/01-3000-74	100-3121-53201-	29.08
14370	1900/01-3000-75	100-3121-53299-	67.29
14371	1900/01-3000-76	100-3121-53299-	148.76
14372	1900/01-3000-77	100-3121-53299-	7.51
14373	1900/01-3000-78	100-3121-54101-	1,404.69
14374	1900/01-3000-79	100-3121-53299-	191.12
14375	1900/01-5023-1	100-5401-53101-	616.27
14376	1900/01-5023-2	100-0000-15203-	574.54
14377	1900/01-5023-3	100-0000-15203-	97.88
14378	1900/01-5023-4	100-0000-15203-	316.74
14379	1900/01-5023-5	100-0000-15203-	377.99
14380	1900/01-5023-6	100-5401-56101-	75.23
14381	1900/01-5023-7	100-0000-15203-	59.26
14382	1900/01-5023-8	100-5401-56999-	44.07
14383	1900/01-5023-9	100-0000-15203-	187.41
14384	1900/01-5023-10	100-0000-15203-	68.26
14385	1900/01-5023-11	100-0000-15203-	41.89
14386	1900/01-5023-12	100-0000-15203-	68.95
14387	1900/01-5023-13	100-5401-56999-	.93
14388	1900/01-5023-14	100-5401-56999-	31.18
14389	1900/01-5023-15	100-0000-15203-	206.87
14390	1900/01-5023-16	100-0000-15203-	687.45
14391	1900/01-5023-17	100-5501-56999-	237.66
14392	1900/01-5023-18	100-5501-56999-	107.72
14393	1900/01-5023-19	100-5501-56999-	177.57
14394	1900/01-5023-20	100-5501-56999-	9.67
14395	1900/01-5023-21	100-5702-53299-	48.74
14396	1900/01-5023-22	100-5702-53299-	348.02
14397	1900/01-1401-1	100-1201-55999-	25.00
14398	1900/01-1401-2	100-1201-55999-	25.00
14399	1900/01-1401-3	100-1201-55999-	25.00
14400	1900/01-1401-4	100-1201-55999-	25.00
14401	1900/01-1401-5	100-1401-57101-	82.70

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
14402		1900/01-1401-6	100-1401-57101-			84.73		

DOC	INVOICE NO	ACCOUNT	AMOUNT
14403	1900/01-1401-7	100-1401-55101-	3.50
14404	1900/01-1401-8	100-1401-57101-	129.10
14405	1900/01-1401-9	100-1401-57101-	55.73
14406	1900/01-1401-10	100-1401-55101-	1.00
14407	1900/01-1401-11	100-1401-55101-	1.00
14408	1900/01-1401-12	100-1401-55101-	29.95
14409	1900/01-1401-13	100-1401-57101-	228.76
14410	1900/01-1401-14	100-1401-55999-	175.00
14411	1900/01-1401-15	100-1401-53101-	36.62
14412	1900/01-1401-16	100-1401-57101-	254.18
14413	1900/01-1601-1	100-1601-55999-	92.98
14414	1900/01-1601-2	100-1601-56999-	249.00
14415	1900/01-1601-3	100-1601-55999-	241.89
14416	1900/01-2000-1	100-2314-53101-	17.23
14417	1900/01-2000-2	100-2101-53101-	19.34
14418	1900/01-2000-3	100-2101-53101-	38.68
14419	1900/01-2000-4	100-2101-53101-	120.42
14420	1900/01-2000-5	100-2101-53101-	825.91
14421	1900/01-2000-6	100-2101-53101-	149.59
14422	1900/01-2000-7	100-2101-54101-	171.32
14423	1900/01-2000-8	100-2101-53101-	38.71
14424	1900/01-2000-9	100-2101-53101-	39.73
14425	1900/01-2000-10	100-7001-57101-	79.10
14426	1900/01-2000-11	100-7203-53201-	53.20
14427	1900/01-2000-12	100-2101-53101-	210.00
14428	1900/01-2000-13	100-2101-53101-	38.70
14429	1900/01-2000-14	100-2101-53101-	270.00
14430	1900/01-2000-15	100-2316-53101-	26.58
14431	1900/01-2000-16	100-2101-53101-	126.89
14432	1900/01-2000-17	100-2101-53101-	603.74
14433	1900/01-2000-18	100-2101-53101-	23.45
14434	1900/01-2000-19	100-2101-53101-	76.49
14435	1900/01-2000-20	100-2101-53101-	792.28
14436	1900/01-2000-21	100-2101-53101-	85.06
14437	1900/01-5000-1	600-5802-57101-	1,675.00
14438	1900/01-5000-2	100-5001-55999-	120.00
14439	1900/01-5000-3	100-5703-53101-	252.00
14440	1900/01-5000-4	100-5102-53101-	351.26
14441	1900/01-5000-5	100-5102-53101-	439.43
14442	1900/01-5000-6	100-5401-57101-	68.19
14443	1900/01-5000-7	100-5001-55999-	145.26
14444	1900/01-5000-8	100-5001-55999-	6.89
14445	1900/01-5000-9	100-5601-56101-	107.36
14446	1900/01-5000-10	100-5601-56101-	14.49
14447	1900/01-5000-11	100-5601-56101-	-53.70
14448	1900/01-5000-12	100-5601-56101-	56.23
14449	1900/01-5000-13	100-5601-56101-	121.02
14450	1900/01-5000-14	100-5601-56101-	45.19

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
14451		1900/01-5000-15	100-5601-56101-			17.71		

DOC	INVOICE NO	ACCOUNT	AMOUNT
14452	1900/01-5000-16	100-5601-56101-	57.20
14453	1900/01-5000-17	100-5601-56101-	2.83
14454	1900/01-5000-18	100-5601-56101-	-99.91
14455	1900/01-5000-19	100-5601-56101-	31.17
14456	1900/01-5000-20	100-5601-56101-	44.96
14457	1900/01-5000-21	100-5601-56101-	30.85
14458	1900/01-5000-22	100-5601-56101-	33.40
14459	1900/01-5000-23	100-5601-56101-	6.07
14460	1900/01-5000-24	100-5601-56101-	58.49
14461	1900/01-5000-25	100-5601-56101-	38.39
14462	1900/01-5000-26	100-5601-56101-	38.39
14463	1900/01-5000-27	100-5201-57101-	145.00
14464	1900/01-5000-28	100-5601-56101-	2,116.52
14465	1900/01-5000-29	100-5601-56101-	16.15
14466	1900/01-5000-30	100-5601-56101-	260.10
14467	1900/01-5000-31	100-5601-56101-	25.85
14468	1900/01-5000-32	100-5601-56101-	1,765.16
14469	1900/01-5000-33	100-5601-56101-	89.08
14470	1900/01-5000-34	100-5601-56101-	338.86
14471	1900/01-5000-35	100-5601-56101-	252.88
14472	1900/01-5000-36	100-5601-56101-	289.31
14473	1900/01-5000-37	100-5601-56101-	14.36
14474	1900/01-5000-38	100-5601-56101-	69.34
14475	1900/01-5000-39	100-5601-56101-	43.07
14476	1900/01-5000-40	100-5601-56101-	14.38
14477	1900/01-5000-41	100-5601-56101-	95.30
14478	1900/01-5000-42	100-5601-56101-	43.05
14479	1900/01-5000-43	100-5601-56101-	18.27
14480	1900/01-5000-44	100-5601-56101-	43.02
14481	1900/01-5000-45	100-5601-56101-	8.92
14482	1900/01-5000-46	100-5601-56101-	26.92
14483	1900/01-5000-47	100-5601-56101-	133.24
14484	1900/01-5000-48	100-5601-56101-	31.83
14485	1900/01-5000-49	100-5601-56101-	18.06
14486	1900/01-5000-50	100-5601-56101-	381.74
14487	1900/01-5000-51	100-5601-56101-	23.64
14488	1900/01-5000-52	100-5601-56101-	35.90
14489	1900/01-5000-53	100-5601-56101-	8.57
14490	1900/01-5000-54	100-5601-56101-	16.02
14491	1900/01-5000-55	100-5601-56101-	14.69
14492	1900/01-5000-56	100-5601-56101-	47.18
14493	1900/01-5000-57	100-0000-15203-	42.56
14494	1900/01-5000-58	100-0000-15203-	16.16
14495	1900/01-5000-59	100-0000-15203-	10.78
14496	1900/01-5000-60	601-5301-53299-	1,923.85
14497	1900/01-5000-61	270-5201-53201-	29.00
14498	1900/01-5000-62	270-5201-53201-	48.03
14499	1900/01-5000-63	270-5201-53201-	82.64

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
14500		1900/01-5000-64	100-0000-15204-			99.59		

DOC	INVOICE NO	ACCOUNT	AMOUNT
14501	1900/01-5000-65	100-0000-15204-	61.28
14502	1900/01-5000-66	100-0000-15204-	100.30
14503	1900/01-5000-67	100-0000-15204-	60.28
14504	1900/01-5000-68	100-0000-15204-	100.56
14505	1900/01-5000-69	100-0000-15204-	72.28
14506	1900/01-5000-70	100-0000-15204-	100.80
14507	1900/01-5000-71	100-0000-15204-	33.83
14508	1900/01-5000-72	100-0000-15204-	73.01
14509	1900/01-5000-73	100-0000-15204-	86.36
14510	1900/01-5000-74	100-0000-15204-	75.42
14511	1900/01-5000-75	100-0000-15204-	100.36
14512	1900/01-5000-76	100-0000-15204-	24.38
14513	1900/01-5000-77	100-0000-15204-	100.32
14514	1900/01-5000-78	100-0000-15204-	47.27
14515	1900/01-5000-79	100-0000-15204-	100.18
14516	1900/01-5000-80	100-0000-15204-	100.20
14517	1900/01-5000-81	100-0000-15204-	18.21
14518	1900/01-5000-82	601-5301-53201-	300.62
14519	1900/01-5000-83	100-5201-53201-	307.41
14520	1900/01-5000-84	270-5201-53201-	267.42
14521	1900/01-5000-85	270-5201-53201-	110.06
14522	1900/01-5000-86	270-5201-53201-	60.29
14523	1900/01-5000-87	100-5201-53201-	614.82
14524	1900/01-5000-88	263-5201-53201-	172.39
14525	1900/01-5000-89	263-5201-53201-	427.57
14526	1900/01-5000-90	263-5201-53201-	171.92
14527	1900/01-5000-91	263-5201-53201-	6.49
14528	1900/01-5000-92	100-0000-15204-	100.45
14529	1900/01-5000-93	100-0000-15204-	100.25
14530	1900/01-5000-94	263-5201-53201-	54.37
14531	1900/01-5000-95	263-5201-53201-	325.31
14532	1900/01-5000-96	263-5201-53201-	112.48
14533	1900/01-5000-97	263-5201-53201-	48.29
14534	1900/01-5000-98	263-5201-53201-	256.42
14535	1900/01-5000-99	263-5201-53201-	222.91
14536	1900/01-5000-100	263-5201-53201-	134.88
14537	1900/01-5000-101	263-5201-53201-	32.65
14538	1900/01-5000-102	263-5201-53201-	773.52
14539	1900/01-5000-103	263-5201-53201-	8.59
14540	1900/01-5000-104	270-5201-53299-	-12.33
14541	1900/01-5000-105	270-5201-53299-	63.06
14542	1900/01-1410-1	730-1306-57101-	449.00
14543	1900/01-1410-2	730-1306-80101-	73.24
14544	1900/01-8000-1	600-5802-53101-	271.92
14545	1900/01-8000-2	600-5802-53101-	92.67
14546	1900/01-8000-3	600-5802-53101-	96.95
14547	1900/01-8000-4	600-5802-53101-	43.10
14548	1900/01-8000-5	600-5802-53101-	82.97

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
14549		1900/01-8000-6		600-5802-53101-			104.43	

DOC	INVOICE NO	ACCOUNT	AMOUNT
14550	1900/01-8000-7	600-5802-53101-	149.43
14551	1900/01-8000-8	600-5802-53101-	47.59
14552	1900/01-8000-9	600-5802-53101-	42.88
14553	1900/01-8000-10	600-5802-53101-	52.20
14554	1900/01-8000-11	600-5802-53101-	630.58
14555	1900/01-8000-12	600-5802-53101-	187.27
14556	1900/01-8000-13	600-5802-53101-	298.45
14557	1900/01-8000-14	600-5803-53201-	98.30
14558	1900/01-8000-15	600-5803-53101-	85.77
14559	1900/01-8000-16	600-5803-53101-	104.54
14560	1900/01-8000-17	600-5803-53101-	72.41
14561	1900/01-8000-18	600-5803-53201-	32.30
14562	1900/01-8000-19	600-5802-57101-	350.00
14563	1900/01-8000-20	100-5401-53201-	96.78
14564	1900/01-8000-21	600-5803-53101-	143.99
14565	1900/01-8000-22	600-5802-53199-	967.06
14566	1900/01-8000-23	100-5401-53201-	100.56
14567	1900/01-8000-24	100-5401-53201-	100.93
14568	1900/01-8000-25	100-5401-53201-	89.24
14569	1900/01-8000-26	600-5802-53101-	18.94
14570	1900/01-8000-27	100-5401-53201-	100.38
14571	1900/01-8000-28	100-5401-53201-	42.28
14572	1900/01-8000-29	600-5803-53201-	498.88
14573	1900/01-8000-30	600-5803-53201-	309.15
14574	1900/01-8000-31	100-5401-53201-	100.90
14575	1900/01-8000-32	100-5401-53201-	89.66
14576	1900/01-8000-33	600-5803-53101-	172.08

2 CHECKS CASH ACCOUNT TOTAL 74,922.31 .00

AP CHECK RECONCILIATION REGISTER

		UNCLEARED	CLEARED
145 CHECKS	FINAL TOTAL	1,800,442.85	.00

** END OF REPORT - Generated by Jocelin Mendez **

City of Orange

Finance Department - Accounts Payable

WW # 0353

WEEKLY WARRANT WRITING CHECK REGISTER

Warrant Writing	Warrant Writing Confirmation Date: 02/19/26 3 of 4 reports for 03/10/26 Council Meeting
Notes:	
Requester Signature: eSigned via GovOS.com Holli Kittleson Key: c75eb71bc2d138050ea61da6a02e3123	Date: 02-19-2026

AGENDA ITEM NO. 3.2

I certify that the attached register of demands has been prepared and audited under my direction and supervision. I also certify that each demand is accurately set forth and correctly stated, that each is a legal obligation of the City, and that there are sufficient funds available for the payment of each demand.

Please review and approve before:

eSigned via GovOS.com Tiffany Dang Key: 255ce3af4128a3a50bd1b4b009bc5bbc Tiffany Dang, Finance	02-19-2026 Date	Comments:
eSigned via GovOS.com Jarad L. Hildenbrand Key: d3b9b88f-da90-4693-bd42-b7973c0a7d37 Jarad Hildenbrand, City Manager	02-19-2026 Date	Comments:
eSigned via GovOS.com Pamela Coleman Key: 52f7c7947ed47a25c77b48742be39aca Pam Coleman, City Clerk	02-19-2026 Date	Comments:

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
2172026	02/17/2026	WIRE	000385	SOUTHERN CALIFORNIA GAS C	338.71			

DOC	INVOICE NO	ACCOUNT	AMOUNT
14647	02/17/2026	100-0000-56203-	338.71
8004178 02/19/2026 PRINTED 013658 ABBA TERMITE AND PEST CON			440.00
14575	032194	100-7203-56999-	110.00
14583	033175	100-7203-56999-	110.00
14788	033387	601-5301-56999-	220.00
8004179 02/19/2026 PRINTED 004981 ACADEMY ELECTRIC INC			7,700.00
14220	1375-68	100-7203-56999-	2,600.00
14576	1375-65	100-7203-56999-	2,000.00
14221	1375-67	100-7203-56999-	2,000.00
14577	1375-66	100-7203-56999-	1,100.00
8004180 02/19/2026 PRINTED 013526 ALVARIA INC			150.00
14610	ASI088774	100-3011-55105-	150.00
8004181 02/19/2026 PRINTED 002217 AT&T			10,745.44
14787	02/15/2026	100-1301-56201-	31.93
14787	02/15/2026	100-1801-56201-	95.55
14787	02/15/2026	100-2101-56201-	128.34
14787	02/15/2026	100-2316-56201-	157.69
14787	02/15/2026	100-3011-56201-	3,224.14
14787	02/15/2026	100-4011-56201-	2,228.93
14787	02/15/2026	100-5601-56101-	62.34
14787	02/15/2026	100-7001-56201-	4,628.54
14787	02/15/2026	600-5802-56201-	156.13
14787	02/15/2026	100-5401-56201-	31.85
8004182 02/19/2026 PRINTED 001014 B & M LAWN & GARDEN CENTE			108.72
14758	710594-2	601-5301-53299-	108.72
8004183 02/19/2026 PRINTED 014480 BAY CITY ELECTRIC WORKS I			1,785.74
14632	W323711	600-5803-56101-	1,785.74
8004184 02/19/2026 PRINTED 014480 BAY CITY ELECTRIC WORKS I			13,044.22
14633	W323710	600-5803-56101-	1,519.50
14635	W323715	600-5803-56101-	1,088.20
14636	W323855	600-5803-56101-	1,829.64
14637	W323892	600-5803-56101-	1,641.48
14638	W323895	600-5803-56101-	1,246.46
14639	W324066	600-5803-56101-	1,359.59
14640	W323709	600-5803-56101-	1,850.66
14641	W323862	600-5803-56101-	1,275.84
14789	W324065	600-5803-56101-	1,232.85
8004185 02/19/2026 PRINTED 002135 BC TRAFFIC SPECIALIST			39.17
14709	106926	100-5201-53201-	39.17

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004186	02/19/2026	PRINTED	018258	BENDER READY MIX INC	2,766.48			
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	14701	200548		263-5201-53201-				1,047.87
	14707	199875		263-5201-53201-				1,718.61
8004187	02/19/2026	PRINTED	020690	BIO AQUATICS LAKE MANAGEM	6,066.00			
	14581	41344		100-7203-56999-				3,033.00
	14582	41413		100-7203-56999-				3,033.00
8004188	02/19/2026	PRINTED	001312	BLUE CROSS OF CALIFORNIA	725.44			
	14764	O2411400		100-0000-20108-				725.44
8004189	02/19/2026	PRINTED	001312	BLUE CROSS OF CALIFORNIA	1,906.59			
	14774	O2413018		100-0000-20108-				1,906.59
8004190	02/19/2026	PRINTED	016378	C3 OFFICE SOLUTIONS LLC	8,462.61			
	14653	INV214484		100-1601-56999-				8,462.61
8004191	02/19/2026	PRINTED	019138	CALIFORNIA WATERS DEVELOP	625.00			
	14627	25860		100-5601-56101-				625.00
8004192	02/19/2026	PRINTED	006583	CAM SERVICES	750.00			
	14711	126817		100-5301-56999-				750.00
8004193	02/19/2026	PRINTED	019135	CEM CONSTRUCTION CORP	79,103.83			
	1	RETREL AGR 7718		601-0000-20103-				8,151.25
	1	RETREL AGR 7718		601-0000-20103-				17,258.33
	1	RETREL AGR 7718		601-0000-20103-				37,072.75
	1	RETREL AGR 7718		601-0000-20103-				13,489.00
	1	RETREL AGR 7718		601-0000-20103-				3,132.50
8004194	02/19/2026	PRINTED	003595	CINTAS CORPORATION NO 2	1,863.83			
	14584	4254262184		100-7203-56107-				209.42
	14585	4255624279		100-7203-56107-				419.05
	14586	4256377282		100-7203-56107-				209.42
	14587	4257863605		100-7203-56107-				198.85
	14588	4257125121		100-7203-56107-				209.42
	14589	4258582812		100-7203-56107-				198.85
	14590	4254955911		100-7203-56107-				209.42
	14591	4253446371		100-7203-56107-				209.40
8004195	02/19/2026	PRINTED	014873	CIVICPLUS LLC	1,408.68			
	14592	360886		100-7101-55999-				329.84
	14596	363065		100-7101-55999-				1,078.84
8004196	02/19/2026	PRINTED	002810	CLINICAL LABORATORY OF SA	3,635.00			
	14677	2600263-		600-5802-55999-				3,135.00
	14679	2600264-		600-5802-55999-				500.00
8004197	02/19/2026	PRINTED	004588	CODE CONSULTING GROUP LLC	1,867.50			

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14620	01-26-0187		100-3112-55000-			1,867.50	
8004198	02/19/2026	PRINTED	020178	COLANTUONO HIGHSMITH AND	243.00			
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	14181	69137		100-1301-55102-				243.00
8004199	02/19/2026	PRINTED	019169	COMPLETE PAPERLESS SOLUTI	121,449.66			
	14219	4729		100-1601-56999-			121,449.66	
8004200	02/19/2026	PRINTED	025137	BLUE CROSS	1,285.63			
	14766	O2304204		100-0000-20108-			1,285.63	
8004201	02/19/2026	PRINTED	020315	CULLEN AND ASSOCIATES INC	11,040.00			
	14710	022		100-1801-55999-			11,040.00	
8004202	02/19/2026	PRINTED	000101	CULLIGAN	60.87			
	14615	2034082.1		100-1201-53101-			60.87	
8004203	02/19/2026	PRINTED	011271	DOERSCHEL AND ASSOCIATES	6,750.00			
	14754	128103		200-1601-53201-			6,750.00	
8004204	02/19/2026	PRINTED	000646	EAST ORANGE COUNTY WATER	5,360.34			
	14597	1409100-12-2026		100-7203-56204-			622.40	
	14599	1409000-12-2026		100-7203-56204-			4,737.94	
8004205	02/19/2026	PRINTED	005168	FIRE EXTINGUISHING SAFETY	526.66			
	14606	5525		100-3121-56101-			526.66	
8004206	02/19/2026	PRINTED	000170	HEALTH NET	2,523.94			
	14771	O2404243		100-0000-20108-			2,523.94	
8004207	02/19/2026	PRINTED	004358	HILLTOP ALARMS INC	1,080.00			
	14755	49889		100-7203-56999-			225.00	
	14756	49551		100-7203-56999-			135.00	
	14757	49500		100-7203-56999-			270.00	
	14759	49549		100-7203-56999-			225.00	
	14760	49515		100-7203-56999-			225.00	
8004208	02/19/2026	PRINTED	000454	HOTSY OF SOUTHERN CALIFOR	430.00			
	14780	10024203		270-5201-56101-			430.00	
8004209	02/19/2026	PRINTED	015607	IMAGE TECH MARKETING	147.00			
	13926	26-58547		100-1502-53101-			158.39	
8004210	02/19/2026	PRINTED	009564	INFOSEND INC	12,741.05			
	14728	303903		600-1843-53104-			7,892.49	
	14728	303903		600-1843-55104-			2,314.79	
	14730	303905		100-1842-53104-			2,081.44	
	14730	303905		100-1842-55104-			452.33	

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004211	02/19/2026	PRINTED	000199	KENNEDY EQUIPMENT CO INC	55.85			
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	14649	74779		600-5802-53199-				55.85
8004212	02/19/2026	PRINTED	010008	KRONOS INC	43.72			
	14605	I10010055100		100-3011-55999-				43.72
8004213	02/19/2026	PRINTED	000796	LA HABRA FENCE COMPANY	2,477.00			
	14623	48240		600-5802-56101-				2,477.00
8004214	02/19/2026	PRINTED	025306	LIFE EXTENSION CLINICS IN	48,450.00			
	14594	4239		100-3121-55000-				48,450.00
8004215	02/19/2026	PRINTED	000222	LIFE-ASSIST INC	18,804.10			
	14622	2062894		100-3122-53101-				4,905.41
	14622	2062894		225-3122-53101-				10,900.93
	14622	2062894		225-3215-53101-				2,997.76
8004216	02/19/2026	PRINTED	021021	LINEGEAR INC	20,836.69			
	14626	62563		100-3121-54101-				338.34
	14672	62500		100-3011-53102-				678.83
	14674	62524		100-3011-53102-				2,214.26
	14680	62525		100-3011-53102-				1,563.45
	14681	62526		100-3011-53102-				2,042.94
	14683	62527		100-3011-53102-				2,214.26
	14687	62528		100-3011-53102-				2,096.82
	14690	62529		100-3011-53102-				2,042.94
	14698	62531		100-3011-53102-				2,042.94
	14704	62532		100-3011-53102-				2,042.94
	14715	62549		100-3011-53102-				1,805.89
	14726	62550		100-3011-53102-				171.32
	14729	62551		100-3011-53102-				171.32
	14731	62552		100-3011-53102-				171.32
	14732	62554		100-3011-53102-				171.32
	14733	62555		100-3011-53102-				171.32
	14734	62556		100-3011-53102-				171.32
	14736	62564		100-3011-53102-				24.78
	14737	62565		100-3011-53102-				700.38
8004217	02/19/2026	PRINTED	001067	ROBERT LOBATO	140.08			
	14616	11-08 RUNING SHOES		100-3011-53102-				140.08
8004218	02/19/2026	PRINTED	000239	MAJOR LEAGUE CONSTRUCTION	3,795.00			
	14218	2025-26		100-7203-56999-				2,940.00
	14218	2025-26		105-7203-56999-				855.00
8004219	02/19/2026	PRINTED	000248	MC FADDEN-DALE INDUSTRIAL	94.27			
	14604	599063/5		600-5802-53201-				94.27
8004220	02/19/2026	PRINTED	000250	MC MASTER-CARR SUPPLY CO	69.16			

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14738		59487629	400-3121-53199-			69.16	
8004221	02/19/2026	PRINTED	021017	MDJ MANAGEMENT LLC	8,507.10			
	DOC	INVOICE NO		ACCOUNT			AMOUNT	
	5990	RELRET AGR 7820		500-0000-20103-			4,494.80	
	5990	RELRET AGR 7820		500-0000-20103-			1,861.98	
	5990	RELRET AGR 7820		570-0000-20103-			1,250.00	
	5990	RELRET AGR 7820		500-0000-20103-			900.32	
8004222	02/19/2026	PRINTED	001533	MERCHANTS BUILDING MAINTE	2,677.67			
	14678	937668		100-7203-56999-			270.00	
	14684	937652		100-7203-56999-			225.00	
	14685	946909		100-7203-56999-			311.81	
	14689	946910		100-7203-56999-			311.81	
	14692	946913		100-7203-56999-			311.81	
	14696	946911		100-7203-56999-			311.81	
	14697	946919		100-7203-56999-			311.81	
	14703	946916		100-7203-56999-			311.81	
	14720	946908		100-7203-56999-			311.81	
8004223	02/19/2026	PRINTED	001533	MERCHANTS BUILDING MAINTE	275.00			
	14722	945511		100-7203-56999-			275.00	
8004224	02/19/2026	PRINTED	025228	MOLINA HEALTHCARE	441.60			
	14768	O2107833		100-0000-20108-			220.80	
	14769	O2101935		100-0000-20108-			220.80	
8004225	02/19/2026	PRINTED	001987	NIEVES LANDSCAPE LLC	36,602.80			
	14628	83811		100-5501-56103-			14,661.14	
	14634	83813		263-5201-56103-			7,040.87	
	14658	83810		293-5501-56103-			1,548.39	
	14660	83809		294-5501-56103-			4,364.63	
	14665	83812		100-5501-56103-			891.23	
	14665	83812		540-5501-56103-			1,048.53	
	14667	83814		600-5501-56103-			5,456.51	
	14669	83920		291-5501-56103-			530.77	
	14671	83921		291-5501-56103-			660.65	
	14673	83922		291-5501-56103-			400.08	
8004226	02/19/2026	PRINTED	000052	OFFICE DEPOT INC	2,710.25			
	14655	22986975		100-1601-53101-			208.12	
	14655	22986975		100-1201-53101-			47.07	
	14655	22986975		100-2101-53101-			531.06	
	14655	22986975		100-3011-53101-			624.06	
	14655	22986975		100-4001-53101-			438.58	
	14655	22986975		100-4011-53101-			32.92	
	14655	22986975		100-4213-53101-			268.50	
	14655	22986975		100-4141-53101-			331.42	
	14655	22986975		100-6001-53101-			68.50	
	14655	22986975		100-5401-53101-			160.02	

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004227	02/19/2026	PRINTED	017304	OPENGOV INC	11,825.00			
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	14714	INV23428		790-1801-55999-				11,825.00
8004228	02/19/2026	PRINTED	019593	ORANGE CAR WASH INC	117.00			
	14749	012026		100-5401-56999-				117.00
8004229	02/19/2026	PRINTED	000096	COUNTY OF ORANGE	273.00			
	14648	Z2665277		600-5803-56102-				273.00
8004230	02/19/2026	PRINTED	020273	ORANGE COUNTY JAIL	250.96			
	14763	O2504136		100-0000-20108-				122.11
	14767	O2417178		100-0000-20108-				128.85
8004231	02/19/2026	PRINTED	001406	ORANGE COUNTY TREASURER	1,324.54			
	14650	PS492		100-4011-55104-				1,324.54
8004232	02/19/2026	PRINTED	013213	O'REILLY AUTO ENTERPRISES	1,654.40			
	14735	January Stmt 2026		100-0000-15203-				1,654.40
8004233	02/19/2026	PRINTED	025307	V. SONYA PIZZO	500.00			
	14182	101925-PIZZO		731-1306-50203-				500.00
8004234	02/19/2026	PRINTED	000601	PLACEWORKS INC	124,036.84			
	14686	CRN-09.0 -1		105-6102-55101-				1,522.50
	14753	CRN-09.0-3		105-6102-55101-				14,175.00
	14775	CRN-09.0-5		105-6102-55101-				20,110.00
	14779	CRN-09.0-6		105-6102-55101-				88,229.34
8004235	02/19/2026	PRINTED	017564	PROTELESIS CORP	542.50			
	14752	29898525		100-1601-56201-				542.50
8004236	02/19/2026	PRINTED	025278	ST JOSEPH	386.68			
	14773	O2502789		100-0000-20108-				386.68
8004237	02/19/2026	PRINTED	007130	PTI SAND & GRAVEL INC	1,775.54			
	14670	160647		600-5803-81999-				1,775.54
8004238	02/19/2026	PRINTED	016080	RAPIDS EXPRESS ORANGE, LP	672.00			
	14745	217		100-5401-56999-				672.00
8004239	02/19/2026	PRINTED	025016	RCR TRAFFIC SPECIALIST	2,628.83			
	14781	13666		100-5201-53201-				847.18
	14782	13664		100-5201-53201-				285.54
	14783	13683		100-5201-53201-				94.01
	14784	13703		100-5201-53201-				1,402.10
8004240	02/19/2026	PRINTED	009419	RHA LANDSCAPE ARCHITECTS	3,760.00			
	14651	122748		510-7201-84101-				755.00

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14652		122808	510-7201-84101-			2,015.00	
	DOC	INVOICE NO		ACCOUNT			AMOUNT	
	14654	122863		510-7201-84101-			640.00	
	14657	122925		510-7201-84101-			350.00	
8004241	02/19/2026	PRINTED	000351	ROSEBURROUGH TOOL INC	1,049.52			
	14713	834482		270-5201-53299-			1,049.52	
8004242	02/19/2026	PRINTED	005374	ROSEN & ROSEN INDUSTRIES	1,842.54			
	13978	707455		100-0000-15201-			1,842.54	
8004243	02/19/2026	PRINTED	001006	SASE COMPANY INC	171.88			
	14716	INV388699		270-5201-56101-			85.94	
	14717	INV388698		270-5201-56101-			85.94	
8004244	02/19/2026	PRINTED	004604	SHRED-WISE INC	50.00			
	14180	17620120925		100-1301-53101-			50.00	
8004245	02/19/2026	PRINTED	016994	SOCAL AUTO & TRUCK PARTS	3,323.97			
	14739	January Stmt 2026		100-0000-15203-			3,323.97	
8004246	02/19/2026	PRINTED	015003	SOURCE GRAPHICS	1,335.74			
	14614	SG255420		100-5102-55999-			1,335.74	
8004247	02/19/2026	PRINTED	018966	SWIFTCOMPLY US OPCO INC	7,943.25			
	14205	INV000035		600-5803-55999-			7,943.25	
8004248	02/19/2026	PRINTED	001919	TETRA TECH INC	5,927.00			
	14619	52483843		600-5802-85107-			5,927.00	
8004249	02/19/2026	PRINTED	002753	TOWNSEND PUBLIC AFFAIRS I	13,500.00			
	14624	24835		100-0000-50999-			4,500.00	
	14625	24836		100-0000-50999-			9,000.00	
8004250	02/19/2026	PRINTED	016017	TRICARE WEST REGION	585.45			
	14772	O2412529-1		100-0000-20108-			585.45	
8004251	02/19/2026	PRINTED	019458	TUNNELWORKS SERVICES INC	2,200.00			
	14721	2186		601-5301-87102-			2,200.00	
8004252	02/19/2026	PRINTED	004589	TURNOUT MAINTENANCE COMPA	3,372.15			
	14741	30784		100-3121-56101-			711.15	
	14742	30785		100-3121-56101-			2,661.00	
8004253	02/19/2026	PRINTED	009462	UNITED AUTOMOTIVE SERVICE	109.95			
	14751	138290		100-5401-56999-			109.95	
8004254	02/19/2026	PRINTED	000944	UNITED PARCEL SERVICE	282.22			
	14666	00005733W1076 2026		100-3011-53104-			167.32	
	14666	00005733W1076 2026		100-5401-53299-			23.27	

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14666		00005733W1076 2026	100-0000-53104-			91.63	
8004255	02/19/2026	PRINTED	019230	UNITED RENTALS INC	1,733.20			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
14723	258607331-002	263-5201-53201-				63.52		
14724	258592189-001	263-5201-53201-				588.53		
14725	258706219-001	263-5201-53201-				301.91		
14727	258607331-001	263-5201-53201-				779.24		
8004256	02/19/2026	PRINTED	001845	VERIZON WIRELESS	11,700.00			
14740	6135679768	100-7001-56201-				1,745.09		
14743	6135730113	100-1201-56201-				38.83		
14743	6135730113	100-1601-56201-				372.67		
14744	6135663164	100-1822-56201-				155.32		
14746	6135663165	100-5001-56201-				1,947.30		
14746	6135663165	601-5301-56201-				1,160.09		
14746	6135663165	270-5201-56201-				787.21		
14746	6135663165	100-5401-56201-				165.73		
14746	6135663165	100-5101-56201-				41.43		
14746	6135663165	601-1601-80299-				41.43		
14747	6135763587	600-5802-56201-				3,248.05		
14750	6135763585	100-6301-56201-				1,305.75		
14750	6135763585	100-6201-56201-				168.57		
14750	6135763585	210-6301-55105-				522.53		
8004257	02/19/2026	PRINTED	009050	VULCAN MATERIALS CO	498.74			
13984	5546469	263-5201-53201-				498.74		
8004258	02/19/2026	PRINTED	002319	WATERLINE TECHNOLOGIES	3,572.14			
14691	5780201	600-5802-53201-				988.71		
14693	5780202	600-5802-53201-				542.20		
14695	5780204	600-5802-53201-				542.20		
14699	5780208	600-5802-53201-				446.52		
14702	5780207	600-5802-53201-				446.52		
14705	5780209	600-5802-53201-				605.99		
8004259	02/19/2026	PRINTED	000439	WEST COAST ARBORISTS INC	66,010.00			
14659	236770	100-7203-56999-				40,556.00		
14661	239792	100-7203-56999-				8,370.00		
14662	237460	100-7203-56999-				2,880.00		
14663	238439	100-7203-56999-				13,829.00		
14664	239009	100-7203-56999-				375.00		
8004260	02/19/2026	PRINTED	001759	WITTMAN ENTERPRISES LLC	93,190.68			
14676	2511022	100-3122-47301-				12,567.27		
14676	2511022	225-3215-47301-				19,656.49		
14694	2512022	100-3122-47301-				13,281.78		
14694	2512022	225-3215-47301-				20,774.08		
14706	202601-C1833	100-3122-47301-				10,495.31		
14706	202601-C1833	225-3215-47301-				16,415.75		

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: Uncleared

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004261	02/19/2026	PRINTED	001153	ZOLL MEDICAL CORPORATION	509.12			

DOC	INVOICE NO	ACCOUNT	AMOUNT
14621	4424989	225-3122-53101-	318.20
14621	4424989	400-3122-80101-	190.92

85 CHECKS	CASH ACCOUNT TOTAL	821,806.24	.00	

AP CHECK RECONCILIATION REGISTER

		UNCLEARED	CLEARED
85 CHECKS	FINAL TOTAL	821,806.24	.00

** END OF REPORT - Generated by Holli Kittleson **

City of Orange

Finance Department - Accounts Payable

WW # 0354

WEEKLY WARRANT WRITING CHECK REGISTER

Warrant Writing	Warrant Writing Confirmation Date: 02/26/26 4 of 4 reports for 03/10/26 Council Meeting
Notes:	
Requester Signature:	eSigned via GovOS.com Jocelin Mendez Key: c75eb71bc2d138050ea61da6a02e3123
Date:	02-26-2026

AGENDA ITEM NO. 3.2

I certify that the attached register of demands has been prepared and audited under my direction and supervision. I also certify that each demand is accurately set forth and correctly stated, that each is a legal obligation of the City, and that there are sufficient funds available for the payment of each demand.

Please review and approve before:

eSigned via GovOS.com Tiffany Dang Key: 255ce3af4128a3a50bd1b4b009bc5bbc Tiffany Dang, Finance	02-26-2026 Date	Comments:
eSigned via GovOS.com Jarad L. Hildenbrand Key: d3b9b88f-da90-4693-bd42-b7973c0a7d37 Jarad Hildenbrand, City Manager	02-26-2026 Date	Comments:
eSigned via GovOS.com Pamela Coleman Key: 52f7c7947ed47a25c77b48742be39aca Pam Coleman, City Clerk	02-26-2026 Date	Comments:

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
5589	02/24/2026	WIRE	001480	U S BANK	38,047.95			
	DOC	INVOICE NO	ACCOUNT			AMOUNT		
	13402	3138886	961-0000-10451-			38,047.95		
5592	02/24/2026	WIRE	001480	U S BANK	423,408.31			
	13408	3138941	961-0000-10452-			423,408.31		
22526	02/25/2026	WIRE	000384	SOUTHERN CALIF EDISON CO	68,892.90			
	15082	02/25/26	100-0000-56205-			68,892.90		
8004262	02/26/2026	PRINTED	011584	ACE 5ON5 LLC	2,467.00			
	15067	0000302	100-7101-55000-			1,181.00		
	15068	0000294	100-7101-55000-			831.00		
	15069	0000311	100-7101-55000-			455.00		
8004263	02/26/2026	PRINTED	019638	ANDREW ADAMS	52.10			
	15107	00001287-11	600-0000-11106-			52.10		
8004264	02/26/2026	PRINTED	005317	ADMINSURE INC	25,280.00			
	14949	18626	730-1306-50202-			22,244.00		
	14951	18627	730-1306-50203-			3,036.00		
8004265	02/26/2026	PRINTED	019738	ADVANCED SECURITY SYSTEMS	1,131.10			
	14867	037069	100-5601-56101-			119.85		
	14871	037314	100-5601-56101-			412.00		
	15088	037218	100-5601-56101-			119.85		
	15094	037219	100-5601-56101-			119.85		
	15095	037220	100-5601-56101-			119.85		
	15096	037226	100-5601-56101-			119.85		
	15097	037253	100-5601-56101-			119.85		
8004266	02/26/2026	PRINTED	025212	AIMTD LLC	3,225.00			
	14894	i6826	287-5704-87101-			3,225.00		
8004267	02/26/2026	PRINTED	020698	ALL CITY MANAGEMENT SERVI	20,671.71			
	14834	PS-INV103672	100-4141-55999-			20,671.71		
8004268	02/26/2026	PRINTED	001017	ALTEC INDUSTRIES INC	176.46			
	14992	13431400	100-0000-15203-			176.46		
8004269	02/26/2026	PRINTED	002689	ANDY GUMP INC	186.37			
	14907	INV1308668	600-5802-53199-			186.37		
8004270	02/26/2026	PRINTED	010063	ANIMAL FRIENDS PET HOTEL	32.00			
	14806	785247921	100-4121-55999-			32.00		
8004271	02/26/2026	PRINTED	007191	AT & T	3,653.92			
	14823	000024813489	100-4011-56201-			1,223.44		
	15036	000024667086	100-4011-56201-			1,215.24		
	15037	000024523033	100-4011-56201-			1,215.24		

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004272	02/26/2026	PRINTED	002388	AT & T MOBILITY	87.48			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
14786	287303893584021720 26	600-5802-56101-				87.48		
8004273	02/26/2026	PRINTED	000053	BOOT BARN INC	2,601.18			
14993	INV00568694	731-1306-54101-				421.29		
14994	INV00568695	731-1306-54101-				283.85		
14995	INV00568696	731-1306-54101-				128.21		
14996	INV00572320	731-1306-54101-				549.28		
14997	INV00572321	731-1306-54101-				549.34		
14998	INV00572322	731-1306-54101-				526.38		
14999	INV00572327	731-1306-54101-				142.83		
8004274	02/26/2026	PRINTED	020943	BORDIN SEMMER LLP	11,398.00			
15026	STATEMENT NO. 10	731-1301-55102-				11,398.00		
8004275	02/26/2026	PRINTED	014959	BPS TACTICAL INC	964.36			
14822	26010301	454-4011-53102-				964.36		
8004276	02/26/2026	PRINTED	002011	BURTONS FIRE INC	263.22			
14984	S70830	100-0000-15203-				159.60		
14985	S70846	100-0000-15203-				103.62		
8004277	02/26/2026	PRINTED	001624	C WELLS PIPELINE MATERIAL	892.17			
14906	SINV26-1603	600-5803-81999-				892.17		
8004278	02/26/2026	PRINTED	017952	CAL-STATE AUTO PARTS INC	2,911.97			
14807	543713	100-0000-15203-				569.28		
14812	545571	100-0000-15203-				263.38		
14814	547521	100-0000-15203-				75.96		
14816	548181	100-0000-15203-				645.49		
14827	548637	100-0000-15203-				67.24		
14987	549447	100-0000-15203-				991.39		
14988	549459	100-0000-15203-				203.37		
14989	549773	100-0000-15203-				381.79		
15051	CM572306	100-0000-15203-				-97.03		
15052	CM572320	100-0000-15203-				-188.90		
8004279	02/26/2026	PRINTED	000069	CALIFORNIA FORENSIC PHLEB	5,248.00			
14810	3135	100-4011-55000-				5,248.00		
8004280	02/26/2026	PRINTED	018974	CHARTER COMMUNICATIONS	1,044.99			
15049	189064601021426	100-1601-56201-				900.00		
15050	114973901021426	100-1601-56201-				144.99		
8004281	02/26/2026	PRINTED	018974	CHARTER COMMUNICATIONS	950.00			
14923	189067401022126	100-4011-56201-				950.00		
8004282	02/26/2026	PRINTED	018974	CHARTER COMMUNICATIONS	460.33			

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14924	187909301022126		100-4011-56201-			460.33	
8004283	02/26/2026	PRINTED	003565	AT & T	95.00			
	DOC	INVOICE NO		ACCOUNT				AMOUNT
	14818	605776		100-4131-55999-				95.00
8004284	02/26/2026	PRINTED	019162	CINTAS	277.54			
	14927	4259337855		100-5401-56107-				138.77
	14931	4260109410		100-5401-56107-				138.77
8004285	02/26/2026	PRINTED	013979	CLIMATEC LLC	2,010.00			
	15086	947014000		100-5601-56999-				1,350.00
	15087	947014064		100-5601-56999-				660.00
8004286	02/26/2026	PRINTED	005556	CPAC INC	19,304.93			
	14884	SI-1302600		790-1601-80299-				19,304.93
8004287	02/26/2026	PRINTED	019887	CM CRANE & TRAINING SERVI	2,440.00			
	15064	721		600-5802-57101-				2,440.00
8004288	02/26/2026	PRINTED	025045	CRIME POINT INC	5,487.50			
	15046	21685		355-4133-53199-				487.50
	15046	21685		456-4133-53199-				5,000.00
8004289	02/26/2026	PRINTED	012114	DANIELS TIRE SERVICE	3,838.15			
	14904	200562299		100-0000-15203-				1,005.17
	14976	200559383		100-0000-15203-				2,832.98
8004290	02/26/2026	PRINTED	000959	DARTCO TRANSMISSION SALES	381.08			
	14947	C285767		100-5401-56999-				381.08
8004291	02/26/2026	PRINTED	014203	DIVERSIFIED THERMAL SERVI	4,764.00			
	14865	S4075491		100-5601-56101-				4,764.00
8004292	02/26/2026	PRINTED	017762	DAVID WILSON'S VILLA FORD	260.18			
	14835	035286		100-0000-15203-				11.87
	14836	035460		100-0000-15203-				69.61
	14837	035571		100-0000-15203-				30.31
	14839	035741		100-0000-15203-				78.78
	14990	035929		100-0000-15203-				69.61
8004293	02/26/2026	PRINTED	000646	EAST ORANGE COUNTY WATER	25,420.67			
	14908	01-2026-4		600-5802-53105-				25,420.67
8004294	02/26/2026	PRINTED	002741	EMERGENCY RESPONSE CRIME	1,125.00			
	14811	OP2026-158		100-4011-55000-				375.00
	14921	OP2026-175		100-4011-55000-				375.00
	14922	OP2026-178		100-4011-55000-				375.00
8004295	02/26/2026	PRINTED	025047	DERO	1,238.19			

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FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14887	INV-00077970		510-7201-84101-		1,238.19		
8004296	02/26/2026	PRINTED	001639	FACTORY MOTOR PARTS CO	624.95			
	DOC	INVOICE NO		ACCOUNT		AMOUNT		
	14891	11-2070959		100-0000-15203-		95.66		
	14893	11-2070991		100-0000-15203-		53.53		
	14895	12-7001448		100-0000-15203-		44.44		
	14897	12-7012710		100-0000-15203-		15.95		
	14898	12-7013845		100-0000-15203-		415.37		
8004297	02/26/2026	PRINTED	013268	FARO TECHNOLOGIES INC	15,705.00			
	15034	91888418		450-4141-53202-		15,705.00		
8004298	02/26/2026	PRINTED	002278	FERGUSON WATERWORKS #1089	96,376.99			
	14863	0063162-2		600-5802-80101-		2,223.31		
	14863	0063162-2		600-5803-80101-		83,704.08		
	14863	0063162-2		600-5803-81501-		2,223.32		
	14863	0063162-2		600-5803-80101-		8,226.28		
8004299	02/26/2026	PRINTED	000002	FLEET SERVICES INC	464.47			
	14855	01P173630		100-0000-15203-		305.71		
	14859	01P173971		100-0000-15203-		51.12		
	14860	01P174098		100-0000-15203-		107.64		
8004300	02/26/2026	PRINTED	019984	BNY MELLON - CLIENT FINAN	994.94			
	15011	EFTC FEES -Jan. 2026		100-0000-20302-		994.94		
8004301	02/26/2026	PRINTED	002177	FULLER TRUCK ACCESSORIES	340.49			
	14890	W66126		100-0000-15203-		340.49		
8004302	02/26/2026	PRINTED	002198	GALLS LLC	1,755.17			
	14824	034017577		454-4011-53102-		90.49		
	14825	034030804		100-4011-53102-		94.27		
	14826	034044408		100-4011-53102-		6.64		
	14828	034071949		100-4011-53102-		32.31		
	14829	034071996		100-4011-53102-		65.72		
	14830	034081969		100-4011-53102-		137.89		
	14831	034082017		100-4011-53102-		15.56		
	14935	034095207		100-4011-53102-		296.77		
	14936	034097223		100-4011-53102-		10.78		
	14938	034109393		100-4011-53102-		71.16		
	14940	034109478		100-4011-53102-		77.28		
	14941	034124401		100-4011-53102-		586.16		
	14942	034153631		100-4011-53102-		263.13		
	14943	034153695		100-4011-53102-		7.01		
8004303	02/26/2026	PRINTED	016078	GEORGE HILLS COMPANY	50.00			
	15005	INV1034003		731-1306-55999-		50.00		
8004304	02/26/2026	PRINTED	002509	GLOBALSTAR USA	545.82			

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14808		000000107691644	100-4011-56201-			545.82	
8004305	02/26/2026	PRINTED	012658	HANNA, BROPHY, MACLEAN,	536.50			
	DOC	INVOICE NO	ACCOUNT				AMOUNT	
	15001	2370054	730-1306-50299-				148.00	
	15002	2370102	730-1306-50299-				74.00	
	15003	2370136	730-1306-50299-				166.50	
	15004	2370157	730-1306-50299-				148.00	
8004306	02/26/2026	PRINTED	025324	LUCINDA HANSON	53.58			
	15108	00092405-01	600-0000-11106-				53.58	
8004307	02/26/2026	PRINTED	007956	AMERICAN HONDA FINANCE CO	599.79			
	14959	483245332 3/13/26	100-4133-56301-				599.79	
8004308	02/26/2026	PRINTED	007956	AMERICAN HONDA FINANCE CO	585.79			
	14961	487763993 3/24/26	100-4133-56301-				585.79	
8004309	02/26/2026	PRINTED	007956	AMERICAN HONDA FINANCE CO	589.79			
	14963	491544049 3/16/26	100-4133-56301-				589.79	
8004310	02/26/2026	PRINTED	007956	AMERICAN HONDA FINANCE CO	550.75			
	14965	493269318 3/28/26	100-4121-56301-				550.75	
8004311	02/26/2026	PRINTED	000175	HI-STANDARD AUTOMOTIVE	694.99			
	14948	30592	100-0000-15203-				694.99	
8004312	02/26/2026	PRINTED	004358	HILLTOP ALARMS INC	195.00			
	14874	49941	100-5601-56101-				195.00	
8004313	02/26/2026	PRINTED	017567	HORIZONS CONSTRUCTION CO	434,893.47			
	14916	140411.00B	500-2101-84101-				47,857.41	
	14916	140411.00B	580-2101-84101-				77,110.50	
	14916	140411.00B	500-2101-84101-				19,384.15	
	14916	140411.00B	580-2101-84101-				57,218.63	
	15091	140411.00A	100-2101-53101-				7,500.00	
	15091	140411.00A	580-2101-84101-				12,519.78	
	15091	140411.00A	500-2101-84101-				69,990.85	
	15091	140411.00A	500-5601-80101-				46,976.28	
	15091	140411.00A	580-2101-84101-				5,928.41	
	15091	140411.00A	580-2101-84101-				3,259.43	
	15093	140411.00C	500-2101-84101-				37,459.04	
	15093	140411.00C	580-2101-84101-				72,578.13	
8004314	02/26/2026	PRINTED	018475	IMPERIAL BAG AND PAPER CO	8,406.73			
	14882	40334342	100-0000-15201-				3,573.33	
	14883	40495429	100-0000-15201-				4,833.40	
8004315	02/26/2026	PRINTED	018938	INDUSTRIAL DOOR GROUP	399.00			
	15080	25-802129	100-5601-56101-				399.00	

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004316	02/26/2026	PRINTED	012820	INLAND KENWORTH US INC	471.87			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
14939	336502MNP	100-0000-15203-				471.87		
8004317	02/26/2026	PRINTED	019556	ITS ONLY TEMPORARY INC	16,950.00			
14611	25-138	100-7203-56999-				16,950.00		
8004318	02/26/2026	PRINTED	019789	JASPER ENGINES & TRANSMIS	1,454.63			
14986	15494610	100-0000-15203-				1,454.63		
8004319	02/26/2026	PRINTED	012870	JOHN JENSEN	241.60			
15111	01/26-06/2026RB	100-4011-57101-				241.60		
8004320	02/26/2026	PRINTED	020689	JMDIAZ INC	395.12			
14896	005 (26-009)	500-5704-87101-				39.52		
14896	005 (26-009)	550-5704-87101-				355.60		
8004321	02/26/2026	PRINTED	000199	KENNEDY EQUIPMENT CO INC	328.78			
15065	75187	600-5802-53199-				328.78		
8004322	02/26/2026	PRINTED	019179	BRIAN KINDER	89.88			
15110	01/21-23/2026RB	100-4011-57101-				89.88		
8004323	02/26/2026	PRINTED	015771	KIM LAMOS	180.00			
11109	FALL25P1 KIM LAMOS	100-7101-55999-				180.00		
8004324	02/26/2026	PRINTED	002806	LATIN PLUMBING INC	6,750.00			
14876	47171	600-5802-55999-				315.00		
14876	47171	600-5803-55999-				6,435.00		
8004325	02/26/2026	PRINTED	008853	LIBRARY IDEAS LLC	816.88			
14602	121027	100-2101-53101-				816.88		
8004326	02/26/2026	PRINTED	000221	LIEBERT CASSIDY WHITMORE	9,828.00			
14902	313479	100-1401-55102-				4,473.00		
14903	313480	100-1401-55102-				5,355.00		
8004327	02/26/2026	PRINTED	000232	LU'S LIGHTHOUSE INC	65.16			
14964	01297180	100-0000-15203-				65.16		
8004328	02/26/2026	PRINTED	000250	MC MASTER-CARR SUPPLY CO	131.03			
14888	58938309	720-5401-80301-				131.03		
8004329	02/26/2026	PRINTED	002332	MC PEEK DODGE OF ANAHEIM	531.08			
14889	56712	100-0000-15203-				531.08		
8004330	02/26/2026	PRINTED	020067	MEDIA CONTROL SYSTEMS LLC	800.00			
15055	00004330	100-1601-56999-				800.00		

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004331	02/26/2026	PRINTED	004378	RAFAEL MERCADO	7,976.75			
	DOC	INVOICE NO	ACCOUNT			AMOUNT		
	15072	7308	100-5601-56101-			4,576.75		
	15075	7309	100-5601-56101-			1,200.00		
	15078	7310	100-5601-56101-			2,200.00		
8004332	02/26/2026	PRINTED	001533	MERCHANTS BUILDING MAINTE	99,098.00			
	14688	937656	100-7203-56999-			24,774.50		
	14700	937654	100-7203-56999-			24,774.50		
	14708	937653	100-7203-56999-			24,774.50		
	14712	937655	100-7203-56999-			24,774.50		
8004333	02/26/2026	PRINTED	014455	MICHAEL BAKER INTERNATION	5,641.00			
	14853	1263543	510-7201-84101-			676.00		
	14858	1269707	510-7201-84101-			1,624.00		
	14864	1267667	510-7201-84101-			3,341.00		
8004334	02/26/2026	PRINTED	025284	MILLER MENDEL INC	10,528.50			
	14809	13008	100-4011-53202-			10,528.50		
8004335	02/26/2026	PRINTED	001867	MISSION LINEN SUPPLY	531.58			
	14801	525530469	100-4011-55999-			265.79		
	14802	525489540	100-4011-55999-			265.79		
8004336	02/26/2026	PRINTED	020752	BOSCO LEGAL SERVICES	1,465.17			
	15017	15026937	731-1301-55102-			174.14		
	15018	15026956	731-1301-55102-			170.00		
	15019	15026971	731-1301-55102-			191.03		
	15020	15026991	731-1301-55102-			190.00		
	15021	15026996	731-1301-55102-			190.00		
	15023	15027010	731-1301-55102-			190.00		
	15024	15027069	731-1301-55102-			190.00		
	15025	15027097	731-1301-55102-			170.00		
8004337	02/26/2026	PRINTED	019010	MOTOPORT USA	89.54			
	14804	3371	100-4011-53102-			89.54		
8004338	02/26/2026	PRINTED	000909	NATIONAL CONSTRUCTION REN	1,286.20			
	15057	8054386	100-7203-56301-			321.55		
	15058	8025761	100-7203-56301-			321.55		
	15059	8081528	100-7203-56301-			321.55		
	15060	8109716	100-7203-56301-			321.55		
8004339	02/26/2026	PRINTED	025213	NATIONAL DATA AND SURVEYI	6,520.00			
	14892	26- 010005	287-5704-87101-			6,520.00		
8004340	02/26/2026	PRINTED	025321	KIM THU NGUYEN	46.03			
	15103	00023087-00	600-0000-11106-			46.03		
8004341	02/26/2026	PRINTED	025322	ALEX NGUYEN	103.52			

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
15104		00104364-00		600-0000-11106-			103.52	
8004342	02/26/2026	PRINTED	001987	NIEVES LANDSCAPE LLC	271,107.56			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
14629	83581-January	100-7203-56999-				80,314.85		
14630	83321-December	100-7203-56999-				80,314.85		
14631	83807-February	100-7203-56999-				80,314.85		
14656	83808	291-5501-56103-				30,163.01		
8004343	02/26/2026	PRINTED	019237	EDINGER URGENT CARE MEDIC	575.00			
14899	00086289-00	100-1401-55101-				186.00		
14900	00086105-00	100-1401-55101-				279.00		
14958	00085746-00	731-1306-55999-				55.00		
15000	00086104-00	731-1306-55999-				55.00		
8004344	02/26/2026	PRINTED	020236	ONYX PAVING COMPANY INC	810,404.37			
14912	25-035-7	263-5101-87102-				123,955.81		
14912	25-035-7	270-5101-87102-				35,865.34		
14912	25-035-7	274-5101-87102-				487,768.69		
14912	25-035-7	500-5101-87102-				205,467.39		
8004345	02/26/2026	PRINTED	000096	ORANGE CNTY TREASURER-TAX	117.45			
14817	STTM003429	100-4011-53299-				117.45		
8004346	02/26/2026	PRINTED	000096	ORANGE CNTY TREASURER-TAX	21,859.33			
14819	SH73605	100-4134-55000-				4,153.00		
15039	SH73676	100-4134-55000-				17,706.33		
8004347	02/26/2026	PRINTED	006609	ORANGE CO SANITATION DIST	7,877.88			
14792	OCSD JANUARY 2026	100-0000-20302-				7,877.88		
8004348	02/26/2026	PRINTED	000610	ORANGE COAST PETRO EQUIP	237.05			
14805	0291321-IN	100-5401-56101-				237.05		
8004349	02/26/2026	PRINTED	000952	ORANGE COUNTY OVERHEAD DO	564.33			
15085	77752	100-5601-56101-				564.33		
8004350	02/26/2026	PRINTED	001406	ORANGE COUNTY TREASURER	57.07			
15100	PS469-1	100-4011-55104-				2,188.38		
15101	CMPS469	100-4011-55104-				-2,131.31		
8004351	02/26/2026	PRINTED	012836	ORANGE COUNTY WINWATER WO	1,970.48			
15073	182634 02	600-5803-53201-				259.47		
15073	182634 02	600-5803-54101-				1,711.01		
8004352	02/26/2026	PRINTED	001069	PARKHOUSE TIRE INC	285.99			
14977	1020302900	100-0000-15203-				285.99		
8004353	02/26/2026	PRINTED	019401	PENN CARE INC	250.83			
14794	A155185	100-0000-15203-				187.05		

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CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14795		A158048	100-0000-15203-			63.78	
8004354	02/26/2026	PRINTED	000314	PETE'S ROAD SERVICE INC	683.83			
	DOC	INVOICE NO		ACCOUNT			AMOUNT	
	14920	26-0898100-00		100-5401-56999-			448.83	
	14925	26-0898500-00		100-5401-56999-			235.00	
8004355	02/26/2026	PRINTED	000130	POWERSTRIDE BATTERY CO	315.28			
	14901	E698550		100-0000-15203-			1,300.12	
	15054	CME696846		100-0000-15203-			-984.84	
8004356	02/26/2026	PRINTED	019534	PVP COMMUNICATIONS	130.00			
	14919	137858		100-4141-56101-			130.00	
8004357	02/26/2026	PRINTED	002251	QUINN GROUP INC-MAINTENAN	500.06			
	14861	PC811067375		100-0000-15203-			42.29	
	14862	PC811067499		100-0000-15203-			457.77	
8004358	02/26/2026	PRINTED	025323	REAL ESTATE ESTABLISHMENT	139.72			
	15106	00061822-10		600-0000-11106-			139.72	
8004359	02/26/2026	PRINTED	000331	RED WING BUSINESS ADVANTA	1,773.85			
	14953	855ST1-3557677		730-1306-54101-			407.26	
	14954	855ST1-3620307		730-1306-54101-			232.73	
	14955	855ST1-3575116		730-1306-54101-			252.72	
	14957	855ST1-3653121		730-1306-54101-			242.42	
	15009	855ST1-3663140		730-1306-54101-			312.26	
	15010	855ST1-3664318		730-1306-54101-			326.46	
8004360	02/26/2026	PRINTED	020080	REPUBLIC EVS	596,766.24			
	14851	13163		720-5401-80301-			596,766.24	
8004361	02/26/2026	PRINTED	000372	SELMAN CHEVROLET CO	233.13			
	14840	653330		100-0000-15203-			153.17	
	14841	653952		100-0000-15203-			79.96	
8004362	02/26/2026	PRINTED	002187	SIEMENS INDUSTRY INC	28,832.51			
	14854	5332154259		902-1601-80299-			25,633.13	
	15112	5332305809		902-1601-80299-			3,199.38	
8004363	02/26/2026	PRINTED	025071	SIERRA ANALYTICAL LABS IN	1,751.25			
	14866	6B16039-		600-5802-55999-			270.00	
	14868	6B16021-		600-5802-55999-			138.75	
	14869	6B16023-		600-5802-55999-			138.75	
	14870	6B15008-		600-5802-55999-			182.50	
	14872	6B15028-		600-5802-55999-			357.50	
	14873	6B16013-		600-5802-55999-			663.75	
8004364	02/26/2026	PRINTED	014719	SITEONE LANDSCAPE SUPPLY	383.93			
	15027	162723958-001		600-5803-53201-			383.93	

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
8004365	02/26/2026	PRINTED	025320	CAROL SOMERS	120.99			
DOC	INVOICE NO	ACCOUNT				AMOUNT		
15102	00031673-02	600-0000-11106-				120.99		
8004366	02/26/2026	PRINTED	000718	SOUTH COAST AQMD	2,946.28			
14930	4664089	600-5802-56101-				170.94		
14933	4661004	600-5802-56101-				565.63		
14937	4663640	600-5802-56101-				170.94		
14944	4660864	600-5802-56101-				565.63		
14945	4671821	600-5802-56101-				170.94		
14946	4668315	600-5802-56101-				565.63		
14950	4668192	600-5802-56101-				565.63		
14952	4671022	600-5802-56101-				170.94		
8004367	02/26/2026	PRINTED	000386	SOUTHERN COUNTIES OIL CO	30,702.14			
14797	IN-0000838334	100-0000-15204-				30,702.14		
8004368	02/26/2026	PRINTED	000386	SOUTHERN COUNTIES OIL CO	23,746.86			
14796	IN-0000289848	100-0000-15205-				3,496.05		
14798	IN-0000291048	100-0000-15204-				6,794.62		
14798	IN-0000291048	100-0000-15205-				4,766.39		
14799	IN-0000292722	100-0000-15205-				3,099.52		
14803	IN-0000296309	100-0000-15205-				3,842.47		
14978	IN-0000300325	100-0000-15205-				1,747.81		
8004369	02/26/2026	PRINTED	020235	SOUTHERN TIRE MART LLC	1,318.27			
14971	7090062485	100-0000-15203-				748.16		
14973	7090062648	100-0000-15203-				570.11		
8004370	02/26/2026	PRINTED	020829	SP PLUS CORPORATION	25,940.45			
14832	83559-I1-0126F	100-4141-55999-				25,940.45		
8004371	02/26/2026	PRINTED	000396	STATE OF CALIF DEPT OF JU	1,050.00			
14821	021287	100-4011-55999-				1,050.00		
8004372	02/26/2026	PRINTED	001303	SUNRISE MULTISPECIALIST M	65.00			
14962	00204220-00	731-1306-55999-				65.00		
8004373	02/26/2026	PRINTED	020862	SWEENEY, LAUREN MARIE	900.00			
14975	FC6158F7-0047	100-1201-55999-				900.00		
8004374	02/26/2026	PRINTED	015776	THE COUNSELING TEAM INTER	375.00			
14960	INV108491	731-1306-55999-				375.00		
8004375	02/26/2026	PRINTED	018234	THE HUB OC	23,111.94			
15014	98	412-6431-55999-				11,003.59		
15015	99	412-6431-55999-				12,108.35		
8004376	02/26/2026	PRINTED	020346	THE WORLD FAMOUS PASCUAL	275.64			

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14800	000080	100-4011-53102-			275.64	
8004377	02/26/2026	PRINTED	000410 TILLEY CRANE INSPECTION S	2,700.00			
	DOC	INVOICE NO	ACCOUNT			AMOUNT	
	14979	26094	100-5401-56101-			2,700.00	
8004378	02/26/2026	PRINTED	016551 TIRE HUB LLC	1,486.65			
	14793	56447295	100-0000-15203-			940.98	
	14991	56730182	100-0000-15203-			545.67	
8004379	02/26/2026	PRINTED	000413 TOYOTA FINANCIAL SERVICES	498.35			
	14966	010272E8364 3/8/26	100-4121-56301-			498.35	
8004380	02/26/2026	PRINTED	000413 TOYOTA FINANCIAL SERVICES	498.54			
	14968	010272C5688 3/18/26	100-4132-56301-			498.54	
8004381	02/26/2026	PRINTED	000413 TOYOTA FINANCIAL SERVICES	491.77			
	14970	010272A1808 3/11/26	100-4133-56301-			491.77	
8004382	02/26/2026	PRINTED	000413 TOYOTA FINANCIAL SERVICES	533.78			
	14967	010272E6125 3/3/26	100-4133-56301-			533.78	
8004383	02/26/2026	PRINTED	000413 TOYOTA FINANCIAL SERVICES	498.74			
	14969	010272B3581 3/21/26	100-4133-56301-			498.74	
8004384	02/26/2026	PRINTED	000413 TOYOTA FINANCIAL SERVICES	498.76			
	14972	010272C4596 3/3/26	100-4132-56301-			498.76	
8004385	02/26/2026	PRINTED	019458 TUNNELWORKS SERVICES INC	44,053.06			
	14719	2187	601-5301-87102-			44,053.06	
8004386	02/26/2026	PRINTED	002977 TYLER TECHNOLOGIES INC	8,000.00			
	15071	045-552660	600-1843-80201-			395.36	
	15071	045-552660	790-1601-80299-			1,204.64	
	15079	045-553391	600-1843-80201-			1,581.44	
	15079	045-553391	790-1601-80299-			4,818.56	
8004387	02/26/2026	PRINTED	000001 U S ARMOR CORP	5,234.72			
	14813	51694	100-4011-54101-			3,000.03	
	14815	51768	100-4011-54101-			2,234.69	
8004388	02/26/2026	PRINTED	013781 ULTIMATE MAINTENANCE SERV	8,600.00			
	14603	36148	100-2101-53101-			8,600.00	
8004389	02/26/2026	PRINTED	020753 UNITED SAFETY SERVICES	344.36			
	15006	228140	730-1306-54101-			172.18	
	15007	228141	730-1306-54101-			86.09	
	15008	228142	730-1306-54101-			86.09	
8004390	02/26/2026	PRINTED	025286 UPCODES INC	1,404.00			

AP CHECK RECONCILIATION REGISTER

FOR CASH ACCOUNT: 998-0000-10000- FOR: All

CHECK #	CHECK DATE	TYPE	VENDOR	NAME	UNCLEARED	CLEARED	BATCH	CLEAR DATE
	14926		233428	210-6001-55105-			1,404.00	
8004391	02/26/2026	PRINTED	020018	HD SUPPLY INC	2,596.24			
	DOC	INVOICE NO		ACCOUNT			AMOUNT	
	14875	INV00958716		600-5802-53201-			2,596.24	
8004392	02/26/2026	PRINTED	002124	ALAN VELASCO	1,500.00			
	14833	EDU25/26		100-1401-57102-			1,500.00	
8004393	02/26/2026	PRINTED	001845	VERIZON WIRELESS	7,141.48			
	14928	6136234122		100-4011-56201-			190.09	
	14928	6136234122		100-4121-56201-			374.23	
	14928	6136234122		100-4134-56201-			20.02	
	14932	6136170558		100-4011-56201-			1,980.21	
	14932	6136170558		100-4121-56201-			116.49	
	14932	6136170558		450-4141-56201-			178.12	
	14934	6135762406		355-4011-56201-			4,282.32	
8004394	02/26/2026	PRINTED	000431	W W GRAINGER INC	390.92			
	14905	9804593219		600-5802-56102-			390.92	
8004395	02/26/2026	PRINTED	002319	WATERLINE TECHNOLOGIES	3,444.56			
	14838	5780981		600-5802-53201-			446.52	
	14842	5780982		600-5802-53201-			542.20	
	14843	5780983		600-5802-53201-			318.94	
	14844	5780984		600-5802-53201-			1,020.61	
	14845	5780985		600-5802-53201-			637.88	
	14846	5780987		600-5802-53201-			478.41	
8004396	02/26/2026	PRINTED	001267	WE DO GRAPHICS INC	1,034.40			
	14785	215807		600-5802-53199-			1,034.40	
8004397	02/26/2026	PRINTED	018330	WILCOX SUPPLY INC	329.21			
	14956	344184-1		100-0000-15203-			329.21	
8004398	02/26/2026	PRINTED	000448	WILLDAN ENGINEERING	27,629.21			
	14910	00423537		601-5101-85101-			13,776.00	
	15022	002-37315		100-6201-55999-			13,853.21	
8004399	02/26/2026	PRINTED	016092	WINZER CORPORATION	414.21			
	14974	3704770		100-0000-15203-			414.21	
8004400	02/26/2026	PRINTED	002801	YO FIRE SUPPLIES	2,743.32			
	14820	1037822		600-5803-81999-			2,743.32	
	142 CHECKS			CASH ACCOUNT TOTAL	3,396,808.29	.00		

AP CHECK RECONCILIATION REGISTER

		UNCLEARED	CLEARED
142 CHECKS	FINAL TOTAL	3,396,808.29	.00

** END OF REPORT - Generated by Jocelin Mendez **

City of Orange
Finance Department - PAYROLL

PAYROLL WARRANT INFORMATION

PAY PERIOD:	1/25/26 to 2/7/26		
PAYCHECK DATE:	Feb 13, 2026		
TOTAL AMOUNT (CHECKS & DIRECT DEPOSIT) :	$ 3,858,233.26		
Total Employees Paid:	*667*	***Total Vendors Paid :***	*24*

Requestor Signature:

In accordance with Government Code Section 37202, I hereby certify and attest that the referenced demand conforms with the approved budget. I also certify and attest to the accuracy of the demands and the availability of funds for payment thereof.

Please review and approve before: _____

Date: 2/24/26 Digitally signed by Pamela Coleman DN: cn=Pamela Coleman, ou=Civic Users Date: 2026.02.24 09:49:41 -08'00' *Trang Nguyen,* *Finance Director*	**Comments:**
Date: 2/24/26 Digitally signed by Pamela Coleman DN: cn=Pamela Coleman, ou=Civic Users Date: 2026.02.24 09:49:41 -08'00' *Pamela Coleman,* *City Clerk*	**Comments:**

City of Orange
Finance Department - PAYROLL

PAYROLL WARRANT INFORMATION

PAY PERIOD:	2/8/26 to 2/21/26		
PAYCHECK DATE:	Feb 27, 2026		
TOTAL AMOUNT (CHECKS & DIRECT DEPOSIT) :	$ 4,013,751.12		
Total Employees Paid:	*668*	***Total Vendors Paid :***	*26*

Requestor Signature:

In accordance with Government Code Section 37202, I hereby certify and attest that the referenced demand conforms with the approved budget. I also certify and attest to the accuracy of the demands and the availability of funds for payment thereof.

Please review and approve before: _____

Date: 3/3/26 Digitally signed by Pamela Coleman DN: cn=Pamela Coleman, ou=Civic Users Date: 2026.03.04 08:12:50 -08'00' *Trang Nguyen,* *Finance Director*	**Comments:**
Date: 3/4/26 Digitally signed by Pamela Coleman DN: cn=Pamela Coleman, ou=Civic Users Date: 2026.03.04 08:12:50 -08'00' *Pamela Coleman,* *City Clerk*	**Comments:**

Agenda Item

Orange City Council

Item #: 3.3. 3/10/2026 **File #:** 26-0108

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Pamela Coleman, City Clerk/City Clerk Services Director**

1. SUBJECT

Approval of minutes of the City of Orange City Council Regular Meeting held on February 24, 2026

2. SUMMARY

Submitted for your consideration and approval are the minutes of the above meeting.

3. RECOMMENDED ACTION

Approve minutes as presented.

4. ATTACHMENTS

- February 24, 2026, Regular Meeting minutes

Agenda Item

Orange City Council

Item #: 3.3. 3/10/2026 **File #:** 26-0108

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Pamela Coleman, City Clerk/City Clerk Services Director**

1. SUBJECT

Approval of minutes of the City of Orange City Council Regular Meeting held on February 24, 2026

2. SUMMARY

Submitted for your consideration and approval are the minutes of the above meeting.

3. RECOMMENDED ACTION

Approve minutes as presented.

4. ATTACHMENTS

- February 24, 2026, Regular Meeting minutes

MINUTES - DRAFT

City of Orange

Orange City Council

February 24, 2026

The City Council of the City of Orange, California convened on Tuesday, February 24, 2026, at 5:00 p.m. in a Regular Meeting in the Council Chamber, 300 E. Chapman Avenue, Orange, California.

5:00 PM CLOSED SESSION

1. CALL TO ORDER

1.1 ROLL CALL

Present: Barrios, Dumitru, Gutierrez, Tavoularis, Gyllenhammer, and Slater
Absent: Bilodeau

Councilmember Gutierrez joined Closed Session at 5:03 p.m.

2. PUBLIC COMMENTS ON CLOSED SESSION ITEMS

None

3. RECESS TO CLOSED SESSION

The City Council recessed to Closed Session at 5:02 p.m. with all Members present, except Councilmember Gutierrez who joined Closed Session at 5:03 p.m. and Mayor pro tem Bilodeau who was absent, to discuss the following:

a. CONFERENCE WITH LABOR NEGOTIATORS

Pursuant to Government Code Section 54957.6
City Negotiators: Jarad Hildenbrand, City Manager; Monica Espinoza, Human Resources Director; Cody Kleen, Assistant Human Resources Director
Employee Organizations: International Brotherhood of Electrical Workers (IBEW) Local 47 (Maintenance and Crafts and Water Division), Executive Management and Senior Management Employees, Orange City Firefighters, Orange City Fire Management Association, Orange Management Association, Orange Municipal Employees' Association, City of Orange Police Association, and City of Orange Police Management Association

4. CLOSED SESSION REPORT

None

5. ADJOURNMENT

Closed Session was adjourned at 5:50 p.m.

Draft

6:00 PM REGULAR SESSION

1. OPENING/CALL TO ORDER

Mayor Slater called the meeting to order at 6:02 p.m.

1.1 INVOCATION

Given by Reverend Nancy E. Brink, Executive Director of the Fish Interfaith Center at Chapman University.

1.2 PLEDGE OF ALLEGIANCE

Led by Councilmember John Gyllenhammer.

1.3 ROLL CALL

Present: Barrios, Dumitru, Gutierrez, Tavoularis, Gyllenhammer, and Slater
Absent: Bilodeau

1.4 PRESENTATIONS/ANNOUNCEMENTS

Proclamation honoring K-9 Nash for six years of service to the City of Orange

Orange High School Student Liaison Jacob Gonzalez provided Council with a brief update on school happenings.

1.5 REPORT ON CLOSED SESSION ACTIONS

None

2. PUBLIC COMMENTS

Public Speakers:
Greg Arrowsmith spoke regarding statistics related to California correctional facilities.
Reggie Mundekis encouraged Council to support the International Brotherhood of Electrical Workers (IBEW) and all employee bargaining groups.
Marci Carey spoke regarding federal immigration issues.
Michael Ristig spoke regarding federal immigration issues.
Ryan Johnson spoke about the use of non-sworn Community Service Officers to supplement Police Department staffing.
Lynnette Gertz spoke regarding federal immigration issues.
Mel Vernon announced a "No Kings" event at Yorba Park on March 28.
Mary Oberschlake commented on federal immigration offices in Orange County.
Chip O'Neal encouraged Council to adopt a resolution stating the City would not assist federal immigration officers.
Carole Walters inquired about parking meter funds.
David Casselman expressed support for Ukraine and commented on his First Amendment rights.
Lisa Baldwin spoke about the notice mailed to residents regarding a proposed development at the former Best Buy site.
Shawn Donnelly, City of Orange Water Division employee, talked about labor negotiations and the retention of Water Division employees.

Draft

Josh Borden, City of Orange Water Division employee, stated the City of Orange is the lowest paid City in the area and discussed retention concerns, noting employees are trained by the City and subsequently leave for other jurisdictions.
Steven Borden spoke regarding the automation of street sweeping parking citations.
Paul (no last name given) suggested adding 15-minute parking spaces in Old Towne.

Written Public Comments
Janice Brownfield emailed about the dangers of air pollution.
Matin Sharifinejad submitted an eComment concerning the impact that the ban on tobacco sales from 2 a.m. to 6 a.m. has had on his business.

3. CONSENT CALENDAR

All items on the Consent Calendar are considered routine and are enacted by one motion approving the recommended action listed on the Agenda. Any member of the City Council, staff, or the public may request an item be removed from the Consent Calendar for discussion or separate action. Unless otherwise specified in the request to remove an item from the Consent Calendar, all items removed shall be considered immediately following action on the remaining items on the Consent Calendar.

3.1. Waive reading in full of all ordinances on the Agenda.

ACTION: Approved.

3.2. Approval of minutes of the City of Orange City Council Special Meeting held on February 5, 2026, and Regular Meeting held on February 10, 2026.

ACTION: Approved minutes as presented.

3.3. Agreement with Lance, Soll & Lunghard, LLP for annual financial audit services for the City and the Successor Agency of the former Orange Redevelopment Agency for Fiscal Year 2025-2026 and 2026-2027 and an Agreed-Upon Procedures for Payroll.

ACTION: Approved the agreement with Lance, Soll & Lunghard, LLP in the amount of $185,240 for audit services and Agreed-Upon Procedures for Payroll; and authorized the Mayor and City Clerk to execute on behalf of the City.

3.4. Agreement with Officer Logan Shryock for the transfer of ownership of police service dog, Nash, assigned to the Police Department's canine team.

A speaker card was submitted for Item 3.4; therefore, the item was removed from the Consent Calendar for separate consideration.

Public Speaker:
David Casselman spoke in support.

ACTION: A motion was made by Councilmember Dumitru, seconded by Councilmember Barrios, to approve the agreement with Logan Shryock to transfer ownership of canine Nash; and authorize the Mayor and City Clerk to execute on behalf of the City. The motion carried by the following vote:

Ayes: Barrios, Dumitru, Gutierrez, Tavoularis, Gyllenhammer, and Slater
Noes: None
Absent: Bilodeau

Draft

3.5. First Amendment to Agreement with Tetra Tech, Inc. for additional design services for Well 29 Equipping.

ACTION: Approved the First Amendment with Tetra Tech, Inc. in the amount of $191,200; and authorized the Mayor and City Clerk to execute on behalf of the City.

3.6. Appropriation of $10,689 in designated grant funding received from California Library Association and California State Library.

ACTION: 1) Accepted into the City's General Fund (100) revenue budget $10,689 in grant funds from California Library Association and California State Library to:
100-2101-43201-262110-48 Lunch at the Library Grant FY26
2) Authorized the appropriation of $10,689 to General Fund (100):
100-2316-53101-262110-20 Operating Materials & Supplies

3.7. Appropriation of $55,000 from the County of Orange for the 2025 Proposition 69 funding award and approval of purchase of a forensic imaging and evidence detection device from Foster & Freeman USA Inc.

ACTION: 1) Accepted into the City's Reimbursable Capital Projects (550) revenue budget $55,000 in 2025 Proposition 69 funding from the County of Orange to:
550-4134-43299-264067 State - Other
2) Authorized the appropriation of $55,000 into Reimbursable Capital Projects (550):
550-4134-80101-264067 Equipment - Prop 69 2025
3) Approved the sole source purchase of the Crime-Lite AUTO device from Foster & Freeman USA Inc. for $54,831.94.

3.8. Authorize an increase to two purchase orders for medical supplies and essential equipment repairs for the Emergency Medical Transport Program.

ACTION: 1) Approved an increase to a blanket purchase order for a total not-to-exceed amount of $375,000 with Life Assist, Inc. for medical supplies; and 2) Approved an increase to a blanket purchase order for a total not-to-exceed amount of $85,000 with Stryker Medical Supplies for medical supplies and other professional services.

3.9. Authorize purchase of replacement public use desktop computers and laptops from CPAC, Inc.

ACTION: Approved the purchase order for replacement public use desktop computers and laptops from CPAC, Inc. for $80,000.

3.10. Annual Comprehensive Financial Report and related financial reports for the Fiscal year ended June 30, 2025.

ACTION: Receive and file the following documents for the fiscal year ended June 30, 2025:
1) Annual Comprehensive Financial Report
2) Audit Communication Letter
3) Independent Accountants' Report on Agreed-Upon Procedures Applied to the Appropriations Limit Worksheets
4) Independent Accountants' Report on Agreed-Upon Procedures Applied to the Investment Portfolio
5) Air Pollution Reduction Fund Financial Statements and Independent Auditors' Report

Draft

6) Independent Auditors' Report on Internal Control Over Financial Reporting
7) Housing Successor Fund Financial Statements

Approval of the Consent Calendar

Item 3.4 was removed from the Consent Calendar and heard separately. All other items were approved as recommended.
A motion was made by Councilmember Tavoularis, seconded by Councilmember Dumitru, to approve the Consent Calendar as recommended. The motion carried by the following vote:

Ayes: Barrios, Dumitru, Gutierrez, Tavoularis, Gyllenhammer, and Slater
Noes: None
Absent: Bilodeau

END OF CONSENT CALENDAR

* * * * * * * *

4. REPORTS FROM MAYOR SLATER

4.1. Discuss reinstating sidewalk steam cleaning services for the Plaza in Old Towne.

Mayor Slater proposed reinstating sidewalk steam cleaning services in Old Towne. Council discussed the cost associated with restoring weekly and monthly cleanings, the possibility of adding the Lemon Street parking structure to the cleaning schedule, and the addition of security cameras in the parking structure stairwells.

Public Speakers:
The following spoke in support of reinstating the cleaning services: AJ Ricci, Brandy Romero, Lisa Baldwin, Steve Molina, and Tim Mabshi.

With Council concurrence, staff was directed to restore cleaning efforts within the City Manager's signing authority.

RECESS: The City Council recessed at 7:32 p.m. and reconvened at 7:47 p.m. with all Members present, except Mayor pro tem Bilodeau who was absent.

4.2. Discuss updating the standards for paving, driveway widths, and parking in setback areas.

Mayor Slater noted an increase in the amount of vehicles parked in single driveways and requested consensus to direct staff to revise standards related to paving, driveway widths, and parking within setback areas.

Public Speaker:
Douglas Newall spoke about the need for updated standards, noting that accessory dwelling units (ADUs) have contributed to an increase in the number of vehicles per household.

With Council concurrence, staff was directed to return with a report on driveway parking standards and the boarding house ordinance.

4.3. Additional Reports from Mayor Slater

Mayor Slater made a brief announcement about the current vacancies on various Boards, Commissions, and Committees.

5. REPORTS FROM COUNCILMEMBERS

Councilmember Barrios requested that the Tobacco Ordinance be brought back to Council for further updates.

Councilmember Gutierrez thanked Orange Police Department for keeping students safe during the recent walkouts while allowing them to exercise their constitutional rights.

Councilmember Tavoularis thanked the community for organizing a cleanup on Canal Street and announced an Open House for the Heim & Meats specific plan on February 26, 2026.

6. AB 1234 REPORTS

None

7. REPORTS FROM CITY MANAGER

None

8. ADMINISTRATIVE REPORTS

8.1. Lottery selection for permits to sell safe and sane fireworks.

Staff provided a brief report noting that the three high schools identified in Resolution No. 11648 (Orange High School, El Modena High School, and Richland High School) have indicated their intent to move forward with the permitting process. Staff then conducted the random lottery. The results were as follows:
1) Greater Orange Community Arts Theater Foundation (GOCAT)
2) Orange Plaza Rotary Club
3) Cedar Tree Music and Performance
4) Young Life
5) Santiago Canyon College Foundation
6) Orange Lutheran High School
7) McPherson Educational Foundation
8) Journey to Hope Ministries
9) Orange Antlers #1475/Orange Elks Lodge #1475

The following alternate organizations were selected:
1) Rest Ezzz Foundation
2) The Church of God of Prophecy Orange
3) Homeless Intervention Services of Orange County
4) Father JJ Juba Council 4922 Knights of Columbus
5) Love Orange

Draft

6) House of Mercy

Draft

8.2. Review of the Santiago Creek Commission Strategic Plan.

Deputy City Manager Jack Morgan presented the Santiago Creek Commission Strategic Plan. Council expressed strong support for the plan and discussed options for implementation.

Public Speakers:
Pamela Galera, Santiago Creek Commission Vice Chair, spoke in support of adoption and expressed interest in collaborating with grant writers to advance the plan.
Adrienne Gladson spoke in support of adoption and implementation of the plan.
Theresa Sears spoke in support of adoption and implementation of the plan.

A motion was made by Councilmember Dumitru, seconded by Councilmember Barrios, to adopt the Santiago Creek Strategic Plan. The motion carried by the following vote:
Ayes: Barrios, Dumitru, Gutierrez, Tavoularis, Gyllenhammer, and Slater
Noes: None
Absent: Bilodeau

A motion was made by Mayor Slater, seconded by Councilmember Gutierrez, to direct the Santiago Creek Commission to collaborate with Townsend Public Affairs to identify potential grant opportunities and engage community groups to implement the recommendations detailed in the plan. The motion carried by the following vote:
Ayes: Barrios, Dumitru, Gutierrez, Tavoularis, Gyllenhammer, and Slater
Noes: None
Absent: Bilodeau

9. ADJOURNMENT

There being no further business, the meeting was adjourned at 8:44 p.m. in Memory of former City employee Viviano Cortez.

The next Regular City Council meeting will be held on Tuesday, March 10, 2026, at 6:00 p.m., in the Council Chamber, with Closed Session beginning at 5:00 p.m., if necessary.

PAMELA COLEMAN
CITY CLERK

DANIEL R. SLATER
MAYOR

Draft

Agenda Item

Orange City Council

Item #: 3.4. 3/10/2026 **File #:** 26-0074

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Cooperative Agreement by and between the cities of Anaheim, Brea, Fullerton and Orange for the State College Boulevard/The City Drive Regional Traffic Signal Synchronization Project

2. SUMMARY

The OCTA Board approved competitive Measure M2 grant funding for an inter-jurisdictional traffic signal enhancement project along the State College Boulevard/City Drive corridor. This Cooperative Agreement establishes the respective responsibilities of each of the four participating agencies. Orange is responsible for 20 percent of project costs within the city limits.

3. RECOMMENDED ACTION

1. Approve the Cooperative Agreement with the cities of Anaheim, Brea, and Fullerton for the implementation of State College Boulevard/The City Drive Regional Traffic Signal Synchronization Project; and authorize the City Manager and City Clerk to execute on behalf of the City.

2. Authorize the appropriation of $200,000 from the Measure M - Traffic Improvement (263) unreserved fund balance to:

   263-5704-87101-265105 State College Blvd Traffic Signal Synchronization

4. FISCAL IMPACT

The expense for this cooperative agreement is $200,000 and will be funded through Measure M - Traffic Improvement (263):

263-5704-87101-265105 State College Blvd Traffic Signal Synchronization

Upon approval of this appropriation, the estimated Measure M - Traffic Improvement (263) fund balance on June 30, 2026, will be $6,468,215.07.

5. STRATEGIC PLAN GOALS

Goal 5: Improve infrastructure, mobility, and technology.

6. DISCUSSION AND BACKGROUND

In August 2024, Orange County Transportation Authority (OCTA) issued a call for projects for coordinating traffic signals across multiple jurisdictional boundaries as part of the Renewed Measure

M (M2) Regional Traffic Signal Synchronization Program (referred to as Project P) to enhance countywide traffic flow and reduce congestion.

In response to the call, the City of Anaheim, with the participation of the cities of Orange, Fullerton and Brea, initiated an application and was awarded Measure M2 funds for the synchronization of the traffic signals along the State College Boulevard/The City Drive Corridor. As a requirement of the grant application process, the Orange City Council adopted Resolution No. 11590 in January 2025, which enabled OCTA to allocate funds from the Comprehensive Transportation Funding Programs to this project.

The 11-mile State College Boulevard/The City Drive corridor, between Cliffwood Avenue in the City of Brea and Garden Grove Boulevard in Orange, includes 58 traffic signals across five jurisdictions: Santa Ana, Orange, Brea, Placentia, Caltrans, and Anaheim. Within the City of Orange, the corridor spans approximately one mile along The City Drive and includes seven intersections from Orangewood Avenue to Garden Grove Boulevard. In addition to signal timing changes, the project will include traffic signal equipment and modifications identified in the application. For the City of Orange, equipment upgrades include installation of fiber optic cable, controller and cabinet upgrades, and new video detection systems.

The total project cost is $4,702,863.50. The participating agencies agreed to a combined cash and in-kind (staffing commitments and equipment purchases) match of $940,572.70, representing approximately twenty percent (20%) of the total project cost. The City of Orange has a local match (fair share) of $185,621.20. The proposed $200,000 appropriation is expected to cover our local match and provide for a small contingency.

The attached Cooperative Agreement describes the duties and responsibilities, including funding obligations of all the participating agencies. The City of Anaheim has agreed to act as the implementing agency to carry out project implementation. Participating agencies will be responsible for coordinating the installation of their elements during the course of the project and on-going maintenance and operation after the three-year grant period. When completed, vehicular traffic in a synchronized corridor will often pass through a longer series of green lights before stopping.

7. ATTACHMENTS

- Attachment 1 Cooperative Agreement
- Attachment 2 Project Corridor Map
- Attachment 3 Resolution No. 11590

Agenda Item

Orange City Council

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7. ATTACHMENTS

- Attachment 1 Cooperative Agreement
- Attachment 2 Project Corridor Map
- Attachment 3 Resolution No. 11590

COOPERATIVE AGREEMENT BY AND BETWEEN THE CITIES OF ANAHEIM, BREA, FULLERTON, AND ORANGE FOR THE STATE COLLEGE BOULEVARD / THE CITY DRIVE REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROJECT

This Cooperative Agreement ("Agreement") is made and entered into this _____ day of _____ _____, 2026, by and between the CITY OF ANAHEIM, a municipal corporation ("ANAHEIM"), the CITY OF BREA, a municipal corporation ("BREA"), the CITY OF FULLERTON, a municipal corporation ("FULLERTON"), and the CITY OF ORANGE, a municipal corporation ("ORANGE").

RECITALS:

A. Anaheim, with cooperation from Brea, Fullerton, and Orange, applied for a grant from the Orange County Transportation Authority ("OCTA") as part of Renewed Measure M2 Regional Traffic Signal Synchronization Program ("RTSSP") (Project P), aimed to coordinate traffic signals across multiple jurisdictions to enhance countywide traffic flow and reduce congestion.

B. The State College Boulevard/ The City Drive Regional Traffic Signal Synchronization Project was selected by OCTA as one of the RTSSP Projects to be funded in OCTA Fiscal Year 2025-2026. The project will include timing implementation and improvements at traffic signals along State College Boulevard/The City Drive, from Cliffwood Avenue in Brea to Garden Grove Bl in City of Orange, as listed in the Project Application attached hereto as Exhibit B and incorporated herein by this reference.

C. The total budget for the project is $4,702,863.50. 80% ($3,762,290.80) is funded by the OCTA Regional Traffic Signal Synchronization Program and 20% ($940,572.70) is local agencies matching funds. The breakdown is shown in Exhibit A attached hereto and incorporated herein by this reference.

D. Anaheim, Brea, Fullerton, and Orange agree to provide twenty percent (20%) matching funds for the total project cost. Matching funds can be a combination of cash and in-kind match as defined by the RTSSP grant.

E. OCTA and Anaheim have entered into a Master Funding Agreement "Cooperative Agreement No. C-1-2754" defining the terms and conditions for approved Measure M2 projects that will be implemented by Anaheim.

F. Anaheim agrees to serve as the lead agency to oversee the design and implementation of the project.

G. Anaheim, Brea, Fullerton, and Orange desire to enter into this Cooperative Agreement to demonstrate their commitment to implement the project and improve inter-jurisdiction traffic signal synchronization on State College Boulevard/The City Drive.

H. This cooperative agreement defines the specific terms, conditions and funding responsibilities between Anaheim, Brea, Fullerton, and Orange for the implementation of the project.

NOW, THEREFORE, it is mutually understood and agreed by and between ANAHEIM, BREA, FULLERTON, and ORANGE as follows:

I. SCOPE:

This Agreement specifies the roles and responsibilities of the cities as they pertain to the subjects and projects addressed herein. The project is specifically detailed in the Project Application attached hereto as Exhibit B and incorporated herein by this reference. All of the cities agree that each will cooperate and coordinate with the other in all activities covered by this Agreement and any other supplemental agreements that may be required to facilitate purposes thereof.

II. MUTUAL RESPONSIBILITIES:

Anaheim, Brea, Fullerton, and Orange mutually agree to:

a. Designate a lead staff to act as the liaison for the project. The liaison and any other project personnel, if necessary, will attend and participate in all related project meetings.

b. Participate, cooperate and coordinate with contractors, consultants, vendors and staff in good faith using reasonable efforts to resolve any unforeseen issues and disputes arising out of the project to the extent practicable with respect to the performance of the project.

c. Maintain project related traffic signals and telecommunications equipment with high priority during the project and be responsible for repair of their own signal control systems in each of their respective jurisdictions.

d. Provide on-site support for signal control systems, timing plans, detection systems and related equipment during construction, installation and integration, and be available to change or make adjustments to timing plans when necessitated by the project.

e. Document in-kind match or dollar match funding as identified in the project application and provide verification of such expenditures as part of any review or audit process, which may include payroll records, contracts and purchase orders.

f. Monitor and operate the project traffic signals and improvements within its jurisdiction for a period of two (2) years following the completion of the Primary Implementation Phase of the project, as required by the program funding.

g. Coordinate the inclusion of other improvements and in-kind services, where necessary, that the owning agency requires for the implementation of the project but are not included in the project application. The owning agency shall be responsible for the inclusion of such elements within reason and at its own costs.

h. Unused project funds for improvements from one City can be used by another City (with matching fund responsibility) upon mutual consent of the involved parties.

III. RESPONSIBILITIES OF ANAHEIM:

Anaheim agrees to the following responsibilities:

a. Anaheim shall serve as lead agency for design, construction and construction management of the project, and shall provide oversight by establishing milestones and overseeing the project development to ensure that all standards and requirements set forth by the agreement is adhered to.

b. Anaheim shall be responsible for completing the project in accordance with the funding guidelines and any and all other OCTA requirements related to these funding programs. Anaheim shall maintain coordination with all participating agencies throughout the duration of the project.

c. Anaheim shall provide staff, consultants, and contractors deemed necessary and appropriate to manage, administer, coordinate, and oversee timing implementation, engineering design, bid and award, and construction management of the project.

d. Anaheim shall enter into an agreement with a qualified consultant and contractor to assist in the completion and monitoring of the project.

e. Anaheim shall enter into any required Cooperative Agreement with Caltrans regarding Caltrans Improvements in cities; to comply with all the terms and conditions of said Cooperative Agreement; to pay invoices for such Caltrans Improvements as required by Caltrans; and to invoice participating agencies in a timely manner with detailed documentation of said Caltrans Improvements

f. Anaheim shall coordinate the work effort of this Project, provide the day-to-day management of the consultant and manage all consultant administration and contracting. Anaheim shall review the consultant's invoices and pay them accordingly after ensuring that the work has been adequately performed by the consultant.

g. Anaheim shall provide its share of matching fund as shown in Exhibit A attached hereto and incorporated herein by this reference. The final amount may vary and will be based on the 20% of actual cost of implementing all timing, improvements and maintenance, as identified in the project application.

h. Upon issuance of a Notice to Proceed to the Consultant, Anaheim can issue invoices to Brea, Fullerton, and Orange for up to 80% of the cash match amount identified in Exhibit A. The remaining cash match amount will be invoiced after completion of the Primary Implementation Phase of the project.

i. Anaheim shall comply with all of the terms and conditions of the Cooperative Agreement with OCTA, including the Project Reporting and Audit Requirements contained therein.

IV. RESPONSIBILITIES OF BREA:

Brea agrees to the following responsibilities:

a. Brea shall provide its share of matching funds as shown in Exhibit A. The final amount may vary and will be based on the 20% of actual cost of implementing all timing, improvements, and maintenance, as identified in the project application.

b. Brea shall provide Construction Inspection on all improvements within its jurisdiction. No additional compensation from the project is provided for providing inspection services.

c. Brea shall waive all costs and fees related to any and all permits, if such permits are required to perform any project related work within its jurisdiction.

V. RESPONSIBILITIES OF FULLERTON:

Fullerton agrees to the following responsibilities:

a. Fullerton shall provide its share of matching funds as shown in Exhibit A. The final amount may vary and will be based on the 20% of actual cost of implementing all timing, improvements and maintenance, as identified in the project application.

b. Fullerton shall provide Construction Inspection on all improvements within its jurisdiction. No additional compensation from the project is provided for providing inspection services.

c. Fullerton shall waive all costs and fees related to any and all permits, if such permits are required to perform any project related work within its jurisdiction.

VI. RESPONSIBILITIES OF ORANGE:

Orange agrees to the following responsibilities:

a. Orange shall provide its share of matching funds as shown in Exhibit A. The final amount may vary and will be based on the 20% of actual cost of implementing all timing, improvements and maintenance, as identified in the project application.

b. Orange shall provide Construction Inspection on all improvements within its jurisdiction. No additional compensation from the project is provided for providing inspection services.

c. Orange shall waive all costs and fees related to any and all permits, if such permits are required to perform any project related work within its jurisdiction.

VII. COMPLETE AGREEMENT:

a. This Agreement, including any attachments incorporated herein and made applicable by reference, constitutes the complete and exclusive statement of the terms and conditions of this Agreement between ANAHEIM, BREA, FULLERTON, and ORANGE and it supersedes all prior representations, understandings, and communications between the parties. The invalidity in whole or in part of any term or condition of this Agreement shall not affect the validity of other term(s) or conditions(s) of this Agreement. The above referenced Recitals are true and correct and are incorporated by reference herein.

b. Any modification of this Agreement shall only be by amendment upon written mutual consent of all cities. All modifications, amendments, changes and revisions of this Agreement in whole or in part, and from time to time, shall be binding upon the cities so long as the same shall be in writing and executed by each agency.

c. A party's failure to insist on any instance(s) of any other party's performance of any term(s) or condition(s) of this Agreement shall not be construed as a waiver of the non-enforcing party's right to such performance or to future performance of such term(s) or condition(s), and the nonperforming party's obligation in respect thereto shall continue in full force and effect. Changes to any portion of this Agreement shall not be binding upon either party except when specifically confirmed in writing by way of a written amendment to this Agreement between the parties and issued in accordance with the provisions of this Agreement.

VIII. INSURANCE AND INDEMNIFICATION:

a. Each city shall jointly and severally indemnify, defend and hold harmless every other city, it's officers, directors, employees and agents from and against any and all claims for any loss or damages, bodily injuries, damage to, or loss of property caused by the negligent acts, omissions or willful misconduct by that city, its officers, directors, employees or agents in connection with or arising out of the performance of this Agreement.

b. Each city shall maintain adequate levels of insurance, or self-insurance to assure full indemnification of every other city.

IX. ADDITIONAL PROVISIONS:

a. Term of Agreement: This Agreement shall commence on the date first written above and continue in full force and effect until December 31, 2032. This Agreement may be extended at the mutual consent of all parties in writing.

b. ANAHEIM, BREA, FULLERTON, and ORANGE hereto affirm that they are authorized to execute this Agreement on behalf of said parties and that, by so executing this agreement, the parties hereto are formally bound to the provisions of this Agreement.

c. Severability: If any term, provision, covenant or condition of this Agreement is held to be invalid, void or otherwise unenforceable, to any extent, by any court of competent jurisdiction, the remainder of this Agreement shall not be affected thereby, and each term, provision, covenant or condition of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

d. Counterparts of Agreement: This Agreement may be executed and delivered in any number of counterparts, each of which, when executed and delivered shall be deemed an original and all of which together shall constitute the same agreement. Facsimile and electronic signatures will be permitted.

e. In the event that the project costs exceed the estimates submitted in the Project Application as prepared, all parties agree to meet and determine project revisions to

meet the budget, or a revised funding proposal by the cities that shall be documented and submitted in writing as a revision to the Agreement.

f. The parties shall comply with all applicable federal, state and local laws, statutes, ordinances and regulations of any governmental agency having jurisdiction over the project.

g. Force Majeure: Any party shall be excused from performing its obligations under this Agreement during the time and to the extent that it is prevented from performing by an unforeseeable cause beyond its control, including, but not limited to: any incidence of fire, flood; acts of God; commandeering of material, products, plants or facilities by the federal, state or local government; national fuel shortage; or, a material act or omission by the other party; when satisfactory evidence of such cause is presented to the other parties, and provided further that such nonperformance is unforeseeable, beyond the control and is not due to the fault or negligence of the party not performing.

h. Assignment: Neither this Agreement, nor any of the parties' rights, obligations, or duties hereunder may be assigned in whole or in part by any party without the prior written consent of all the other parties in their sole and absolute discretion. Any such attempt of assignment shall be deemed void and of no force and effect. Consent to one assignment shall not be deemed consent to any subsequent assignment, nor the waiver of any right to consent to such subsequent assignment.

i. Obligations To Comply with Law: Nothing herein shall be deemed nor construed to authorize or require any party to issue bonds, notes or other evidences of indebtedness under the terms, in amounts, or for purposes other than as authorized by local, state or federal law.

j. Governing Law: The laws of the State of California and applicable local and federal laws, regulations and guidelines shall govern this Agreement.

k. Litigation fees: Should litigation arise out of this Agreement for the performance thereof, the court shall award costs and expenses, including attorney's fees, to the prevailing party.

l. Notices: Any notices, requests, or demands made between the parties pursuant to this Agreement are to be directed as follows:

City of Anaheim
Public Works Department – Traffic Management Center
201 S. Anaheim Blvd, Suite 502
Anaheim, CA 92805
Jane Keely
Principal Traffic Engineer
714-765-5202
jkeely@anaheim.net

City of Brea
Public Works Department
1 Civic Center Circle
Brea, CA 92821
Ryan Chapman
City Engineer
714-990-7763
ryanch@cityofbrea.gov

City of Fullerton
Public Works Department
303 W Commonwealth Avenue
Fullerton, CA 92832
Michael Plotnik
City Traffic Engineer
714-738-6864
michael.plotnik@cityoffullerton.com

City of Orange
Public Works Department
300 E. Chapman Avenue
Orange, CA 92866
Gabrielle Hayes
Principal Civil Engineer
714-744-5561
ghayes@cityoforange.org

X. DELAGATED AUTHORITY:

The actions required to be taken by the cities in the implementation of this Agreement are delegated to its City Manager or equivalent designee.

[SIGNATURES ON SUBSEQUENT PAGES]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the date and year first above written:

CITY OF ANAHEIM:

_____
Jim Vanderpool
City Manager

ATTEST:

_____
Theresa Bass
City Clerk

APPROVED AS TO FORM:
ROBERT FABELA, CITY ATTORNEY

_____
Bryn M. Morley
Deputy City Attorney
157425

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the date and year first above written:

CITY OF BREA:

_____
Kristin Griffith
City Manager

ATTEST:

_____
Victoria Popescu
City Clerk

APPROVED AS TO FORM:

_____
Terence Boga
City Attorney

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the date and year first above written:

CITY OF FULLERTON:

_____
Eddie Manfro
Interim City Manager

ATTEST:

_____
Lucinda Williams
City Clerk

APPROVED AS TO FORM:

_____
Richard D. Jones
City Attorney

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the date and year first above written:

CITY OF ORANGE:

_____
Jarad L. Hildenbrand
City Manager

ATTEST:

_____
Pamela Coleman
City Clerk

APPROVED AS TO FORM:

_____
Nathalie Adourian √
City Attorney

EXHIBIT A

State College Boulevard / The City Drive Corridor Regional Traffic Signal Synchronization Program (RTSSP)

Project Funds Breakdown

Agency	Project Cost	Project Cost	M2 Grant (80%)	City Match* (20%)
Brea	**PI**	$ 376,442.50	$ 301,154.00	$ 75,288.50
	O&M	$ 63,800.00	$ 51,040.00	$ 12,760.00
	City Total	$ 440,242.50	$ 352,194.00	$ 88,048.50
Fullerton	**PI**	$ 937,675.00	$ 750,140.00	$ 187,535.00
	O&M	$ 75,400.00	$ 60,320.00	$ 15,080.00
	City Total	$ 1,013,075.00	$ 810,460.00	$ 202,615.00
Anaheim	**PI**	$ 2,188,040.00	$ 1,750,432.00	$ 437,608.00
	O&M	$ 133,400.00	$ 106,720.00	$ 26,680.00
	City Total	$ 2,321,440.00	$ 1,857,152.00	$ 464,288.00
Orange	**PI**	$ 864,306.00	$ 691,444.80	$ 172,861.20
	O&M	$ 63,800.00	$ 51,040.00	$ 12,760.00
	City Total	$ 928,106.00	$ 742,484.80	$ 185,621.20
	TOTAL	**$ 4,702,863.50**	**$ 3,762,290.80**	**$ 940,572.70**

*: Total match amount may vary; the final match amount will be based on the actual project implementation costs, to be determined at completion of the Primary Implementation Phase of the project.

EXHIBIT B

State College Boulevard / The City Drive Corridor Regional Traffic Signal Synchronization Program (RTSSP)

Project Application

FY 2025 Call for Projects

Regional Traffic Signal Synchronization Program

Project P

Supplemental Application

State College Boulevard / The City Drive Regional Traffic Signal Synchronization Program Project

10/24/2024
Application Deadline

Project Overview

Length of Corridor (mi):	11.3
Number of signals:	58
Total Project Cost:	$4,702,863.50
M2 funds requested:	$3,762,290.80
Total Match:	$940,572.70
Cash Match:	*$940,572.70*
In-kind Match:	*$0.00*
Participating Agencies:	Anaheim
	Brea
	Fullerton
	Orange
	Caltrans

Applicant Agency: City of Anaheim

Contact Name: John Thai

Contact Number: 714-765-5202

Contact Email: jthai@anaheim.net

Project P Regional Traffic Signal Synchronization Program
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RTSSP Online Application – submitted through OCFundTracker	
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c. Project Characteristics	
d. Project Scale	
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g. Funding Match	
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c. Project Length	1
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SECTION 1: KEY TECHNICAL INFORMATION

a. Project Corridor
State College Boulevard / The City Drive Regional Traffic Signal Synchronization Program Project

b. Project Limits:
from **Cliffwood Ave** to **Garden Grove Bl**

c. Project Length (*miles*):
11.32

d. Number of signalized intersections along the corridor (include all Caltrans intersections):
58 number of signals on project corridor(s) **0** number of offset signals included in this project

e. Participating agencies / Traffic Forum Members (*including applicant agency*):

☐ Aliso Viejo	☐ Cypress	☐ La Habra	☐ Los Alamitos	☐ San Juan Capistrano
☑ Anaheim	☐ Dana Point	☐ La Palma	☐ Mission Viejo	☐ Santa Ana
☑ Brea	☐ Fountain Valley	☐ Laguna Beach	☐ Newport Beach	☐ Seal Beach
☐ Buena Park	☑ Fullerton	☐ Laguna Hills	☑ Orange	☐ Stanton
☑ Caltrans	☐ Garden Grove	☐ Laguna Niguel	☐ Placentia	☐ Tustin
☐ Costa Mesa	☐ Huntington Beach	☐ Laguna Woods	☐ Rancho Santa Margarita	☐ Villa Park
☐ County of Orange	☐ Irvine	☐ Lake Forest	☐ San Clemente	☐ Westminster
				☐ Yorba Linda

f. Lead Agency ☑ **Anaheim**

g. Is this project on either the Signal Synchronization Network or Master Plan of Arterial Highways?
◉ Yes ○ No

h. Project Start Date: **October 1, 2025** Project End Date: **December 31, 2029**

i. Project Status and Baseline Participation
None
Yes, all applicant agencies and project signals are participating in the Countywide Baseline Project

j. Contact Information (Include name, title, agency, phone, email, and address)

John Thai, PE, Principal Engineer City of Anaheim - Traffic Management Center 201 S Anaheim Bl Suite #502 Anaheim, CA 92805 jthai@anaheim.net 714-765-5202	Ryan Chapman, City Engineer City of Brea - Brea Civic & Cultural Center 1 Civic Center Circle Brea, CA 92821 ryanch@ci.brea.ca.us (714) 990-7763
Michael Plotnik, PE,TE, City Traffic Engineer City of Fullerton 303 W Commonwealth Ave Fullerton, CA 92832 Michael.Plotnik@cityoffullerton.com 714-738-6864	Gabrielle Hayes, PE, Principal Civil Engineer City of Orange-Public Works (Traffic Engineering) 300 E Chapman Ave Orange, CA 92866 ghayes@cityoforange.org 714-744-5561

k. Signalized intersections that are part of the project:

	Main Corridor	Cross Street
1	State College Bl	Cliffwood Ave
2	State College Bl	Balsa Ave
3	State College Bl	Lambert Rd
4	State College Bl	Avocado St / Tracks
5	State College Bl	Corporate
6	State College Bl	Birch St
7	State College Bl	Brea Mall North
8	State College Bl	Brea Mall Center
9	State College Bl	Brea Mall South
10	State College Bl	Imperial Hwy*
11	State College Bl	Elm St
12	State College Bl	Rolling Hills Dr
13	State College Bl	Delicata Dr
14	State College Bl	Bastanchury Rd
15	State College Bl	Palmetto Terrace/Mountain Ridge Dr
16	State College Bl	Yorbal Linda Bl
17	State College Bl	Dorothy Ln/Campus Dr
18	State College Bl	Arts Dr
19	State College Bl	Nutwood Ave
20	State College Bl	Chapman Ave (North)
21	State College Bl	Commonwealth Ave
22	State College Bl	Walnut Ave (Fender Ave)
23	State College Bl	Valencia Dr
24	State College Bl	Orangethorpe Ave
25	State College Bl	Via Burton St
26	State College Bl	SR-91WB Off-Ramp*
27	State College Bl	SR-91 EB Off-Ramp*
28	State College Bl	Placentia Ave/Romneya Dr
29	State College Bl	Shopping Center (McDonald's)
30	State College Bl	La Palma Ave
31	State College Bl	Underhill Ave
32	State College Bl	Lincoln Ave
33	State College Bl	Shopping Center (Anaheim Town Square)
34	State College Bl	Santa Ana St
35	State College Bl	South St
36	State College Bl	Vermont Ave
37	State College Bl	Wagner Ave
38	State College Bl	Ball Rd
39	State College Bl	Winston Rd
40	State College Bl	Cerritos Ave
41	State College Bl	Howell Ave
42	State College Bl	Railroad Crossing
43	State College Bl	Katella Ave
44	State College Bl	Gateway
45	State College Bl	Gene Autry Wy
46	State College Bl	Artisan Ct
47	State College Bl	Orangewood Ave
48	State College Bl	Orange Center Dr*
49	State College Bl	I-5 NB Off-Ramp*
50	The City Dr	I-5 SB Off-Ramp*
51	The City Dr	Chapman Ave
52	The City Dr	Medical Center
53	The City Dr	Dawn Way
54	The City Dr	Steiner Way/Style St
55	The City Dr	Outlet Dr
56	The City Dr	Metropolitan Dr
57	The City Dr	SR-22 EB Off/On-Ramp*
58	The City Dr	Garden Grove Bl

Legend

Brea
Fullerton
Anaheim
Orange

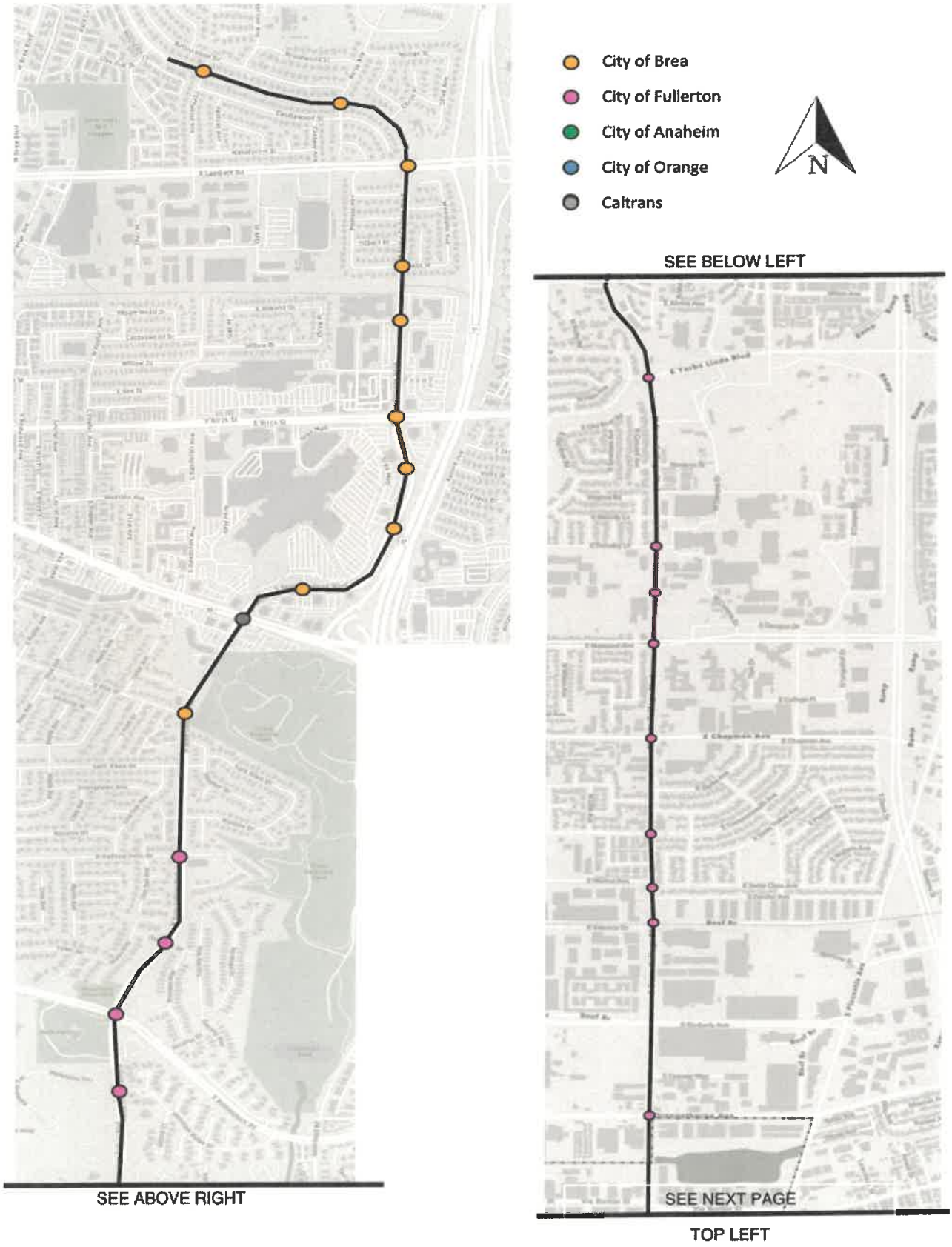
* Caltrans

l. Offset signalized intersections that are part of the project. ***Baseline participants only need to list signals that are requesting improvements***:

	Main Street	Cross Street		Main Street	Cross Street
59			74		
60			75		
61			76		
62			77		
63			78		
64			79		
65			80		
66			81		
67			82		
68			83		
69			84		
70			85		
71			86		
72			87		
73			88		

m. Project Map Depicting the Project Limits and Offset Signals

Map should clearly show project limits, operating agencies, and local juridiction boundaries. Do not use satellite maps as they are hard to read and determine location. Map should also show all offset signals (MPAH only) along corridor/grid/route. Please distinguish the offset signals (MPAH only) that will be included/excluded.Feel free to use multiple maps if necessary.

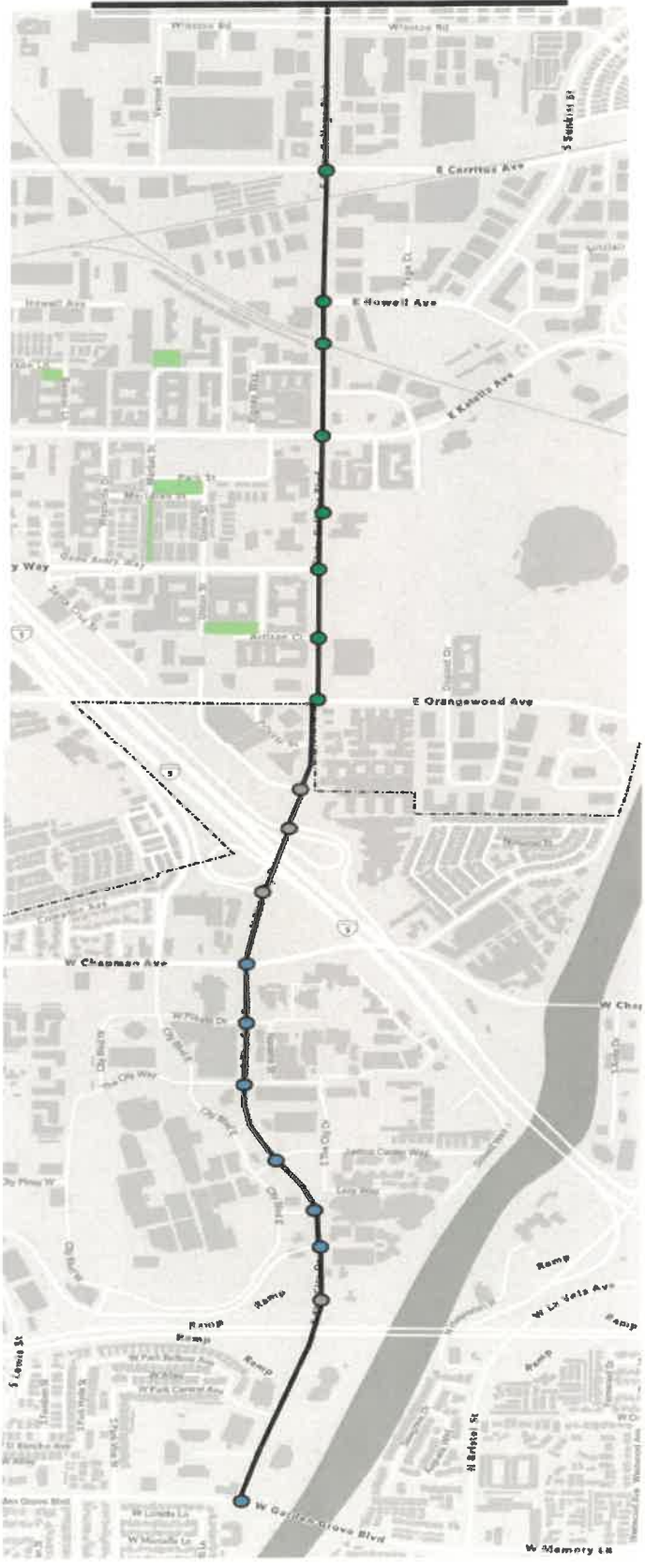


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SECTION 2: REGIONAL SIGNIFICANCE

Explain why this project is regionally significant:

State College Boulevard is a north-south corridor identified in OCTA's MPAH. This corridor parallels the SR-57 freeway and is used to bypass major traffic congestion on the freeway or as a detour route if there is a major incident along the freeway. It is approximately 11.3 miles crossing four cities: Brea, Fullerton, Anaheim, and Orange and includes 58 signalized intersections. Traffic volume along this corridor ranges up to 25,000 vehicles per day. Land use varies along the corridor with major generators such as the Brea Mall, Regional Parks, and CSU Fullerton in the northern section and the Angel Stadium and the Outlets at Orange in the southern section of the corridor.

Through the City of Brea, State College Boulevard parallels the CA-57 freeway and provides primary access to the Brea Mall a regional shopping destination. It also provides connectivity between Central Avenue and Brea Boulevard/Brea Canyon Road to the CA-57 freeway ramps at Lambert Road and Imperial Highway. When there is construction or a major incident on the CA-57, State College Boulevard becomes the primary regional detour connecting Orange County to Los Angeles County through the foothills. Additionally, State College Boulevard is a key multi-modal transportation corridor providing Class II bike lanes that connect The Tracks, a regionally significant dedicated bike and pedestrian trail facility, to various key bike routes and pedestrian destinations. State College Boulevard also provides primary access to a Park-n-ride facility at the CA-57 and Lambert interchange and the Brea Mall Transit Center, which is a major destination and transfer point served by multiple transit lines from all three major transit providers in the region. State College Boulevard also provides primary access to Craig Regional Park providing various passive and active recreation opportunities and the Fullerton Dam and Reservoir. State College Boulevard also provides a key transportation alternative to CA-57 connecting neighborhoods and businesses in the region to California State University, Fullerton to the south.

Within the City of Fullerton, State College Boulevard is classified as a major arterial highway. The 57 freeway is located about a half mile east of this thoroughfare where drivers can easily access Cal State Fullerton or a plethora of shopping centers, businesses, and dining locations. Along this corridor, there are thirteen (13) intersections under the jurisdiction of the City of Fullerton and is connected from the north to Brea, where mostly residential housing can be found and from the south to Anaheim, where there is more commercial and industry. As such, this is a very heavily utilized corridor by all modes of transportation which will benefit from an updated synchronized network to help alleviate the congestion from daily demand.

In the City of Anaheim, State College Boulevard is classified as a major arterial except for the section between La Palma Ave and Ball Rd, where it is classified as a primary arterial. State College is bordered by the SR-91 freeway to the north, SR-22 freeway to the south, SR-57 to the east, and I-5 to the west, which makes it a main alternate route when the freeways are congested. Additionally, State College Boulevard is used by many visitors travelling to the Angel Stadium, the Grove and Honda Center. By upgrading the communication and signal equipment along this corridor, the City will be able to manage traffic more efficiently and provide better service to commuters, visitors, and residents.

Within the City of Orange, The City Drive is one of the busiest principal arterials and the backbone of several activity centers in west Orange. The southern limit of this corridor is surrounded with regionally significant land uses including the Outlets of Orange, University of California Irvine (UCI) Medical Center, various business centers, civic centers, and high-density housing. Additionally, The City Drive connects two major freeways within Orange County in less than a mile: State Route 22 and Interstate 5. This area sees some of the highest traffic volumes and would benefit from a well-synchronized network to meet the directional and oversaturated traffic demand.

SECTION 3: ACKNOWLEDGEMENT OF REQUIRED TASKS

a. **PROJECT TASKS**

☑ **By checking this box, the Applicant Agency, on behalf of all the participating agencies, agree to the following tasks:**

Primary Implementation (PI) Phase, lasting approximately one year shall include the following:

Task 1: Project Management - PI Phase

This task is ongoing throughout the duration of the PI Phase of the project. It includes day-to-day project management, such as meetings, progress reports, tracking of schedules, tracking of cost by agency, invoicing, and overall administration of the PROJECT.

The following list is a minimum of what is required of this task:

- *A running record of project cost broken down by Participating Agency shall be part of this task. This information will be used by the Lead Agency to bill Participating Agencies for their respective project match.*
- *A running record of all scope changes and/or any deviations from the final approved application. This information will be used by the Lead Agency to request for Scope Changes at the Semi-Annual Review (SAR).*

Task 2: Data Collection and Field Review

This task shall include collecting seven-day, 24-hour machine counts, including vehicle and bike classifications, along each 1-mile segment of the corridor(s). The project shall also produce weekday and weekend peak period intersection turning movement (ITM) counts at every signalized intersection, including pedestrian and bicycle counts. ITM counts shall be conducted for two hours of each weekday peak period (AM, mid-day, and PM) and a single four-hour Saturday mid-day peak period. All counts shall be summarized in Microsoft Excel format. All data shall adhere to the CTFP Guidelines for data compatibility.

Data collection also includes field review of before and after conditions. The floating car method shall be utilized with software and GPS for the 'Before' Study to fine-tune the corridor operation and verify integrity of system intersection clocks. Synchronized Video shall be used to compare actual conditions to anticipated conditions dictated by the time-space diagram so that any anomalies may be corrected prior to the 'After' studies task.

Field review conducted as part of this task will document the existing conditions for all signal timing, infrastructure, and system improvements on the project. This includes pre-construction pictures for comparison during the post-construction walkthrough, should there be any questions or discrepancies noted by any parties. Data Collection and Field Review Memos shall be provided to all participating agencies.

☑ ***Check this box to indicate all agencies on this application will opt out of the data collection portion of Task 3 due to participation in the Countywide Baseline Project. A Before/After study is still required. A memorandum shall be submitted to indicate completion of this task.***

Task 3: System Design and Construction

The Lead Agency will hire a consultant(s), licensed contractor(s), and/or use city staff, or extension of staff, to design, procure, install, construct, and implement all desired components of the project as described in this application in accordance with the CTFP Guidelines.

All work and equipment supplied for the project shall comply and be done in accordance with the latest standards and provisions of each Participating Agency or latest approved California Department of Transportation (Caltrans) Standard Plans and Standard Specifications.

SECTION 3: ACKNOWLEDGEMENT OF REQUIRED TASKS

As-built plans shall be provided to match the improvements. This task is not complete until all participating agencies approve the improvements implemented in their jurisdiction.

Task 4: Signal Timing Optimization and Implementation

Synchronization will be inter-jurisdictional in nature. All existing traffic patterns, flows, and conditions will be taken into account. At a minimum, synchronized timing plans will be developed for a weekday AM, Mid-day, PM, and a Weekend peak period. Special generators such as schools and businesses along with cross street traffic will be considered as part of the project. Timing plans that will be developed will assist traffic in getting to its destination without regard to physical or jurisdictional boundaries.

The following list is a minimum of what is required of this task:

- *A review of the basic timing parameters*
- *Concept of Operations documenting the recommended coordination strategies (e.g. segments, cycle lengths, etc.) based on existing data collection and simulations*
- *Existing and Optimized simulation networks in Synchro (version 10) that is also shared with OCTA using the OCTA designated ID numbers*
- *Implementation and fine-tuning of proposed timing plans*

This task will not be complete until all participating agencies approve the new timing plans

☑ ***Check this box to indicate all agencies on this application (excluding Caltrans) will opt out of the Signal Timing Optimization and Implementation task (Task 4) due to participation in the Countywide Baseline Project. The Final PI Report shall still include a section on timing optimization and implementation from the Baseline Project.Task 4 for Caltrans signals is the responsibility of the applicant.***

Task 5: Final PI Report

A Final PI Report, with an executive summary, shall provide complete documentation of the project, including, but not limited to:

- *Project scope, objectives, locations, findings, and recommendations*
- *Data collected: counts, travel time studies, and project benefits achieved in terms of fuel savings, travel time, and other measurable parameters*
- *For each intersection: lane configurations, signal phasing, turning movement data, and cycle lengths for existing and proposed timings for all peak periods*
- *All work performed for system construction and signal timing optimization*
- *Implementation schedule and improvements accomplished, including dates*
- *Procedures for continuing maintenance, surveillance, and evaluation of the coordinated signal system*

The report shall document all planned and programmed improvements on the study corridor as well as recommendations based on PI tasks for further infrastructure improvements that would likely improve the corridor signal coordination project results. The report shall be completed in accordance with the current CTFP Guidelines.

Finally, the report shall provide recommendations with cost and benefit estimates for future improvements to traffic signal infrastructure (signal controllers, vehicle detection, communications, etc.), intersection capacity (appropriate signal phasing, lane geometrics, and alleviation of physical bottlenecks that curtail arterial capacity), and traffic management strategies. These proposed improvements should be useful in determining future enhancements to the corridor.

A Project Summary Sheet, one sheet front and back, that describes the project and improvements gained shall be provided to OCTA. This sheet will be used by OCTA and Participating Agencies to present to the Board and elected officials.

SECTION 3: ACKNOWLEDGEMENT OF REQUIRED TASKS

☑ ***By checking this box, the following additional PI task(s) and/or exceptions will be made:***
Each agency is responsible for Task 4 for Caltrans intersections within their city. Each agency will coordinate with Caltrans as needed to develop and implement signal timing.

ONGOING OPERATIONS AND MAINTENANCE (O&M) PHASE, lasting approximately two (2) years, shall include the following:

Task 6: Project Management - O&M Phase
This task includes day-to-day project management, such as meetings, tracking of schedules, invoicing, and overall administration of the project. This task shall continue in full force as specified in the Primary Implementation Phase.

Task 7: Continuing Support
During this 24-month period, the signal timing along the corridor/route/grid shall be observed and fine-tuned. This task shall also include the monitoring, maintaining, and repair of detection and communication implemented as part of this project. Monthly drives shall be conducted along the length of the project during all designated corridor synchronization timing plan hours of operation in order to verify that the synchronization timing is working as designed and complete any necessary adjustments. This is followed by a monthly memorandum summarizing the status and trends of the corridor based on the runs conducted. Trip logs for the month shall be provided to the Participating Agencies. The memorandum shall include all additional tasks requested and completed during that month. Performance metrics comparisons from ATSPM, where available, shall also be included in the

Task 8: Final O&M Report
At the end of the O&M Phase, a Final O&M Report documenting the Ongoing Operations and Maintenance efforts and procedures for continuing maintenance shall be prepared. At the minimum, the memorandum shall include when travel runs were conducted and issues and solutions throughout the phase. The memorandum shall document all planned and programmed improvements on the study corridor as well as recommendations for further infrastructure improvements that would likely improve the corridor signal coordination project results.

☐ ***By checking this box, the following additional O&M task(s) and/or exceptions will be made:***
<Insert Text>

b. **ENVIRONMENTAL CLEARANCE AND OTHER PERMITS**
☑ By checking this box, the Applicant Agency, on behalf of all the participating agencies, agree to obtain environmental clearance and other permits (if needed) for this project

c. **ACKNOWLEDGMENT OF MEETING CTFP GUIDELINES**
☑ By checking this box, the Applicant Agency, on behalf of all the participating agencies, certify that all current CTFP guidelines were met for this project.

SECTION 4: FUNDING NEEDS / COSTS FOR PROPOSED PROJECT BY TASK

a. Summary of Project Cost

Project Tasks	Total Cost
Task 1: Project Management - PI Phase	$ 145,000.00
Task 2: Data Collection	$ 58,000.00
Task 3: System Design and Construction	$ 4,070,463.50
Task 4: Signal Timing Optimization and Implementation	$ 35,000.00
Task 5: Project Report	$ 58,000.00
Task 6: Project Management - O&M Phase	$ 29,000.00
Task 7: Continuing Support	$ 290,000.00
Task 8: Final Technical Memorandum	$ 17,400.00
Total Project Cost:	**$ 4,702,863.50**

Match Commitment: 20% *(minimum 20%)*

Total Project Cost (PI and O&M for a total of 3 years):

	Project Total
Total M2 Request:	*$ 3,762,290.80*
Total Agency Match:	*$ 940,572.70*
Total Project Cost:	**$ 4,702,863.50**

	PI Total
Total M2 Request for PI Phase:	*$ 3,493,170.80*
Total Agency Match for PI Phase:	*$ 873,292.70*
Total PI Cost:	**$ 4,366,463.50**

	O&M Total
Total M2 Request for O&M Phase:	*$ 269,120.00*
Total Agency Match for O&M Phase:	*$ 67,280.00*
Total O&M Cost:	**$ 336,400.00**

SECTION 4: FUNDING NEEDS / COSTS FOR PROPOSED PROJECT BY TASK

b. Summary of Cost by Agency

Brea

	Agency	Caltrans	Offset	Total
Number of Signals:	10	1	0	11

Project Tasks (Brea)	Cost / Int	Total Cost
Task 1: Project Management - PI Phase	$ 2,500.00	$ 27,500.00
Task 2: Data Collection	$ 1,000.00	$ 11,000.00
Task 3: System Design and Construction	-	$ 321,942.50
Task 4: Signal Timing Optimization and Implementation	$ 5,000.00	$ 5,000.00
Task 5: Project Report	$ 1,000.00	$ 11,000.00
Task 6: Project Management - O&M Phase	$ 500.00	$ 5,500.00
Task 7: Continuing Support	$ 5,000.00	$ 55,000.00
Task 8: Final Technical Memorandum	$ 300.00	$ 3,300.00

	M2 Requested	Match	Total Cost
PI	$ 301,154.00	$ 75,288.50	$ 376,442.50
O&M	$ 51,040.00	$ 12,760.00	$ 63,800.00

Fullerton

	Agency	Caltrans	Offset	Total
Number of Signals:	13	0	0	13

Project Tasks (Fullerton)	Cost / Int	Total Cost
Task 1: Project Management - PI Phase	$ 2,500.00	$ 32,500.00
Task 2: Data Collection	$ 1,000.00	$ 13,000.00
Task 3: System Design and Construction	-	$ 879,175.00
Task 4: Signal Timing Optimization and Implementation	$ 5,000.00	$ -
Task 5: Project Report	$ 1,000.00	$ 13,000.00
Task 6: Project Management - O&M Phase	$ 500.00	$ 6,500.00
Task 7: Continuing Support	$ 5,000.00	$ 65,000.00
Task 8: Final Technical Memorandum	$ 300.00	$ 3,900.00

	M2 Requested	Match	Total Cost
PI	$ 750,140.00	$ 187,535.00	$ 937,675.00
O&M	$ 60,320.00	$ 15,080.00	$ 75,400.00

Anaheim

	Agency	Caltrans	Offset	Total
Number of Signals:	21	2	0	23

Project Tasks (Anaheim)	Cost / Int	Total Cost
Task 1: Project Management - PI Phase	$ 2,500.00	$ 57,500.00
Task 2: Data Collection	$ 1,000.00	$ 23,000.00
Task 3: System Design and Construction	-	$ 2,074,540.00
Task 4: Signal Timing Optimization and Implementation	$ 5,000.00	$ 10,000.00
Task 5: Project Report	$ 1,000.00	$ 23,000.00
Task 6: Project Management - O&M Phase	$ 500.00	$ 11,500.00
Task 7: Continuing Support	$ 5,000.00	$ 115,000.00
Task 8: Final Technical Memorandum	$ 300.00	$ 6,900.00

	M2 Requested	Match	Total Cost
PI	$ 1,750,432.00	$ 437,608.00	$ 2,188,040.00
O&M	$ 106,720.00	$ 26,680.00	$ 133,400.00

SECTION 4: FUNDING NEEDS / COSTS FOR PROPOSED PROJECT BY TASK

Orange

	Agency	Caltrans	Offset	Total
Number of Signals:	7	4	0	11

Project Tasks (Orange)	Cost / Int	Total Cost
Task 1: Project Management - PI Phase	$ 2,500.00	$ 27,500.00
Task 2: Data Collection	$ 1,000.00	$ 11,000.00
Task 3: System Design and Construction	-	$ 794,806.00
Task 4: Signal Timing Optimization and Implementation	$ 5,000.00	$ 20,000.00
Task 5: Project Report	$ 1,000.00	$ 11,000.00
Task 6: Project Management - O&M Phase	$ 500.00	$ 5,500.00
Task 7: Continuing Support	$ 5,000.00	$ 55,000.00
Task 8: Final Technical Memorandum	$ 300.00	$ 3,300.00

	M2 Requested	Match	Total Cost
PI	$ 691,444.80	$ 172,861.20	$ 864,306.00
O&M	$ 51,040.00	$ 12,760.00	$ 63,800.00

	Agency	Caltrans	Offset	Total
Number of Signals:				0

Project Tasks ()	Cost / Int	Total Cost
Task 1: Project Management - PI Phase	$ 2,500.00	$ -
Task 2: Data Collection	$ 1,000.00	$ -
Task 3: System Design and Construction	-	$ -
Task 4: Signal Timing Optimization and Implementation	$ 5,000.00	$ -
Task 5: Project Report	$ 1,000.00	$ -
Task 6: Project Management - O&M Phase	$ 500.00	$ -
Task 7: Continuing Support	$ 5,000.00	$ -
Task 8: Final Technical Memorandum	$ 300.00	$ -

	M2 Requested	Match	Total Cost
PI	$ -	$ -	$ -
O&M	$ -	$ -	$ -

	Agency	Caltrans	Offset	Total
Number of Signals:				0

Project Tasks ()	Cost / Int	Total Cost
Task 1: Project Management - PI Phase	$ 2,500.00	$ -
Task 2: Data Collection	$ 1,000.00	$ -
Task 3: System Design and Construction	-	$ -
Task 4: Signal Timing Optimization and Implementation	$ 5,000.00	$ -
Task 5: Project Report	$ 1,000.00	$ -
Task 6: Project Management - O&M Phase	$ 500.00	$ -
Task 7: Continuing Support	$ 5,000.00	$ -
Task 8: Final Technical Memorandum	$ 300.00	$ -

	M2 Requested	Match	Total Cost
PI	$ -	$ -	$ -
O&M	$ -	$ -	$ -

SECTION 4: FUNDING NEEDS / COSTS FOR PROPOSED PROJECT BY TASK

c. Summary of Intersection Improvement Costs

LOC.	AGENCY	PROJECT CROSS STREETS	TASK 3 IMPROVEMENT TOTALS			
			Design	Construction	TOTAL	Average Score
1	Brea	Cliffwood Ave	$ -	$ 27,197.50	$ 27,197.50	35.0
2	Brea	Balsa Ave	$ -	$ 14,547.50	$ 14,547.50	37.5
3	Brea	Lambert Rd	$ -	$ -	$ -	
4	Brea	Avocado St / Tracks	$ -	$ 12,650.00	$ 12,650.00	30.0
5	Brea	Corporate	$ -	$ -	$ -	
6	Brea	Birch St	$ -	$ 12,650.00	$ 12,650.00	30.0
7	Brea	Brea Mall North	$ -	$ 56,925.00	$ 56,925.00	30.0
8	Brea	Brea Mall Center	$ -	$ 69,575.00	$ 69,575.00	15.0
9	Brea	Brea Mall South	$ -	$ 69,575.00	$ 69,575.00	15.0
10	Brea	Imperial Hwy*	$ -	$ -	$ -	
11	Brea	Elm St	$ -	$ 27,197.50	$ 27,197.50	35.0
12	Fullerton	Rolling Hills Dr	$ -	$ 67,045.00	$ 67,045.00	31.3
13	Fullerton	Delicata Dr	$ -	$ 54,395.00	$ 54,395.00	31.7
14	Fullerton	Bastanchury Rd	$ -	$ 102,465.00	$ 102,465.00	31.0
15	Fullerton	Palmetto Terrace/Mountain Ridge D	$ -	$ 40,480.00	$ 40,480.00	37.5
16	Fullerton	Yorbal Linda Bl	$ -	$ 102,465.00	$ 102,465.00	31.0
17	Fullerton	Dorothy Ln/Campus Dr	$ -	$ 53,130.00	$ 53,130.00	35.0
18	Fullerton	Arts Dr	$ -	$ 40,480.00	$ 40,480.00	37.5
19	Fullerton	Nutwood Ave	$ -	$ 88,550.00	$ 88,550.00	33.8
20	Fullerton	Chapman Ave (North)	$ -	$ 40,480.00	$ 40,480.00	37.5
21	Fullerton	Commonwealth Ave	$ -	$ 54,395.00	$ 54,395.00	31.7
22	Fullerton	Walnut Ave (Fender Ave)	$ -	$ 53,130.00	$ 53,130.00	35.0
23	Fullerton	Valencia Dr	$ -	$ 40,480.00	$ 40,480.00	37.5
24	Fullerton	Orangethorpe Ave	$ -	$ 53,130.00	$ 53,130.00	11.7
25	Anaheim	Via Burton St	$ -	$ 35,420.00	$ 35,420.00	35.0
26	Anaheim	SR-91WB Off-Ramp*	$ -	$ 2,500.00	$ 2,500.00	50.0
27	Anaheim	SR-91 EB Off-Ramp*	$ -	$ 2,500.00	$ 2,500.00	50.0
28	Anaheim	Placentia Ave/Romneya Dr	$ -	$ 142,945.00	$ 142,945.00	34.2
29	Anaheim	Shopping Center (McDonald's)	$ -	$ 94,875.00	$ 94,875.00	31.0
30	Anaheim	La Palma Ave	$ -	$ 98,670.00	$ 98,670.00	37.0
31	Anaheim	Underhill Ave	$ -	$ 94,875.00	$ 94,875.00	31.0
32	Anaheim	Lincoln Ave	$ -	$ 193,545.00	$ 193,545.00	33.3
33	Anaheim	Shopping Center (Anaheim Town Sc	$ -	$ 64,515.00	$ 64,515.00	31.3
34	Anaheim	Santa Ana St	$ -	$ 94,875.00	$ 94,875.00	31.0
35	Anaheim	South St	$ -	$ 130,295.00	$ 130,295.00	32.0
36	Anaheim	Vermont Ave	$ -	$ 127,765.00	$ 127,765.00	33.0
37	Anaheim	Wagner Ave	$ -	$ 99,935.00	$ 99,935.00	35.8
38	Anaheim	Ball Rd	$ -	$ 193,545.00	$ 193,545.00	33.3
39	Anaheim	Winston Rd	$ -	$ 63,250.00	$ 63,250.00	31.3
40	Anaheim	Cerritos Ave	$ -	$ 32,890.00	$ 32,890.00	31.7
41	Anaheim	Howell Ave	$ -	$ 127,765.00	$ 127,765.00	33.0
42	Anaheim	Railroad Crossing	$ -	$ 50,600.00	$ 50,600.00	31.7
43	Anaheim	Katella Ave	$ -	$ 86,020.00	$ 86,020.00	42.5
44	Anaheim	Gateway	$ -	$ 51,865.00	$ 51,865.00	36.7
45	Anaheim	Gene Autry Wy	$ -	$ 73,370.00	$ 73,370.00	46.7
46	Anaheim	Artisan Ct	$ -	$ 54,395.00	$ 54,395.00	40.0
47	Anaheim	Orangewood Ave	$ -	$ 94,875.00	$ 94,875.00	35.0
48	Orange	Orange Center Dr*	$ -	$ 2,500.00	$ 2,500.00	50.0
49	Orange	I-5 NB Off-Ramp*	$ -	$ 2,500.00	$ 2,500.00	50.0
50	Orange	I-5 SB Off-Ramp*	$ -	$ 2,500.00	$ 2,500.00	50.0

SECTION 4: FUNDING NEEDS / COSTS FOR PROPOSED PROJECT BY TASK

c. Summary of Intersection Improvement Costs

LOC.	AGENCY	PROJECT CROSS STREETS	TASK 3 IMPROVEMENT TOTALS			
			Design	Construction	TOTAL	Average Score
51	Orange	Chapman Ave	$ 1,200.00	$ 7,908.00	**$ 9,108.00**	15.0
52	Orange	Medical Center	$ 18,600.00	$ 122,574.00	**$ 141,174.00**	31.3
53	Orange	Dawn Way	$ 18,600.00	$ 122,574.00	**$ 141,174.00**	31.3
54	Orange	Steiner Way/Style St	$ 18,600.00	$ 122,574.00	**$ 141,174.00**	31.3
55	Orange	Outlet Dr	$ 18,600.00	$ 122,574.00	**$ 141,174.00**	31.3
56	Orange	Metropolitan Dr	$ 18,600.00	$ 122,574.00	**$ 141,174.00**	31.3
57	Orange	SR-22 EB Off/On-Ramp*	$ -	$ 2,500.00	**$ 2,500.00**	50.0
58	Orange	Garden Grove Bl	$ 9,200.00	$ 60,628.00	**$ 69,828.00**	22.5
-	Brea	TMC Improvements	$ -	$ 31,625.00	**$ 31,625.00**	30.0
-	Anaheim	TMC Improvements	$ -	$ 63,250.00	**$ 63,250.00**	20.0
-	Fullerton	TMC Improvements	$ -	$ 88,550.00	**$ 88,550.00**	30.0
-	0	TMC Improvements	$ -	$ -	**$ -**	
		SIGNAL IMPROVEMENT TOTAL =			**$ 4,070,463.50**	**33.6**

SECTION 5: DETAILED LOCAL MATCH COMMITMENT

PART 1: AGENCY TOTAL MATCH SUMMARY

Agency	CASH		IN-KIND		TOTAL MATCH	
	PI	OMM	PI	OMM	PI	OMM
Brea	*$75,288.50*	*$12,760.00*	*$0.00*	*$0.00*	*$75,288.50*	*$12,760.00*
	$88,048.50		***$0.00***		***$88,048.50***	
Fullerton	*$187,535.00*	*$15,080.00*	*$0.00*	*$0.00*	*$187,535.00*	*$15,080.00*
	$202,615.00		***$0.00***		***$202,615.00***	
Anaheim	*$437,608.00*	*$26,680.00*	*$0.00*	*$0.00*	*$437,608.00*	*$26,680.00*
	$464,288.00		***$0.00***		***$464,288.00***	
Orange	*$172,861.20*	*$12,760.00*	*$0.00*	*$0.00*	*$172,861.20*	*$12,760.00*
	$185,621.20		***$0.00***		***$185,621.20***	
0	*$0.00*	*$0.00*			*$0.00*	*$0.00*
	$0.00		***$0.00***		***$0.00***	
0	*$0.00*	*$0.00*			*$0.00*	*$0.00*
	$0.00		***$0.00***		***$0.00***	
TOTAL MATCH	***$873,292.70***	***$67,280.00***	***$0.00***	***$0.00***	***$873,292.70***	***$67,280.00***
	$940,572.70		***$0.00***		***$940,572.70***	

PART 2: MATCH BREAKDOWN (CASH vs IN-KIND SERVICES)

A. Cash Match

Agency	Funding Source	Amount of Cash Contribution
Brea	Developer Funds, Measure M, Gas Tax	$88,048.50
Fullerton	Gas Tax	$202,615.00
Anaheim	Gas Tax	$464,288.00
Orange	Gas Tax, Measure M2 Fairshare	$185,621.20
		$0.00
		$0.00
	TOTAL CASH MATCH:	$754,951.50

B. In-Kind Services

i. Specific Improvements (List items and Cost):

Agency	Description	Expenditure
Select a City		
	Total Specific Improvements (i):	$0.00

SECTION 5: DETAILED LOCAL MATCH COMMITMENT

ii. Staffing Commitment:

Agency	Staff Position	Type of Service to Project	No. of Hours	Fully Burdened Hourly Rate	Total*
Select a City					$0.00
					$0.00
					$0.00
					$0.00
				Total for City of Select a City:	*$0.00*
Select a City					$0.00
					$0.00
					$0.00
					$0.00
				Total for City of Select a City:	*$0.00*
Select a City					$0.00
					$0.00
					$0.00
					$0.00
				Total for City of Select a City:	*$0.00*
Select a City					$0.00
					$0.00
					$0.00
					$0.00
				Total for City of Select a City:	*$0.00*
Select a City					$0.00
					$0.00
					$0.00
					$0.00
				Total for City of Select a City:	*$0.00*
Select a City					$0.00
					$0.00
					$0.00
					$0.00
				Total for City of Select a City:	*$0.00*
				Total Staffing Commitment (ii):	*$0.00*

TOTAL IN-KIND MATCH* (i + ii):	$0.00

*Total amount is the required participation by the identified agency. The number of hours and hourly rate will be based on each agency's actual fully burdened billing rates, which must collectively equal the same value of the assigned "Total" dollars. Each agency will be responsible for keeping detailed records of hours worked and description of work. An accounting record of personnel, hours at fully burdened rate shall be included with the in-kind report submittals. Records will be subject to auditing. In-kind match can be converted to Cash Match, but Cash Match cannot be converted to in-kind match.

SECTION 6: PROJECT SCHEDULE BY TASK

a. Projected Start and End Dates:

Project start date: October 1, 2025

Project end date: December 31, 2029

b. Projected Schedule by Task

Task	Starting Date	Ending Date
Task 1: Project Management - PI Phase	October 1, 2025	December 31, 2027
Task 2: Data Collection	October 1, 2025	May 30, 2026
Task 3: System Design and Construction	October 1, 2025	December 31, 2027
Task 4: Signal Timing Optimization and Implementation	October 1, 2025	December 31, 2027
Task 5: Project Report	August 1, 2027	December 31, 2027
Task 6: Project Management - O&M Phase	January 1, 2027	December 31, 2029
Task 7: Continuing Support	January 1, 2027	December 31, 2029
Task 8: Final Technical Memorandum	September 1, 2029	December 31, 2029

Appendix A
CALCULATIONS AND ESTIMATED POINTS

APPENDIX A: CALCULATIONS AND ESTIMATED POINTS

Criteria (Max Points)	Estimated Points
1. Transportation Significance (25 points) Yes, all agencies are participating in the Countywide Baseline Project Inclusion of offset signals on MPAH w/in 2,700' # of offset signals on project / total # of offset signals: 0 / 35 = 100.0% = 10 Vehicle Miles Traveled (VMT): 280,700 = 15	25
2. Economic Effectiveness (Cost to Benefit Ratio): (10 points) Calculation for Total Project Cost / VMT = $4,702,864 / 280,700 = 16.75	5
3. Project Characteristics: (20 points) Average project improvement score = 33.6	10
4. Project Scale: (20 points) # of signals along entire length of corridor(s): 78 = 10 # of signals being synched / total # of corridor signals: 58 / 78 = 74.4% = 6	16
5. Number of Jurisdictions: (15 points) 5 Participating Jurisdiction(s)	15
6. Current Project Status (5 points) None = 0	0
7. Funding Match: (5 points) $940,572.70 / $4,702,863.50 = 20.00%	0
Total Estimated Points:	**71**

Appendix B

AGENCY IMPROVEMENT CALCULATIONS

TABLE I: AGENCY IMPROVEMENT PREFERENCES ☐ Yes ☑ No

CATEGORIES	ID	ITEM DESCRIPTION	UNIT PRICE (MATERIAL + LABOR)				APPLICABLE DESIGN COST PER UNIT				VENDOR/BRAND & ADDITIONAL NOTES			
			Anaheim	Brea	Fullerton	Orange	Anaheim	Brea	Fullerton	Orange	Anaheim	Brea	Fullerton	Orange
Comm	1	Above ground (e.g. wireless, cellular, etc.)												
	2	Fiber Optic underground	$10,000	$4,000	$24,000	$6,000				$1,200	upgrade fiber optic cable with Etherwan switches with SPF and FDUs	New Etherwan Fiber Switches with SFP Modules.	Corning cables, housing & connectors, jumpers, splice trays & enclosures, switches, power supply, cat6E cables	Fiber Switch & power supply, SFPs, Fiber Patch Panel
	3	All other (e.g. copper, aerial fiber, GPS, etc.)												
Field Elements	4	ATC signal controller	$6,000	$7,500	$8,000	$7,000				$1,400	2070L/2070LN with EOS	Furnish and Install New Cubic Commander ATC NT2 Controller with Scout Software. Convert signal timing (incudling adaptive parameters) to new format and integrate with ATMS/Synchrogreen.	Q-Free	Econolite Cobalt w/ ASC3
	5	Signal cabinet on existing foundation	$24,000	$45,000		$40,000				$8,000	Type P Cabinet w/new service	Cubic NEMA P cabinet with Service and SCE Design Fee.		Use existing foundation as is or modify foundation, Econolite TS Type II P Cabinet, reuse existing SCE service
	6	Signal cabinet on new foundation	$60,000	$55,000	$45,000						Type 333 Cabinet w/new service	Cubic NEMA P cabinet with Service and SCE Design Fee.	Type P or P+, Type 332 and Type 352i cabinets	
	7	BBS/USP (attached)			$11,000								Alpha	
	8	BBS/UPS on existing foundation												
	9	BBS/UPS on new foundation												
	10	CCTV	$10,000	$10,000	$10,000						Axis	Axis Q6000 series (multisensor 360) & Axis PTZ	Axis	
	11	Vehicle detection (ATSPM inputs + counts)												
	12	Vehicle detection (ATSPM inputs)												
	13	Vehicle detection + bicycle detection	$25,000	$35,000	$28,000						Econolite	Iteris Vantage Next System	Iteris Next	
	14	Vehicle detection				$40,000				$8,000				Iteris or Econolite VDS
	15	Bicycle detection												
	16	Pedestrian detection (audible)	$2,000								APS			
	17	Pedestrian detection												
	18	Active transportation/pedestrian safety												
	19	Transit Signal Priority												
	20	EVP (hybrid or GPS)	$12,000								GPS EVP			
	21	EVP (infrared)												
	22	Speed feedback signs (existing post)												
	23	Speed feedback signs (new post)												
	24	Signal Performance Monitoring	$50,000								SPMs and RSUs			
Minor Signal Op Improve	25	Channelization												
	26	Signal phasing improvement												

TABLE II: DESCRIPTION OF WORK BY INTERSECTION

LOCATION	IMPLEMENTING AGENCY	PROJECT CROSS STREETS	DESCRIPTION OF WORK																												
			Above ground (e.g. wireless, cellular, etc.)	Fiber Optic underground	All other (e.g. copper, aerial fiber, GPS, etc.)	ATC signal controller	Signal cabinet on existing foundation	Signal cabinet on new foundation	BBS/USP (attached)	BBS/UPS on existing foundation	BBS/UPS on new foundation	CCTV	Vehicle detection (ATSPM inputs + counts)	Vehicle detection (ATSPM inputs)	Vehicle detection + bicycle detection	Vehicle detection	Bicycle detection	Pedestrian detection (audible)	Pedestrian detection	Active transportation/pedestrian safety	Transit Signal Priority	EVP (hybrid or GPS)	EVP (infrared)	Speed feedback signs (existing post)	Speed feedback signs (new post)	Signal Performance Monitoring	Channelization	Signal phasing improvement	Central System (server, licenses, workstations)	Display (video wall, VMS, etc.)	UPS for TMC	Caltrans Cooperative Agreement
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	34
1	Brea	Cliffwood Ave		1		1						1																				
2	Brea	Balsa Ave		1		1																										
3	Brea	Lambert Rd																														
4	Brea	Avocado St / Tracks										1																				
5	Brea	Corporate																														
6	Brea	Birch St										1																				
7	Brea	Brea Mall North					1																									
8	Brea	Brea Mall Center						1																								
9	Brea	Brea Mall South						1																								
10	Brea	Imperial Hwy*																														
11	Brea	Elm St		1		1						1																				
12	Fullerton	Rolling Hills Dr		1		1			1			1																				
13	Fullerton	Delicata Dr		1		1			1																							
14	Fullerton	Bastanchury Rd		1		1			1			1			1																	
15	Fullerton	Palmetto Terrace/Mountain Ridge Dr		1		1																										
16	Fullerton	Yorbal Linda Bl		1		1			1			1			1																	
17	Fullerton	Dorothy Ln/Campus Dr		1		1						1																				
18	Fullerton	Arts Dr		1		1																										
19	Fullerton	Nutwood Ave		1		1						1			1																	
20	Fullerton	Chapman Ave (North)		1		1																										
21	Fullerton	Commonwealth Ave		1		1			1																							
22	Fullerton	Walnut Ave (Fender Ave)		1		1						1																				
23	Fullerton	Valencia Dr		1		1																										
24	Fullerton	Orangethorpe Ave		1		1						1																				
25	Anaheim	Via Burton St		1		1																1										
26	Anaheim	SR-91WB Off-Ramp*																														1
27	Anaheim	SR-91 EB Off-Ramp*																														1
28	Anaheim	Placentia Ave/Romneya Dr		1		1						1			1							1				1						
29	Anaheim	Shopping Center (McDonald's)		1		1	1					1			1																	
30	Anaheim	La Palma Ave		1		1						1						1								1						
31	Anaheim	Underhill Ave		1		1	1					1			1																	
32	Anaheim	Lincoln Ave		1		1		1							1			1								1						
33	Anaheim	Shopping Center (Anaheim Town Square)		1		1						1			1																	
34	Anaheim	Santa Ana St		1		1	1					1			1																	
35	Anaheim	South St		1		1		1							1			1														
36	Anaheim	Vermont Ave		1		1						1			1											1						
37	Anaheim	Wagner Ave		1		1	1								1			1				1										
38	Anaheim	Ball Rd		1		1		1							1			1								1						
39	Anaheim	Winston Rd		1		1	1					1																				
40	Anaheim	Cerritos Ave		1		1						1																				

APPENDIX B: AGENCY IMPROVEMENT CALCULATIONS

TABLE II: DESCRIPTION OF WORK BY INTERSECTION

LOCATION	IMPLEMENTING AGENCY	PROJECT CROSS STREETS	DESCRIPTION OF WORK																												
			Above ground (e.g. wireless, cellular, etc.)	Fiber Optic underground	All other (e.g. copper, aerial fiber, GPS, etc.)	ATC signal controller	Signal cabinet on existing foundation	Signal cabinet on new foundation	BBS/USP (attached)	BBS/UPS on existing foundation	BBS/UPS on new foundation	CCTV	Vehicle detection (ATSPM inputs + counts)	Vehicle detection (ATSPM inputs)	Vehicle detection + bicycle detection	Vehicle detection	Bicycle detection	Pedestrian detection (audible)	Pedestrian detection	Active transportation/pedestrian safety	Transit Signal Priority	EVP (hybrid or GPS)	EVP (infrared)	Speed feedback signs (existing post)	Speed feedback signs (new post)	Signal Performance Monitoring	Channelization	Signal phasing improvement	Central System (server, licenses, workstations)	Display (video wall, VMS, etc.)	UPS for TMC	Caltrans Cooperative Agreement
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	34
41	Anaheim	Howell Ave		1		1						1			1										1						
42	Anaheim	Railroad Crossing		1		1	1																								
43	Anaheim	Katella Ave				1						1						1								1					
44	Anaheim	Gateway				1						1			1																
45	Anaheim	Gene Autry Wy				1												1								1					
46	Anaheim	Artisan Ct				1									1							1									
47	Anaheim	Orangewood Ave													1											1					
48	Orange	Orange Center Dr*																													1
49	Orange	I-5 NB Off-Ramp*																													1
50	Orange	I-5 SB Off-Ramp*																													1
51	Orange	Chapman Ave		1																											
52	Orange	Medical Center		1		1	1									1															
53	Orange	Dawn Way		1		1	1									1															
54	Orange	Steiner Way/Style St		1		1	1									1															
55	Orange	Outlet Dr		1		1	1									1															
56	Orange	Metropolitan Dr		1		1	1									1															
57	Orange	SR-22 EB Off/On-Ramp*																													1
58	Orange	Garden Grove Bl		1												1															
-	Brea	TMC Improvements																											1	1	1	
-	Anaheim	TMC Improvements																											1		1	
-	Fullerton	TMC Improvements																											1	1	1	
-		TMC Improvements																														
QUANTITY TOTAL =			**0**	**39**	**0**	**41**	**12**	**5**	**5**	**0**	**0**	**23**	**0**	**0**	**17**	**6**	**0**	**7**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**9**	**0**	**0**	**3**	**2**	**3**	**6**

APPENDIX B: AGENCY IMPROVEMENT CALCULATIONS

TABLE II: DESCRIPTION OF WORK BY INTERSECTION

LOCATION	IMPLEMENTING AGENCY	PROJECT CROSS STREETS	SIGNAL IMPROVEMENT COSTS						NOTES
			Design	Construction	Construction Management & Inspection 15%	Contingency 10%	Caltrans Cooperative Agreement Fees ($2,500)	TOTAL	
1	Brea	Cliffwood Ave	$ -	$ 21,500.00	$ 3,225.00	$ 2,472.50	$ -	**$ 27,197.50**	
2	Brea	Balsa Ave	$ -	$ 11,500.00	$ 1,725.00	$ 1,322.50	$ -	**$ 14,547.50**	
3	Brea	Lambert Rd	$ -	$ -	$ -	$ -	$ -	**$ -**	No improvements included in this project. Included in on-going TSSP project.
4	Brea	Avocado St / Tracks	$ -	$ 10,000.00	$ 1,500.00	$ 1,150.00	$ -	**$ 12,650.00**	
5	Brea	Corporate	$ -	$ -	$ -	$ -	$ -	**$ -**	
6	Brea	Birch St	$ -	$ 10,000.00	$ 1,500.00	$ 1,150.00	$ -	**$ 12,650.00**	
7	Brea	Brea Mall North	$ -	$ 45,000.00	$ 6,750.00	$ 5,175.00	$ -	**$ 56,925.00**	
8	Brea	Brea Mall Center	$ -	$ 55,000.00	$ 8,250.00	$ 6,325.00	$ -	**$ 69,575.00**	
9	Brea	Brea Mall South	$ -	$ 55,000.00	$ 8,250.00	$ 6,325.00	$ -	**$ 69,575.00**	
10	Brea	Imperial Hwy*	$ -	$ -	$ -	$ -	$ -	**$ -**	No improvements included in this project. Included in on-going TSSP project.
11	Brea	Elm St	$ -	$ 21,500.00	$ 3,225.00	$ 2,472.50	$ -	**$ 27,197.50**	
12	Fullerton	Rolling Hills Dr	$ -	$ 53,000.00	$ 7,950.00	$ 6,095.00	$ -	**$ 67,045.00**	
13	Fullerton	Delicata Dr	$ -	$ 43,000.00	$ 6,450.00	$ 4,945.00	$ -	**$ 54,395.00**	
14	Fullerton	Bastanchury Rd	$ -	$ 81,000.00	$ 12,150.00	$ 9,315.00	$ -	**$ 102,465.00**	
15	Fullerton	Palmetto Terrace/Mountain Ridge Dr	$ -	$ 32,000.00	$ 4,800.00	$ 3,680.00	$ -	**$ 40,480.00**	
16	Fullerton	Yorbal Linda Bl	$ -	$ 81,000.00	$ 12,150.00	$ 9,315.00	$ -	**$ 102,465.00**	
17	Fullerton	Dorothy Ln/Campus Dr	$ -	$ 42,000.00	$ 6,300.00	$ 4,830.00	$ -	**$ 53,130.00**	
18	Fullerton	Arts Dr	$ -	$ 32,000.00	$ 4,800.00	$ 3,680.00	$ -	**$ 40,480.00**	
19	Fullerton	Nutwood Ave	$ -	$ 70,000.00	$ 10,500.00	$ 8,050.00	$ -	**$ 88,550.00**	
20	Fullerton	Chapman Ave (North)	$ -	$ 32,000.00	$ 4,800.00	$ 3,680.00	$ -	**$ 40,480.00**	
21	Fullerton	Commonwealth Ave	$ -	$ 43,000.00	$ 6,450.00	$ 4,945.00	$ -	**$ 54,395.00**	
22	Fullerton	Walnut Ave (Fender Ave)	$ -	$ 42,000.00	$ 6,300.00	$ 4,830.00	$ -	**$ 53,130.00**	
23	Fullerton	Valencia Dr	$ -	$ 32,000.00	$ 4,800.00	$ 3,680.00	$ -	**$ 40,480.00**	
24	Fullerton	Orangethorpe Ave	$ -	$ 42,000.00	$ 6,300.00	$ 4,830.00	$ -	**$ 53,130.00**	
25	Anaheim	Via Burton St	$ -	$ 28,000.00	$ 4,200.00	$ 3,220.00	$ -	**$ 35,420.00**	
26	Anaheim	SR-91WB Off-Ramp*	$ -	$ -	$ -	$ -	$ 2,500.00	**$ 2,500.00**	
27	Anaheim	SR-91 EB Off-Ramp*	$ -	$ -	$ -	$ -	$ 2,500.00	**$ 2,500.00**	
28	Anaheim	Placentia Ave/Romneya Dr	$ -	$ 113,000.00	$ 16,950.00	$ 12,995.00	$ -	**$ 142,945.00**	
29	Anaheim	Shopping Center (McDonald's)	$ -	$ 75,000.00	$ 11,250.00	$ 8,625.00	$ -	**$ 94,875.00**	
30	Anaheim	La Palma Ave	$ -	$ 78,000.00	$ 11,700.00	$ 8,970.00	$ -	**$ 98,670.00**	
31	Anaheim	Underhill Ave	$ -	$ 75,000.00	$ 11,250.00	$ 8,625.00	$ -	**$ 94,875.00**	
32	Anaheim	Lincoln Ave	$ -	$ 153,000.00	$ 22,950.00	$ 17,595.00	$ -	**$ 193,545.00**	
33	Anaheim	Shopping Center (Anaheim Town Square)	$ -	$ 51,000.00	$ 7,650.00	$ 5,865.00	$ -	**$ 64,515.00**	
34	Anaheim	Santa Ana St	$ -	$ 75,000.00	$ 11,250.00	$ 8,625.00	$ -	**$ 94,875.00**	
35	Anaheim	South St	$ -	$ 103,000.00	$ 15,450.00	$ 11,845.00	$ -	**$ 130,295.00**	
36	Anaheim	Vermont Ave	$ -	$ 101,000.00	$ 15,150.00	$ 11,615.00	$ -	**$ 127,765.00**	
37	Anaheim	Wagner Ave	$ -	$ 79,000.00	$ 11,850.00	$ 9,085.00	$ -	**$ 99,935.00**	
38	Anaheim	Ball Rd	$ -	$ 153,000.00	$ 22,950.00	$ 17,595.00	$ -	**$ 193,545.00**	
39	Anaheim	Winston Rd	$ -	$ 50,000.00	$ 7,500.00	$ 5,750.00	$ -	**$ 63,250.00**	
40	Anaheim	Cerritos Ave	$ -	$ 26,000.00	$ 3,900.00	$ 2,990.00	$ -	**$ 32,890.00**	

APPENDIX B: AGENCY IMPROVEMENT CALCULATIONS

TABLE II: DESCRIPTION OF WORK BY INTERSECTION

LOCATION	IMPLEMENTING AGENCY	PROJECT CROSS STREETS	SIGNAL IMPROVEMENT COSTS						NOTES
			Design	Construction	Construction Management & Inspection 15%	Contingency 10%	Caltrans Cooperative Agreement Fees ($2,500)	TOTAL	
41	Anaheim	Howell Ave	$ -	$ 101,000.00	$ 15,150.00	$ 11,615.00	$ -	**$ 127,765.00**	
42	Anaheim	Railroad Crossing	$ -	$ 40,000.00	$ 6,000.00	$ 4,600.00	$ -	**$ 50,600.00**	
43	Anaheim	Katella Ave	$ -	$ 68,000.00	$ 10,200.00	$ 7,820.00	$ -	**$ 86,020.00**	
44	Anaheim	Gateway	$ -	$ 41,000.00	$ 6,150.00	$ 4,715.00	$ -	**$ 51,865.00**	
45	Anaheim	Gene Autry Wy	$ -	$ 58,000.00	$ 8,700.00	$ 6,670.00	$ -	**$ 73,370.00**	
46	Anaheim	Artisan Ct	$ -	$ 43,000.00	$ 6,450.00	$ 4,945.00	$ -	**$ 54,395.00**	
47	Anaheim	Orangewood Ave	$ -	$ 75,000.00	$ 11,250.00	$ 8,625.00	$ -	**$ 94,875.00**	
48	Orange	Orange Center Dr*	$ -	$ -	$ -	$ -	$ 2,500.00	**$ 2,500.00**	
49	Orange	I-5 NB Off-Ramp*	$ -	$ -	$ -	$ -	$ 2,500.00	**$ 2,500.00**	
50	Orange	I-5 SB Off-Ramp*	$ -	$ -	$ -	$ -	$ 2,500.00	**$ 2,500.00**	
51	Orange	Chapman Ave	$ 1,200.00	$ 6,000.00	$ 1,080.00	$ 828.00	$ -	**$ 9,108.00**	
52	Orange	Medical Center	$ 18,600.00	$ 93,000.00	$ 16,740.00	$ 12,834.00	$ -	**$ 141,174.00**	
53	Orange	Dawn Way	$ 18,600.00	$ 93,000.00	$ 16,740.00	$ 12,834.00	$ -	**$ 141,174.00**	
54	Orange	Steiner Way/Style St	$ 18,600.00	$ 93,000.00	$ 16,740.00	$ 12,834.00	$ -	**$ 141,174.00**	
55	Orange	Outlet Dr	$ 18,600.00	$ 93,000.00	$ 16,740.00	$ 12,834.00	$ -	**$ 141,174.00**	
56	Orange	Metropolitan Dr	$ 18,600.00	$ 93,000.00	$ 16,740.00	$ 12,834.00	$ -	**$ 141,174.00**	
57	Orange	SR-22 EB Off/On-Ramp*	$ -	$ -	$ -	$ -	$ 2,500.00	**$ 2,500.00**	
58	Orange	Garden Grove Bl	$ 9,200.00	$ 46,000.00	$ 8,280.00	$ 6,348.00	$ -	**$ 69,828.00**	
-	Brea	TMC Improvements	$ -	$ 25,000.00	$ 3,750.00	$ 2,875.00	$ -	**$ 31,625.00**	
-	Anaheim	TMC Improvements	$ -	$ 50,000.00	$ 7,500.00	$ 5,750.00	$ -	**$ 63,250.00**	
-	Fullerton	TMC Improvements	$ -	$ 70,000.00	$ 10,500.00	$ 8,050.00	$ -	**$ 88,550.00**	
-		TMC Improvements	$ -	$ -	$ -	$ -	$ -	**$ -**	
QUANTITY TOTAL =			**SIGNAL IMPROVEMENT TOTAL =**					**$ 4,070,463.50**	

TABLE III: PROJECT AVERAGE IMPROVEMENT SCORES

LOCATION	IMPLEMENTING AGENCY	PROJECT CROSS STREETS	DESCRIPTION OF WORK																												
			Above ground (e.g. wireless, cellular, etc.)	Fiber Optic underground	All other (e.g. copper, aerial fiber, GPS, etc.)	ATC signal controller	Signal cabinet on existing foundation	Signal cabinet on new foundation	BBS/USP (attached)	BBS/UPS on existing foundation	BBS/UPS on new foundation	CCTV	Vehicle detection (ATSPM inputs + counts)	Vehicle detection (ATSPM inputs)	Vehicle detection + bicycle detection	Vehicle detection	Bicycle detection	Pedestrian detection (audible)	Pedestrian detection	Active transportation/pedestrian safety	Transit Signal Priority	EVP (hybrid or GPS)	EVP (infrared)	Speed feedback signs (existing post)	Speed feedback signs (new post)	Signal Performance Monitoring	Channelization	Signal phasing improvement	Central System (server, licenses, workstations)	Display (video wall, VMS, etc.)	UPS for TMC
			Time Source			None/5+ Years or Within 5 Years																					0/5+ or <5		0/10+ or < 10		
1	Brea	Cliffwood Ave		25		50						30																			
2	Brea	Balsa Ave		25		50																									
3	Brea	Lambert Rd																													
4	Brea	Avocado St / Tracks										30																			
5	Brea	Corporate																													
6	Brea	Birch St										30																			
7	Brea	Brea Mall North					30																								
8	Brea	Brea Mall Center						15																							
9	Brea	Brea Mall South						15																							
10	Brea	Imperial Hwy*																													
11	Brea	Elm St		25		50						30																			
12	Fullerton	Rolling Hills Dr		25		50			20			30																			
13	Fullerton	Delicata Dr		25		50			20																						
14	Fullerton	Bastanchury Rd		25		50			20			30			30																
15	Fullerton	Palmetto Terrace/Mountain Ridge Dr		25		50																									
16	Fullerton	Yorbal Linda Bl		25		50			20			30			30																
17	Fullerton	Dorothy Ln/Campus Dr		25		50						30																			
18	Fullerton	Arts Dr		25		50																									
19	Fullerton	Nutwood Ave		25		50						30			30																
20	Fullerton	Chapman Ave (North)		25		50																									
21	Fullerton	Commonwealth Ave		25		50			20																						
22	Fullerton	Walnut Ave (Fender Ave)		25		50						30																			
23	Fullerton	Valencia Dr		25		50																									
24	Fullerton	Orangethorpe Ave		15		10						10																			
25	Anaheim	Via Burton St		15		50																40									
26	Anaheim	SR-91WB Off-Ramp*																													
27	Anaheim	SR-91 EB Off-Ramp*																													
28	Anaheim	Placentia Ave/Romneya Dr		15		50						30			30							40				40					
29	Anaheim	Shopping Center (McDonald's)		15		50	30					30			30																
30	Anaheim	La Palma Ave		15		50						30						50								40					
31	Anaheim	Underhill Ave		15		50	30					30			30																
32	Anaheim	Lincoln Ave		15		50		15							30			50								40					
33	Anaheim	Shopping Center (Anaheim Town Square)		15		50						30			30																
34	Anaheim	Santa Ana St		15		50	30					30			30																
35	Anaheim	South St		15		50		15							30			50													
36	Anaheim	Vermont Ave		15		50						30			30											40					
37	Anaheim	Wagner Ave		15		50	30								30			50				40									
38	Anaheim	Ball Rd		15		50		15							30			50								40					
39	Anaheim	Winston Rd		15		50	30					30																			
40	Anaheim	Cerritos Ave		15		50						30																			

TABLE III: PROJECT AVERAGE IMPROVEMENT SCORES

LOCATION	IMPLEMENTING AGENCY	PROJECT CROSS STREETS	DESCRIPTION OF WORK																												
			Above ground (e.g. wireless, cellular, etc.)	Fiber Optic underground	All other (e.g. copper, aerial fiber, GPS, etc.)	ATC signal controller	Signal cabinet on existing foundation	Signal cabinet on new foundation	BBS/USP (attached)	BBS/UPS on existing foundation	BBS/UPS on new foundation	CCTV	Vehicle detection (ATSPM inputs + counts)	Vehicle detection (ATSPM inputs)	Vehicle detection + bicycle detection	Vehicle detection	Bicycle detection	Pedestrian detection (audible)	Pedestrian detection	Active transportation/pedestrian safety	Transit Signal Priority	EVP (hybrid or GPS)	EVP (infrared)	Speed feedback signs (existing post)	Speed feedback signs (new post)	Signal Performance Monitoring	Channelization	Signal phasing improvement	Central System (server, licenses, workstations)	Display (video wall, VMS, etc.)	UPS for TMC
			Time Source			None/5+ Years or Within 5 Years																					0/5+ or <5		0/10+ or < 10		
41	Anaheim	Howell Ave		15		50						30			30											40					
42	Anaheim	Railroad Crossing		15		50	30																								
43	Anaheim	Katella Ave				50						30						50								40					
44	Anaheim	Gateway				50						30			30																
45	Anaheim	Gene Autry Wy				50												50								40					
46	Anaheim	Artisan Ct				50									30							40									
47	Anaheim	Orangewood Ave													30											40					
48	Orange	Orange Center Dr*																													
49	Orange	I-5 NB Off-Ramp*																													
50	Orange	I-5 SB Off-Ramp*																													
51	Orange	Chapman Ave		15																											
52	Orange	Medical Center		15		50	30									30															
53	Orange	Dawn Way		15		50	30									30															
54	Orange	Steiner Way/Style St		15		50	30									30															
55	Orange	Outlet Dr		15		50	30									30															
56	Orange	Metropolitan Dr		15		50	30									30															
57	Orange	SR-22 EB Off/On-Ramp*																													
58	Orange	Garden Grove Bl		15												30															
-	Brea	TMC Improvements																											40	30	20
-	Anaheim	TMC Improvements																											20		20
-	Fullerton	TMC Improvements																											40	30	20
-	0	TMC Improvements																													

TABLE III: PROJECT AVERAGE IMPROVEMENT SCORES

LOCATION	IMPLEMENTING AGENCY	PROJECT CROSS STREETS	Online or Offline: Timing Only	Online or Offline: Timing + Traffic Responsive (license only)	Online or Offline: Timing + Peer-to-Peer (configuration only)	Online or Offline: Timing + Traffic Adaptive (license only)	Y/N: Caltrans Cooperative Agreement	AVERAGE IMPROVEMENT SCORE	NOTES
1	Brea	Cliffwood Ave						**35.0**	
2	Brea	Balsa Ave						**37.5**	
3	Brea	Lambert Rd							No improvements included in this project. Included in on-going TSSP project.
4	Brea	Avocado St / Tracks						**30.0**	
5	Brea	Corporate							
6	Brea	Birch St						**30.0**	
7	Brea	Brea Mall North						**30.0**	
8	Brea	Brea Mall Center						**15.0**	
9	Brea	Brea Mall South						**15.0**	
10	Brea	Imperial Hwy*							No improvements included in this project. Included in on-going TSSP project.
11	Brea	Elm St						**35.0**	
12	Fullerton	Rolling Hills Dr						**31.3**	
13	Fullerton	Delicata Dr						**31.7**	
14	Fullerton	Bastanchury Rd						**31.0**	
15	Fullerton	Palmetto Terrace/Mountain Ridge Dr						**37.5**	
16	Fullerton	Yorbal Linda Bl						**31.0**	
17	Fullerton	Dorothy Ln/Campus Dr						**35.0**	
18	Fullerton	Arts Dr						**37.5**	
19	Fullerton	Nutwood Ave						**33.8**	
20	Fullerton	Chapman Ave (North)						**37.5**	
21	Fullerton	Commonwealth Ave						**31.7**	
22	Fullerton	Walnut Ave (Fender Ave)						**35.0**	
23	Fullerton	Valencia Dr						**37.5**	
24	Fullerton	Orangethorpe Ave						**11.7**	
25	Anaheim	Via Burton St						**35.0**	
26	Anaheim	SR-91WB Off-Ramp*					**50**	**50.0**	
27	Anaheim	SR-91 EB Off-Ramp*					**50**	**50.0**	
28	Anaheim	Placentia Ave/Romneya Dr						**34.2**	
29	Anaheim	Shopping Center (McDonald's)						**31.0**	
30	Anaheim	La Palma Ave						**37.0**	
31	Anaheim	Underhill Ave						**31.0**	
32	Anaheim	Lincoln Ave						**33.3**	
33	Anaheim	Shopping Center (Anaheim Town Square)						**31.3**	
34	Anaheim	Santa Ana St						**31.0**	
35	Anaheim	South St						**32.0**	
36	Anaheim	Vermont Ave						**33.0**	
37	Anaheim	Wagner Ave						**35.8**	
38	Anaheim	Ball Rd						**33.3**	
39	Anaheim	Winston Rd						**31.3**	
40	Anaheim	Cerritos Ave						**31.7**	

TABLE III: PROJECT AVERAGE IMPROVEMENT SCORES

LOCATION	IMPLEMENTING AGENCY	PROJECT CROSS STREETS	Timing Only	Timing + Traffic Responsive (license only)	Timing + Peer-to-Peer (configuration only)	Timing + Traffic Adaptive (license only)	Caltrans Cooperative Agreement	AVERAGE IMPROVEMENT SCORE	NOTES
			Online or Offline				Y/N		
41	Anaheim	Howell Ave						33.0	
42	Anaheim	Railroad Crossing						31.7	
43	Anaheim	Katella Ave						42.5	
44	Anaheim	Gateway						36.7	
45	Anaheim	Gene Autry Wy						46.7	
46	Anaheim	Artisan Ct						40.0	
47	Anaheim	Orangewood Ave						35.0	
48	Orange	Orange Center Dr*					50	50.0	
49	Orange	I-5 NB Off-Ramp*					50	50.0	
50	Orange	I-5 SB Off-Ramp*					50	50.0	
51	Orange	Chapman Ave						15.0	
52	Orange	Medical Center						31.3	
53	Orange	Dawn Way						31.3	
54	Orange	Steiner Way/Style St						31.3	
55	Orange	Outlet Dr						31.3	
56	Orange	Metropolitan Dr						31.3	
57	Orange	SR-22 EB Off/On-Ramp*					50	50.0	
58	Orange	Garden Grove Bl						22.5	
-	Brea	TMC Improvements						30.0	
-	Anaheim	TMC Improvements						20.0	
-	Fullerton	TMC Improvements						30.0	
-	0	TMC Improvements							
							AVERAGE SCORE =	33.6	

Appendix C

VEHICLE MILES TRAVELED (VMT)

APPENDIX C: VEHICLE MILES TRAVELED (VMT)

Segment	ADTs	Distance	VMT
State College (Brea NCL to Birch)	13,457	0.98	19,677
State College (Birch to Elm St)	18,145	0.87	15,786
State College (Fullerton NCL to Bastanchury Rd)	22,000	0.76	16,720
State College (Bastanchury Rd to Yorba Linda Blvd)	20,700	0.70	14,490
State College (Yorba Linda Blvd to Dorothy Ln)	29,600	0.45	13,320
State College (Dorothy Ln to Chapman Ave)	29,700	0.50	14,850
State College (Chapman Ave to Commonwealth Ave	24,500	0.25	6,125
State College (Commonwealth Ave to SCL)	29,300	0.88	25,784
State College (Via Burton to La Palma Ave)	35,887	0.71	25,480
State College (La Palma Ave to Lincoln Ave)	28,252	0.50	14,126
State College (Lincoln Ave to South St)	29,508	0.50	14,754
State College (South St to Wagner Ave)	27,242	0.50	13,621
State College (Wagner Ave to Ball Rd)	25,841	0.50	12,921
State College (Ball Rd to Cerritos Ave)	22,186	0.50	11,093
State College (Cerritos Ave to Katella Ave)	24,895	0.50	12,448
State College (Katella Ave to Anaheim SCL)	20,710	0.50	10,355
The City Dr (Orange City Limit to Chapman Ave)	26,800	0.37	9,916
The City Drive (Style St to Chapman Ave)	27,300	0.35	9,555
The City Drive (22 Fwy to Style St)	24,000	0.54	12,960
The City Drive (Garden Grove Bl to 22 Fwy)	16,000	0.42	6,720
Total Project VMT:		**11.28**	**280,700**

Source:

City of Anaheim - City Traffic Counters 2024
City of Orange - Citywide ADT 2024
City of Brea - NDS 2024
City of Fullerton - Citywide ADT 2024

National Data & Surveying Services

Intersection Turning Movement Count

Location: N State College Blvd & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-003
Date: 5/18/2019

Total

NS/EW Streets:	N State College Blvd				N State College Blvd				E Lambert Rd				E Lambert Rd				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1.5	1.5	0	2	2	0	0	2	3.5	0.5	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	27	46	46	0	127	65	2	0	3	198	27	1	101	244	140	4	1031
11:15 AM	22	57	69	0	125	65	0	0	6	202	45	0	113	275	139	0	1118
11:30 AM	25	62	75	0	161	86	1	0	1	208	37	0	104	292	142	2	1196
11:45 AM	29	54	65	0	119	89	2	0	3	185	45	0	111	341	137	0	1180
12:00 PM	26	59	55	0	105	81	0	0	3	217	64	0	138	352	154	1	1255
12:15 PM	31	60	90	0	122	87	2	0	4	212	54	0	144	303	148	1	1258
12:30 PM	28	60	76	0	106	73	2	0	6	275	73	0	150	335	171	2	1357
12:45 PM	37	54	76	0	139	91	1	0	4	220	56	0	175	280	183	2	1318
1:00 PM	29	51	66	0	142	76	1	0	4	228	53	0	115	257	163	0	1185
1:15 PM	33	69	84	0	108	73	2	0	2	265	49	0	101	248	148	3	1185
1:30 PM	23	58	95	0	116	75	3	0	4	236	54	1	104	274	157	1	1201
1:45 PM	22	76	84	0	140	84	2	0	6	238	51	0	122	293	173	2	1293
2:00 PM	32	62	88	0	128	60	1	0	2	246	34	0	107	296	164	1	1221
2:15 PM	38	62	84	0	127	61	6	0	3	180	41	0	117	301	161	4	1185
2:30 PM	35	64	100	0	131	62	3	0	2	236	42	0	107	333	158	1	1274
2:45 PM	29	59	91	0	124	84	0	0	6	250	52	0	131	283	176	0	1285
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	466	953	1244	0	2020	1212	28	0	59	3596	777	2	1940	4707	2514	24	19542
APPROACH %'s :	17.50%	35.79%	46.71%	0.00%	61.96%	37.18%	0.86%	0.00%	1.33%	81.10%	17.52%	0.05%	21.12%	51.25%	27.37%	0.26%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	122	233	297	0	472	332	5	0	17	924	247	0	607	1270	656	6	5188
PEAK HR FACTOR :	0.824	0.971	0.825	0.000	0.849	0.912	0.625	0.000	0.708	0.840	0.846	0.000	0.867	0.902	0.896	0.750	0.956
	0.901				0.876				0.839				0.965				

Prepared by National Data & Surveying Services

N State College Blvd & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-003
City: Brea

Day: Saturday
Date: 05/18/2019

PEAK HOURS

AM: NONE
NOON: 12:00 PM - 01:00 PM
PM: NONE

COUNT PERIODS

AM: NONE
NOON: 11:00 AM - 03:00 PM
PM: NONE

N State College Blvd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	5	332	472	0	906	NOON
PM	0	0	0	0	0	PM

E Lambert Rd — EASTBOUND

AM	NOON	PM		
0	1397	0		
0	0	0	0	
0	17	0	2	
0	924	0	3.5	
0	247	0	0.5	
AM	NOON	PM		

CONTROL

Signalized

	AM	NOON	PM
TEV	0	5188	0
PHF		0.96	

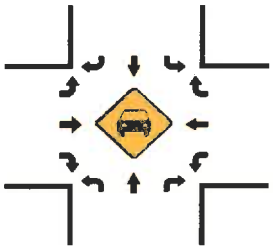
E Lambert Rd — WESTBOUND

PM	NOON	AM		
0	656	0	1	
0	1270	0	3	
0	607	0	2	
0	6	0	0	
0	1699	0		
PM	NOON	AM		

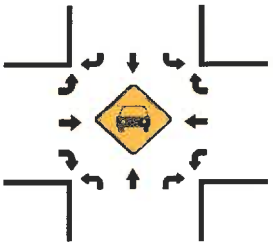
N State College Blvd — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	1186	0	122	233	297	NOON
AM	0	0	0	0	0	AM

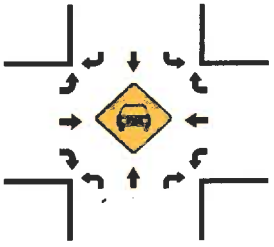
Total Vehicles (AM)



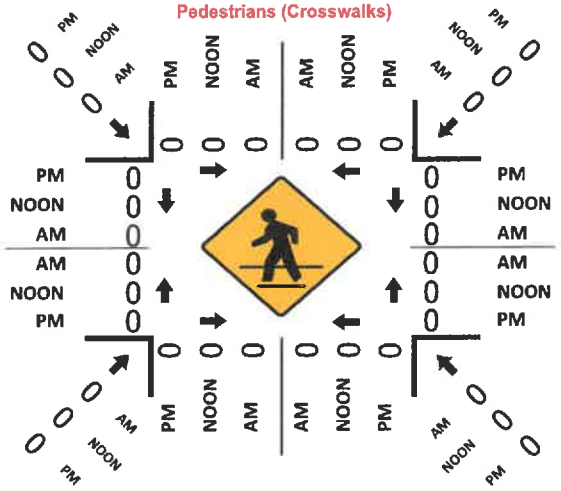
Total Vehicles (NOON)



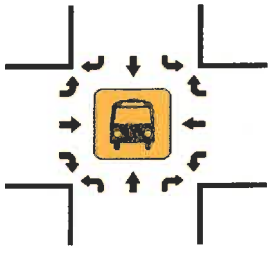
Total Vehicles (PM)



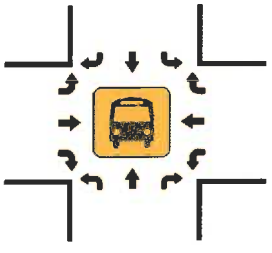
Pedestrians (Crosswalks)



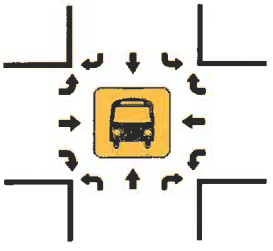
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



INTERSECTION TURNING MOVEMENT COUNTS

T418

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Sat, May 18, 19	LOCATION:	Brea	PROJECT #:	SC2213
	NORTH & SOUTH:	State College	LOCATION #:	1
	EAST & WEST:	Birch	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

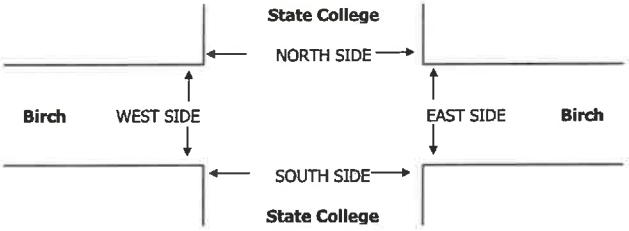
◄ W N S ▼ E ►

Add U-Turns to Left Turns

	NORTHBOUND State College			SOUTHBOUND State College			EASTBOUND Birch			WESTBOUND Birch			
LANES:	NL 2	NT 2	NR 1	SL 2	ST 2	SR 0	EL 2	ET 2	ER 1	WL 2	WT 2	WR 1	TOTAL
MD 11:00 AM	26	36	27	35	83	69	37	117	32	32	147	40	681
11:15 AM	33	63	22	39	102	78	44	107	35	35	142	44	744
11:30 AM	30	62	28	41	92	84	54	130	27	35	141	46	770
11:45 AM	29	52	33	67	98	89	40	154	46	37	175	55	875
12:00 PM	24	57	37	61	119	95	55	148	40	39	160	46	881
12:15 PM	37	60	40	73	126	97	51	158	35	40	150	51	918
12:30 PM	35	59	45	46	125	104	60	180	44	44	170	52	964
12:45 PM	21	66	44	60	145	113	48	172	35	31	145	57	937
1:00 PM	40	49	51	55	98	82	62	156	36	32	140	54	855
1:15 PM	38	78	42	65	101	60	58	153	42	34	127	35	833
1:30 PM	41	70	37	51	98	71	53	164	46	35	128	50	844
1:45 PM	25	69	45	56	110	90	76	149	42	26	138	55	881
2:00 PM	34	69	36	36	74	78	66	140	35	28	117	58	771
2:15 PM	32	62	52	30	94	95	58	139	30	32	110	57	791
2:30 PM	28	81	43	33	77	79	65	159	36	37	122	45	805
2:45 PM	36	71	47	50	118	92	57	144	40	23	133	40	851
VOLUMES	509	1,004	629	798	1,660	1,376	884	2,370	601	540	2,245	785	13,401
APPROACH %	24%	47%	29%	21%	43%	36%	23%	61%	16%	15%	63%	22%	
APP/DEPART	2,142	/	2,674	3,834	/	2,800	3,855	/	3,790	3,570	/	4,137	0
BEGIN PEAK HR	12:00 PM												
VOLUMES	117	242	166	240	515	409	214	658	154	154	625	206	3,700
APPROACH %	22%	46%	32%	21%	44%	35%	21%	64%	15%	16%	63%	21%	
PEAK HR FACTOR		0.944			0.915			0.903			0.926		0.960
APP/DEPART	525	/	662	1,164	/	823	1,026	/	1,061	985	/	1,154	0

U-TURNS

NB 0	SB 0	EB 0	WB 0	TTL
0	0	0	0	0
0	0	0	0	0
0	2	1	1	4
0	0	0	0	0
0	1	1	0	2
0	1	0	0	1
0	1	1	0	2
0	0	1	0	1
0	0	0	0	0
0	1	1	0	2
0	2	0	0	2
0	0	1	0	1
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	8	7	1	16



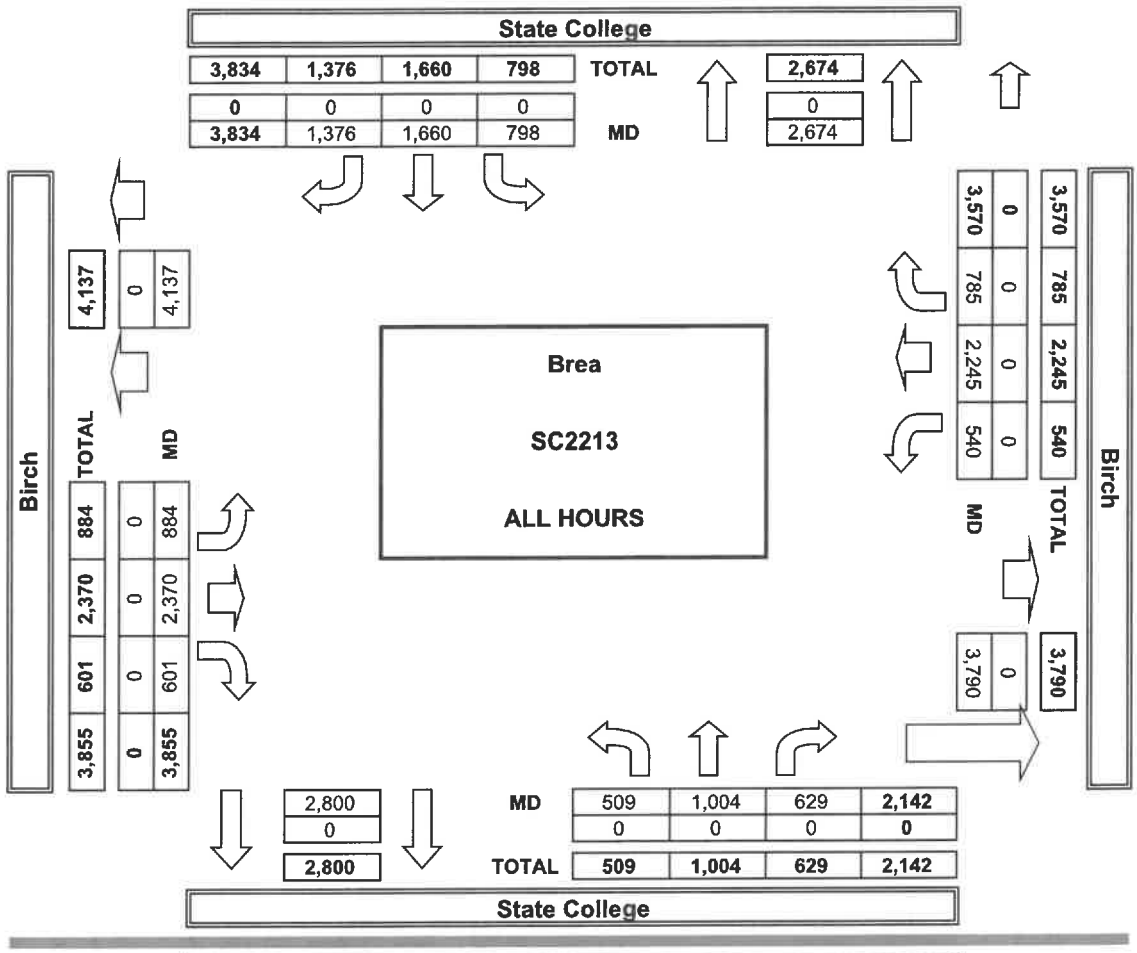
	PEDESTRIAN + BIKE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
MD 11:00 AM	0	0	0	0	0
11:15 AM	0	0	0	0	0
11:30 AM	0	0	0	0	0
11:45 AM	0	0	0	0	0
12:00 PM	0	0	0	0	0
12:15 PM	0	0	0	0	0
12:30 PM	0	0	0	0	0
12:45 PM	0	0	0	0	0
1:00 PM	0	0	0	0	0
1:15 PM	0	0	0	0	0
1:30 PM	0	0	0	0	0
1:45 PM	0	0	0	0	0
2:00 PM	0	0	0	0	0
2:15 PM	0	0	0	0	0
2:30 PM	0	0	0	0	0
2:45 PM	0	0	0	0	0
TOTAL	0	0	0	0	0
AM BEGIN PEAK HR	12:00 PM				

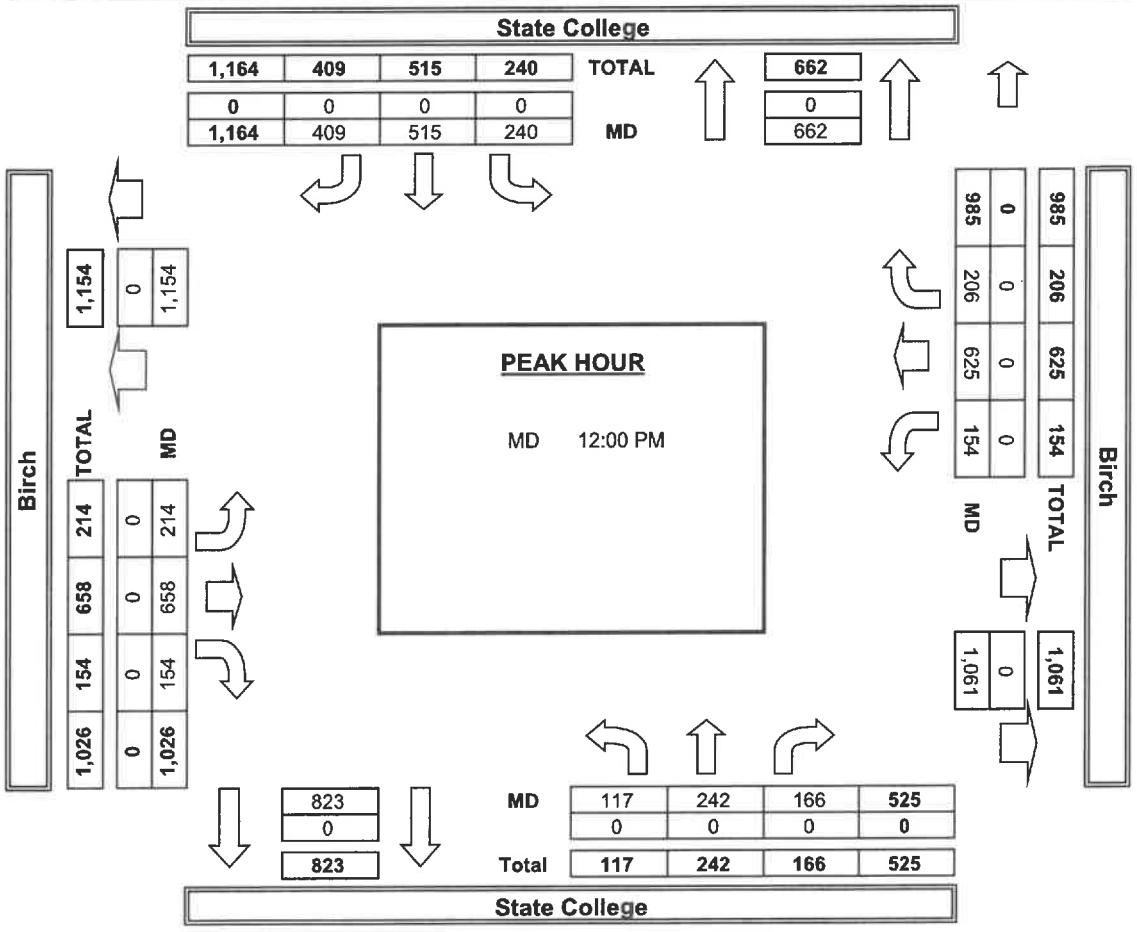
PEDESTRIAN CROSSINGS				
N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

BICYCLE CROSSINGS				
NS	SS	ES	WS	TOTAL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





National Data & Surveying Services

Intersection Turning Movement Count

Location: State College Blvd & Birch St
City: Brea
Control: Signalized

Project ID: 18-01231-005
Date: 11/13/2018

Total

NS/EW Streets:	State College Blvd				State College Blvd				Birch St				Birch St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	0 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
7:00 AM	12	23	11	0	116	168	22	0	16	95	7	0	20	76	40	0	606
7:15 AM	21	19	19	0	131	235	13	0	9	89	10	0	20	85	43	0	694
7:30 AM	14	22	24	0	160	220	30	0	20	137	14	0	10	114	58	0	823
7:45 AM	20	34	27	0	184	144	49	0	23	121	8	0	19	172	88	0	889
8:00 AM	16	37	20	0	117	134	45	0	18	126	13	0	23	153	68	0	770
8:15 AM	17	35	17	0	99	104	44	0	27	84	10	0	34	137	55	0	663
8:30 AM	11	39	15	0	64	81	51	0	28	65	11	0	18	127	43	0	553
8:45 AM	20	33	9	0	73	84	59	0	12	82	17	0	23	117	43	0	572
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	131	242	142	0	944	1170	313	0	153	799	90	0	167	981	438	0	5570
APPROACH %'s :	25.44%	46.99%	27.57%	0.00%	38.90%	48.21%	12.90%	0.00%	14.68%	76.68%	8.64%	0.00%	10.53%	61.85%	27.62%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	71	112	90	0	592	733	137	0	70	473	45	0	72	524	257	0	3176
PEAK HR FACTOR :	0.845	0.757	0.833	0.000	0.804	0.780	0.699	0.000	0.761	0.863	0.804	0.000	0.783	0.762	0.730	0.000	0.893
		0.943				0.891				0.860				0.764			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	0 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	TOTAL
4:00 PM	27	67	34	0	62	71	55	0	54	139	44	0	28	163	82	0	826
4:15 PM	33	83	36	0	67	65	64	0	43	153	29	0	33	150	102	0	858
4:30 PM	33	71	47	0	70	79	58	0	32	138	31	0	27	200	116	0	902
4:45 PM	31	75	35	0	87	72	58	0	35	161	29	0	33	238	145	0	999
5:00 PM	24	75	43	0	62	72	65	0	48	170	46	0	33	231	153	0	1022
5:15 PM	31	85	41	0	70	83	56	0	43	184	30	0	29	223	146	0	1021
5:30 PM	45	92	27	0	72	73	64	1	57	184	41	0	36	203	123	0	1018
5:45 PM	34	84	34	0	54	71	77	2	48	158	39	0	46	168	101	0	916
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	258	632	297	0	544	586	497	3	360	1287	289	0	265	1576	968	0	7562
APPROACH %'s :	21.74%	53.24%	25.02%	0.00%	33.37%	35.95%	30.49%	0.18%	18.60%	66.48%	14.93%	0.00%	9.43%	56.11%	34.46%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	131	327	146	0	291	300	243	1	183	699	146	0	131	895	567	0	4060
PEAK HR FACTOR :	0.728	0.889	0.849	0.000	0.836	0.904	0.935	0.250	0.803	0.950	0.793	0.000	0.910	0.940	0.926	0.000	0.993
		0.921				0.962				0.911				0.955			

Prepared by National Data & Surveying Services

State College Blvd & Birch St

Peak Hour Turning Movement Count

ID: 18-01231-005
City: Brea

Day: Tuesday
Date: 11/13/2018

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

State College Blvd

SOUTHBOUND

AM	137	733	592	0	439	AM
NOON	0	0	0	0	0	NOON
PM	243	300	291	1	1078	PM

EASTBOUND (Birch St)

AM	NOON	PM	
732	0	1269	⇦
0	0	0	0 ↩
70	0	183	2 ↱
473	0	699	2 →
45	0	146	1 ↳
AM	NOON	PM	

WESTBOUND (Birch St)

PM	NOON	AM	
567	0	257	1 ↰
895	0	524	2 ←
131	0	72	2 ↩
0	0	0	0 ↩
1136	0	1155	⇨
PM	NOON	AM	

CONTROL: Signalized

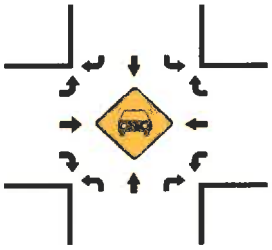
TEV	3176 AM	0 NOON	4060 PM
PHF	0.89		0.99

NORTHBOUND

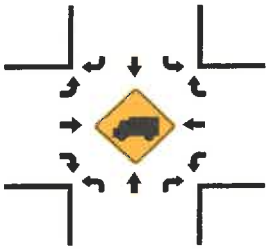
PM	577	0	131	327	146	PM
NOON	0	0	0	0	0	NOON
AM	850	0	71	112	90	AM

State College Blvd

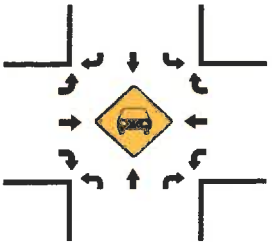
Total Vehicles (AM)



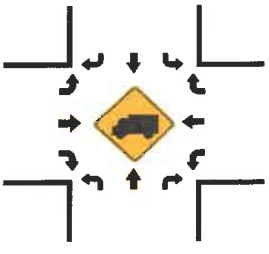
2axle (AM)



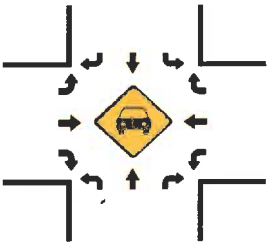
Total Vehicles (Noon)



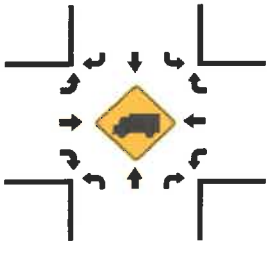
2axle (NOON)



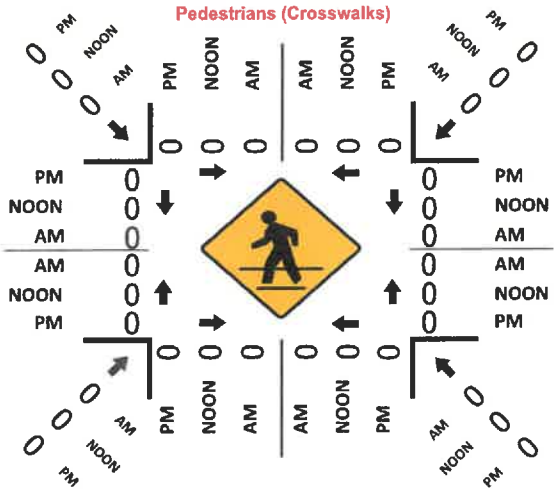
Total Vehicles (PM)



2axle (PM)



Pedestrians (Crosswalks)



Prepared by NDS/ATD

VOLUME

State College Blvd S/O Birch St

Day: Thursday
Date: 5/16/2019

City: Brea
Project #: CA19_1100_003

DAILY TOTALS	NB	SB	EB	WB	Total
	6,005	7,452	0	0	13,457

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	10		7				17		12:00	80		105				185	
00:15	7		5				12		12:15	79		142				221	
00:30	4		7				11		12:30	106		129				235	
00:45	9	30	4	23			13	53	12:45	124	389	117	493			241	882
01:00	3		1				4		13:00	127		118				245	
01:15	0		1				1		13:15	139		111				250	
01:30	6		3				9		13:30	123		122				245	
01:45	5	14	2	7			7	21	13:45	119	508	125	476			244	984
02:00	2		1				3		14:00	121		109				230	
02:15	1		4				5		14:15	104		102				206	
02:30	2		5				7		14:30	104		109				213	
02:45	2	7	3	13			5	20	14:45	101	430	127	447			228	877
03:00	1		1				2		15:00	99		142				241	
03:15	2		4				6		15:15	123		120				243	
03:30	3		2				5		15:30	131		128				259	
03:45	1	7	5	12			6	19	15:45	133	486	122	512			255	998
04:00	4		1				5		16:00	107		137				244	
04:15	5		6				11		16:15	132		105				237	
04:30	4		9				13		16:30	123		140				263	
04:45	2	15	10	26			12	41	16:45	140	502	126	508			266	1010
05:00	9		9				18		17:00	129		127				256	
05:15	7		8				15		17:15	146		130				276	
05:30	10		22				32		17:30	138		126				264	
05:45	19	45	39	78			58	123	17:45	133	546	143	526			276	1072
06:00	8		44				52		18:00	131		131				262	
06:15	14		59				73		18:15	140		113				253	
06:30	27		100				127		18:30	123		131				254	
06:45	45	94	137	340			182	434	18:45	114	508	108	483			222	991
07:00	42		109				151		19:00	132		115				247	
07:15	46		119				165		19:15	100		95				195	
07:30	54		148				202		19:30	94		124				218	
07:45	44	186	146	522			190	708	19:45	94	420	66	400			160	820
08:00	61		147				208		20:00	89		91				180	
08:15	57		152				209		20:15	92		73				165	
08:30	58		122				180		20:30	90		62				152	
08:45	52	228	137	558			189	786	20:45	90	361	67	293			157	654
09:00	48		124				172		21:00	113		60				173	
09:15	60		103				163		21:15	72		53				125	
09:30	41		116				157		21:30	58		30				88	
09:45	51	200	116	459			167	659	21:45	33	276	37	180			70	456
10:00	55		119				174		22:00	49		32				81	
10:15	54		105				159		22:15	27		18				45	
10:30	52		117				169		22:30	22		16				38	
10:45	86	247	126	467			212	714	22:45	23	121	19	85			42	206
11:00	64		124				188		23:00	21		18				39	
11:15	75		122				197		23:15	22		11				33	
11:30	81		124				205		23:30	17		7				24	
11:45	94	314	133	503			227	817	23:45	11	71	5	41			16	112
TOTALS		1387		3008				4395	TOTALS		4618		4444				9062
SPLIT %		31.6%		68.4%				32.7%	SPLIT %		51.0%		49.0%				67.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	6,005	7,452	0	0	13,457

AM Peak Hour	11:45	07:30	11:45	PM Peak Hour	16:45	17:15	17:15
AM Pk Volume	359	593	868	PM Pk Volume	553	530	1078
Pk Hr Factor	0.847	0.975	0.923	Pk Hr Factor	0.947	0.927	0.976
7 - 9 Volume	414	1080	1494	4 - 6 Volume	1048	1034	2082
7 - 9 Peak Hour	08:00	07:30	07:30	4 - 6 Peak Hour	16:45	17:00	17:00
7 - 9 Pk Volume	228	593	809	4 - 6 Pk Volume	553	526	1072
Pk Hr Factor	0.934	0.975	0.968	Pk Hr Factor	0.947	0.920	0.971

Prepared by NDS/ATD

VOLUME

State College Blvd S/O Birch St

Day: Saturday
Date: 5/18/2019

City: Brea
Project #: CA19_1100_003

DAILY TOTALS	NB	SB	EB	WB	Total
	6,548	7,440	0	0	13,988

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	22		12						34		12:00	106		195						301	
00:15	15		14						29		12:15	139		180						319	
00:30	19		12						31		12:30	144		218						362	
00:45	18	74	8	46					26	120	12:45	131	520	201	794					332	1314
01:00	16		4						20		13:00	134		146						280	
01:15	9		7						16		13:15	154		165						319	
01:30	6		7						13		13:30	151		177						328	
01:45	5	36	1	19					6	55	13:45	137	576	186	674					323	1250
02:00	5		6						11		14:00	141		132						273	
02:15	4		1						5		14:15	137		154						291	
02:30	0		4						4		14:30	162		138						300	
02:45	2	11	6	17					8	28	14:45	148	588	177	601					325	1189
03:00	3		2						5		15:00	131		152						283	
03:15	7		0						7		15:15	163		154						317	
03:30	1		2						3		15:30	137		163						300	
03:45	2	13	5	9					7	22	15:45	144	575	186	655					330	1230
04:00	2		5						7		16:00	154		151						305	
04:15	7		7						14		16:15	146		159						305	
04:30	2		2						4		16:30	134		161						295	
04:45	1	12	4	18					5	30	16:45	115	549	163	634					278	1183
05:00	6		7						13		17:00	119		170						289	
05:15	2		8						10		17:15	128		137						265	
05:30	1		6						7		17:30	128		145						273	
05:45	5	14	11	32					16	46	17:45	136	511	123	575					259	1086
06:00	8		9						17		18:00	125		148						273	
06:15	9		15						24		18:15	113		130						243	
06:30	15		15						30		18:30	102		141						243	
06:45	17	49	15	54					32	103	18:45	128	468	139	558					267	1026
07:00	10		25						35		19:00	131		124						255	
07:15	18		32						50		19:15	111		81						192	
07:30	10		39						49		19:30	114		76						190	
07:45	32	70	34	130					66	200	19:45	112	468	72	353					184	821
08:00	18		60						78		20:00	103		88						191	
08:15	26		46						72		20:15	128		61						189	
08:30	19		71						90		20:30	114		57						171	
08:45	36	99	54	231					90	330	20:45	107	452	47	253					154	705
09:00	34		64						98		21:00	92		56						148	
09:15	41		58						99		21:15	77		53						130	
09:30	46		70						116		21:30	74		31						105	
09:45	51	172	103	295					154	467	21:45	47	290	40	180					87	470
10:00	61		101						162		22:00	42		44						86	
10:15	67		117						184		22:15	67		37						104	
10:30	64		125						189		22:30	39		29						68	
10:45	79	271	135	478					214	749	22:45	36	184	25	135					61	319
11:00	90		148						238		23:00	34		26						60	
11:15	110		156						266		23:15	28		14						42	
11:30	123		153						276		23:30	22		24						46	
11:45	115	438	165	622					280	1060	23:45	24	108	13	77					37	185
TOTALS		1259		1951						3210	TOTALS		5289		5489						10778
SPLIT %		39.2%		60.8%						22.9%	SPLIT %		49.1%		50.9%						77.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	6,548	7,440	0	0	13,988

AM Peak Hour	11:45	11:45			11:45	PM Peak Hour	14:30	12:00	12:00
AM Pk Volume	504	758			1262	PM Pk Volume	604	794	1314
Pk Hr Factor	0.875	0.869			0.872	Pk Hr Factor	0.926	0.911	0.907
7 - 9 Volume	169	361			530	4 - 6 Volume	1060	1209	2269
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	16:00	16:15	16:00
7 - 9 Pk Volume	99	231			330	4 - 6 Pk Volume	549	653	1183
Pk Hr Factor	0.688	0.813			0.917	Pk Hr Factor	0.891	0.960	0.970

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brea Mall S Dwy & S State College Blvd
City: Brea
Control: Signalized

Project ID: 19-01152-003
Date: 8/3/2019

Total

NS/EW Streets:	Brea Mall S Dwy				Brea Mall S Dwy				S State College Blvd				S State College Blvd				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0.5	1.5	1	0	2	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	30	5	22	0	4	7	51	1	107	92	10	1	25	81	6	0	442
11:15 AM	30	6	9	0	5	1	46	1	110	80	4	2	17	87	6	0	404
11:30 AM	34	5	18	0	3	7	65	0	126	80	5	1	31	84	7	0	466
11:45 AM	37	6	18	0	4	4	63	0	148	96	11	1	25	87	5	0	505
12:00 PM	37	10	22	0	4	8	60	0	137	96	11	0	24	112	9	0	530
12:15 PM	59	9	17	0	4	4	76	0	109	88	15	1	25	113	7	1	528
12:30 PM	35	12	21	0	8	6	70	0	143	92	6	1	23	143	6	0	566
12:45 PM	42	9	26	0	8	4	92	0	122	80	6	1	27	98	6	1	522
1:00 PM	44	9	20	0	9	3	84	0	133	79	7	0	20	125	6	0	539
1:15 PM	33	6	15	0	3	4	83	0	115	97	6	0	18	100	5	0	485
1:30 PM	37	6	24	0	11	5	95	0	133	79	11	1	19	138	6	0	565
1:45 PM	54	8	19	0	15	7	110	0	148	90	4	0	16	115	7	1	594
2:00 PM	38	8	21	0	9	7	93	0	134	87	9	0	24	124	2	0	556
2:15 PM	38	2	16	0	8	3	123	0	136	84	5	4	19	161	5	1	605
2:30 PM	30	5	30	0	9	1	96	0	124	79	10	0	20	156	7	1	568
2:45 PM	43	2	9	0	12	4	99	0	128	85	3	1	21	119	8	0	534
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	621	108	307	0	116	75	1306	2	2053	1384	123	14	354	1843	98	5	8409
APPROACH %'s :	59.94%	10.42%	29.63%	0.00%	7.74%	5.00%	87.12%	0.13%	57.44%	38.72%	3.44%	0.39%	15.39%	80.13%	4.26%	0.22%	
PEAK HR :	01:45 PM - 02:45 PM																TOTAL
PEAK HR VOL :	160	23	86	0	41	18	422	0	542	340	28	4	79	556	21	3	2323
PEAK HR FACTOR :	0.741	0.719	0.717	0.000	0.683	0.643	0.858	0.000	0.916	0.944	0.700	0.250	0.823	0.863	0.750	0.750	0.960
	0.830				0.897				0.944				0.886				

Prepared by National Data & Surveying Services

Brea Mall S Dwy & S State College Blvd

Peak Hour Turning Movement Count

ID: 19-01152-003
City: Brea

Day: Saturday
Date: 08/03/2019

PEAK HOURS	COUNT PERIODS
NONE	NONE
01:45 PM - 02:45 PM	11:00 AM - 03:00 PM
NONE	NONE

Brea Mall S Dwy — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	422	18	41	0	586	NOON
PM	0	0	0	0	0	PM

Turning movements: 1 | 1.5 | 0.5 | 0

S State College Blvd — EASTBOUND

AM	NOON	PM	
0	1142	0	⇦
0	4	0	0 ↶
0	542	0	2 ↱
0	340	0	2 →
0	28	0	0 ↴
AM	NOON	PM	

CONTROL: Signalized

	AM	NOON	PM
TEV	0	2323	0
PHF		0.96	

S State College Blvd — WESTBOUND

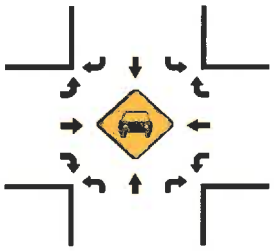
PM	NOON	AM	
0	21	0	0 ↰
0	556	0	2 ←
0	79	0	1 ↰
0	3	0	0 ↶
0	470	0	⇨
PM	NOON	AM	

Turning movements: 0 | 1.5 | 0.5 | 1

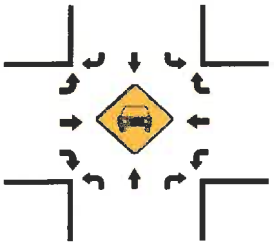
PM	0	0	0	0	0	PM
NOON	125	0	160	23	86	NOON
AM	0	0	0	0	0	AM

Brea Mall S Dwy — NORTHBOUND

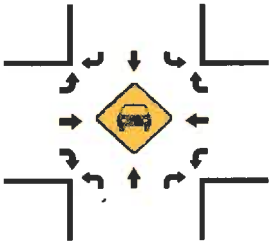
Total Vehicles (AM)



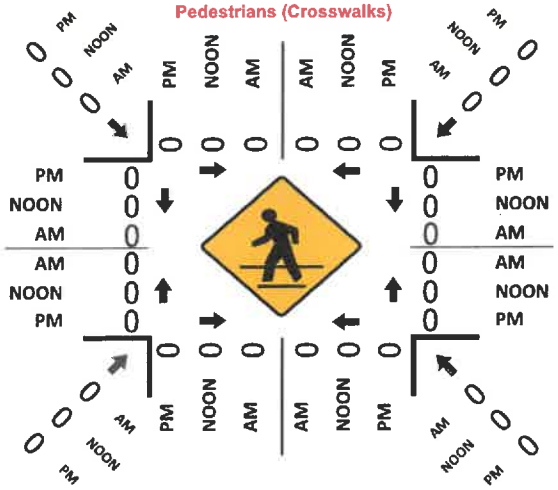
Total Vehicles (NOON)



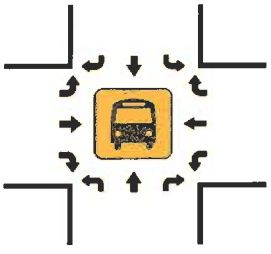
Total Vehicles (PM)



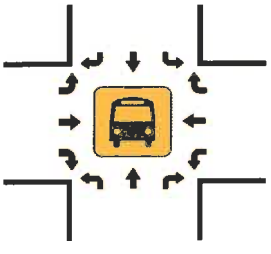
Pedestrians (Crosswalks)



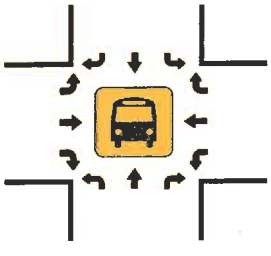
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: S State College Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-014
Date: 5/18/2019

Total

NS/EW Streets:	S State College Blvd				S State College Blvd				Imperial Hwy				Imperial Hwy				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	1	0	2	1.5	0.5	0	2	3.5	0.5	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	48	68	94	1	86	39	32	0	29	362	27	1	97	368	178	10	1440
11:15 AM	53	89	119	3	79	63	24	0	21	375	32	2	94	365	212	16	1547
11:30 AM	64	105	128	3	88	44	44	0	40	368	37	2	98	385	165	13	1584
11:45 AM	59	110	146	3	105	65	31	0	22	330	31	0	137	440	241	24	1744
12:00 PM	70	106	137	1	120	78	45	0	29	349	50	1	129	399	183	24	1721
12:15 PM	54	110	138	4	124	93	38	0	41	359	39	0	124	414	200	17	1755
12:30 PM	56	133	114	5	138	107	55	0	33	382	48	0	135	426	203	13	1848
12:45 PM	55	94	99	1	129	111	41	0	37	340	44	1	108	382	185	19	1646
1:00 PM	47	84	93	4	123	78	38	0	29	396	36	0	139	432	198	17	1714
1:15 PM	47	67	88	1	138	99	40	0	36	394	42	1	125	403	217	13	1711
1:30 PM	58	82	99	3	147	90	46	0	32	403	39	0	129	392	189	13	1722
1:45 PM	55	77	101	1	150	94	42	0	36	420	43	1	145	423	188	17	1793
2:00 PM	39	76	92	1	155	110	37	0	32	416	41	3	112	414	188	23	1739
2:15 PM	43	73	86	0	118	89	53	0	34	373	34	0	115	368	168	18	1572
2:30 PM	43	77	83	2	156	99	46	0	23	375	40	0	117	392	179	14	1646
2:45 PM	37	68	79	2	145	108	41	0	33	375	34	0	112	388	188	19	1629
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	828	1419	1696	35	2001	1367	653	0	507	6017	617	12	1916	6391	3082	270	26811
APPROACH %'s :	20.81%	35.67%	42.63%	0.88%	49.76%	34.00%	16.24%	0.00%	7.09%	84.12%	8.63%	0.17%	16.43%	54.82%	26.43%	2.32%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	239	459	535	13	487	343	169	0	125	1420	168	1	525	1679	827	78	7068
PEAK HR FACTOR :	0.854	0.863	0.916	0.650	0.882	0.801	0.768	0.000	0.762	0.929	0.840	0.250	0.958	0.954	0.858	0.813	0.956
	0.980				0.833				0.925				0.923				

Prepared by National Data & Surveying Services

S State College Blvd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-014
City: Brea

Day: Saturday
Date: 05/18/2019

PEAK HOURS: NONE | 11:45 AM - 12:45 PM | NONE

COUNT PERIODS: NONE | 11:00 AM - 03:00 PM | NONE

S State College Blvd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	169	343	487	0	1411	NOON
PM	0	0	0	0	0	PM

Imperial Hwy — EASTBOUND

AM	NOON	PM	
0	2088	0	
0	1	0	0
0	125	0	2
0	1420	0	3.5
0	168	0	0.5
AM	NOON	PM	

Imperial Hwy — WESTBOUND

PM	NOON	AM	
0	827	0	1
0	1679	0	3
0	525	0	2
0	78	0	0
0	2520	0	
PM	NOON	AM	

0.5 1.5 2 0

0 2 2 1

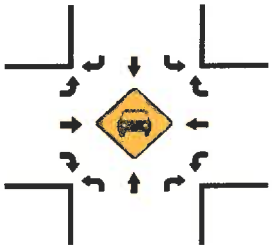
CONTROL: Signalized

TEV	0 AM	7068 NOON	0 PM
PHF		0.96	

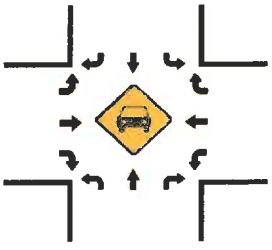
NORTHBOUND — S State College Blvd

PM	0	0	0	0	0	PM
NOON	1049	13	239	459	535	NOON
AM	0	0	0	0	0	AM

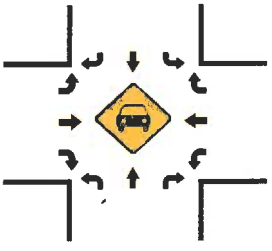
Total Vehicles (AM)



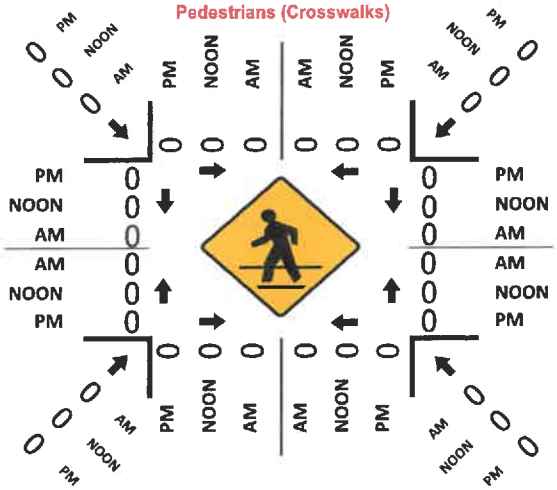
Total Vehicles (NOON)



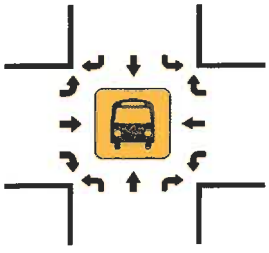
Total Vehicles (PM)



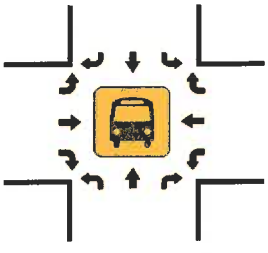
Pedestrians (Crosswalks)



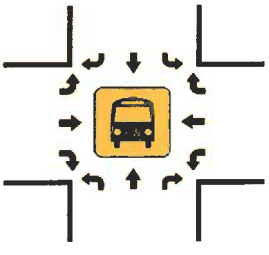
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : N. STATE COLLEGE BOULEVARD
Segment : BASTANCHURY RD TO N.C.L.
Client : CITY FULLERTON

Site: FULLERTON
Date: 02/15/24
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	23	60	174	680	25	67	126	558	48	127	300	1,238
12:15	15		176		12		138		27		314	
12:30	13		162		18		154		31		316	
12:45	9		168		12		140		21		308	
01:00	12	33	202	624	11	30	152	673	23	63	354	1,297
01:15	4		164		4		173		8		337	
01:30	11		134		7		160		18		294	
01:45	6		124		8		188		14		312	
02:00	5	26	150	765	5	19	167	703	10	45	317	1,468
02:15	13		168		2		176		15		344	
02:30	6		220		6		172		12		392	
02:45	2		227		6		188		8		415	
03:00	5	29	197	907	4	26	216	898	9	55	413	1,805
03:15	8		232		3		216		11		448	
03:30	7		224		9		262		16		486	
03:45	9		254		10		204		19		458	
04:00	4	24	258	976	8	69	180	746	12	93	438	1,722
04:15	5		256		11		194		16		450	
04:30	8		228		28		188		36		416	
04:45	7		234		22		184		29		418	
05:00	14	100	244	1,005	26	136	215	777	40	236	459	1,782
05:15	20		278		20		204		40		482	
05:30	30		242		36		174		66		416	
05:45	36		241		54		184		90		425	
06:00	26	181	223	738	64	439	176	642	90	620	399	1,380
06:15	32		190		66		170		98		360	
06:30	41		151		126		156		167		307	
06:45	82		174		183		140		265		314	
07:00	74	467	166	516	296	1,407	112	389	370	1,874	278	905
07:15	122		127		356		114		478		241	
07:30	131		127		354		78		485		205	
07:45	140		96		401		85		541		181	
08:00	131	664	96	363	371	1,278	96	328	502	1,942	192	691
08:15	170		96		320		78		490		174	
08:30	201		77		256		80		457		157	
08:45	162		94		331		74		493		168	
09:00	122	484	76	298	226	784	68	235	348	1,268	144	533
09:15	112		86		206		70		318		156	
09:30	132		70		186		53		318		123	
09:45	118		66		166		44		284		110	
10:00	122	500	48	165	146	582	36	161	268	1,082	84	326
10:15	120		39		158		42		278		81	
10:30	124		44		144		47		268		91	
10:45	134		34		134		36		268		70	
11:00	146	625	24	104	144	566	28	82	290	1,191	52	186
11:15	161		24		137		22		298		46	
11:30	152		26		135		18		287		44	
11:45	166		30		150		14		316		44	
Totals	3,193		7,141		5,403		6,192		8,596		13,333	
Split%	37.1		53.6		62.9		46.4					
Day Totals		10,334				11,595				21,929		
Day Splits		47.1				52.9						
Peak Hour	08:00		05:00		07:15		03:00		07:30		03:30	
Volume	664		1,005		1,482		898		2,018		1,832	
Factor	0.83		0.90		0.92		0.86		0.93		0.94	

* Data File : D2402104

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : N. STATE COLLEGE BOULEVARD — Site: FULLERTON

Segment : YORBA LINDA BVD TO BASTANCHURY — Date: 02/15/24

Client : CITY FULLERTON

Interval	NB				SB				Combined				Day: Thursday
Begin	AM		PM		AM		PM		AM		PM		
12:00	9	38	130	534	20	55	126	598	29	93	256	1.132	
12:15	9		125		16		156		25		281		
12:30	10		115		12		166		22		281		
12:45	10		164		7		150		17		314		
01:00	8	29	188	507	2	22	142	595	10	51	330	1.102	
01:15	10		108		4		136		14		244		
01:30	4		114		9		145		13		259		
01:45	7		97		7		172		14		269		
02:00	1	11	144	649	2	11	176	732	3	22	320	1.381	
02:15	3		148		3		191		6		339		
02:30	5		197		1		183		6		380		
02:45	2		160		5		182		7		342		
03:00	2	10	156	744	2	13	206	914	4	23	362	1.658	
03:15	5		130		4		214		9		344		
03:30	1		216		2		253		3		469		
03:45	2		242		5		241		7		483		
04:00	1	26	259	893	8	51	174	770	9	77	433	1.663	
04:15	3		234		5		180		8		414		
04:30	11		202		18		214		29		416		
04:45	11		198		20		202		31		400		
05:00	12	63	248	957	10	92	198	755	22	155	446	1.712	
05:15	6		256		22		211		28		467		
05:30	15		246		24		176		39		422		
05:45	30		207		36		170		66		377		
06:00	28	158	162	670	46	409	142	530	74	567	304	1.200	
06:15	34		172		58		137		92		309		
06:30	28		144		117		125		145		269		
06:45	68		192		188		126		256		318		
07:00	87	450	164	504	310	1.636	97	358	397	2.086	261	862	
07:15	129		120		438		101		567		221		
07:30	128		120		406		96		534		216		
07:45	106		100		482		64		588		164		
08:00	118	520	68	270	463	1.529	78	288	581	2.049	146	558	
08:15	162		70		444		78		606		148		
08:30	141		49		290		74		431		123		
08:45	99		83		332		58		431		141		
09:00	98	397	91	301	216	889	80	236	314	1.286	171	537	
09:15	97		58		214		68		311		126		
09:30	82		66		244		48		326		114		
09:45	120		86		215		40		335		126		
10:00	82	379	56	144	148	557	30	124	230	936	86	268	
10:15	91		32		133		36		224		68		
10:30	96		26		138		32		234		58		
10:45	110		30		138		26		248		56		
11:00	128	525	24	99	138	551	18	61	266	1.076	42	160	
11:15	128		18		140		18		268		36		
11:30	143		16		133		16		276		32		
11:45	126		41		140		9		266		50		
Totals	2.606		6.272		5.815		5.961		8.421		12.233		
Split%	30.9		51.3		69.1		48.7						
Day Totals		8.878				11.776				20.654			
Day Splits		43.0				57.0							
Peak Hour	07:45		05:00		07:30		03:00		07:30		03:30		
Volume	527		957		1.795		914		2.309		1.799		
Factor	0.81		0.93		0.93		0.90		0.95		0.93		

* Data File : D2402103

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : N. STATE COLLEGE BOULEVARD — Site: FULLERTON

Segment : DOROTHY LN TO YORBA LINDA BV — Date: 02/15/24

Client : CITY FULLERTON — Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	27	68	221	939	19	70	211	895	46	138	432	1.834
12:15	16		220		19		212		35		432	
12:30	12		198		18		228		30		426	
12:45	13		300		14		244		27		544	
01:00	18	65	314	923	10	36	213	856	28	101	527	1.779
01:15	24		204		6		206		30		410	
01:30	10		219		12		227		22		446	
01:45	13		186		8		210		21		396	
02:00	5	22	249	1.199	8	19	222	987	13	41	471	2.186
02:15	6		303		4		274		10		577	
02:30	6		384		3		282		9		666	
02:45	5		263		4		209		9		472	
03:00	3	18	250	1.349	1	15	257	1.209	4	33	507	2.558
03:15	7		226		5		297		12		523	
03:30	3		384		5		326		8		710	
03:45	5		489		4		329		9		818	
04:00	8	40	444	1,386	7	62	259	1,019	15	102	703	2,405
04:15	2		332		5		236		7		568	
04:30	15		322		21		254		36		576	
04:45	15		288		29		270		44		558	
05:00	16	87	361	1.412	15	99	270	1.106	31	186	631	2.518
05:15	16		399		16		285		32		684	
05:30	23		380		28		267		51		647	
05:45	32		272		40		284		72		556	
06:00	27	204	286	1.083	53	390	220	845	80	594	506	1.928
06:15	42		249		60		226		102		475	
06:30	39		256		113		200		152		456	
06:45	96		292		164		199		260		491	
07:00	133	673	285	843	336	1.558	144	491	469	2.231	429	1.334
07:15	231		212		354		126		585		338	
07:30	177		179		376		116		553		295	
07:45	132		167		492		105		624		272	
08:00	169	699	142	520	502	1.570	98	380	671	2.269	240	900
08:15	208		128		418		104		626		232	
08:30	193		122		304		96		497		218	
08:45	129		128		346		82		475		210	
09:00	111	559	240	673	259	1,108	92	295	370	1,667	332	968
09:15	126		163		244		83		370		246	
09:30	134		120		310		62		444		182	
09:45	188		150		295		58		483		208	
10:00	166	625	100	273	208	828	60	191	374	1.453	160	464
10:15	136		80		220		49		356		129	
10:30	140		48		209		42		349		90	
10:45	183		45		191		40		374		85	
11:00	160	856	35	134	228	854	28	85	388	1.710	63	219
11:15	238		33		220		19		458		52	
11:30	260		38		203		22		463		60	
11:45	198		28		203		16		401		44	
Totals	3.916		10.734		6.609		8.359		10.525		19.093	
Split%	37.2		56.2		62.8		43.8					
Day Totals		14.650				14.968				29.618		
Day Splits		49.5				50.5						
Peak Hour	11:00		03:30		07:30		03:15		07:30		03:30	
Volume	856		1.649		1.788		1.211		2.474		2.799	
Factor	0.82		0.84		0.89		0.92		0.92		0.86	

* Data File : D2402102

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : N. STATE COLLEGE BOULEVARD

Segment : CHAPMAN AVE TO DOROTHY LN.

Client : CITY FULLERTON

Site: FULLERTON

Date: 02/15/24

Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	35	87	233	988	19	57	198	964	54	144	431	1.952
12:15	19		255		14		222		33		477	
12:30	18		246		16		244		34		490	
12:45	15		254		8		300		23		554	
01:00	20	72	236	930	8	22	343	1.086	28	94	579	2.016
01:15	28		234		4		226		32		460	
01:30	8		224		4		260		12		484	
01:45	16		236		6		257		22		493	
02:00	4	26	277	923	10	21	273	1.188	14	47	550	2.111
02:15	7		230		6		322		13		552	
02:30	6		196		1		303		7		499	
02:45	9		220		4		290		13		510	
03:00	4	20	244	1.121	3	31	276	1.152	7	51	520	2.273
03:15	10		258		8		246		18		504	
03:30	2		320		4		316		6		636	
03:45	4		299		16		314		20		613	
04:00	4	40	270	1,096	10	73	230	932	14	113	500	2.028
04:15	2		288		6		242		8		530	
04:30	16		254		19		216		35		470	
04:45	18		284		38		244		56		528	
05:00	24	102	278	1,170	32	163	291	1.074	56	265	569	2,244
05:15	18		300		24		278		42		578	
05:30	24		294		41		271		65		565	
05:45	36		298		66		234		102		532	
06:00	44	280	294	1.030	52	438	240	960	96	718	534	1.990
06:15	50		230		86		216		136		446	
06:30	60		256		116		218		176		474	
06:45	126		250		184		286		310		536	
07:00	129	819	211	729	274	1.246	250	637	403	2.065	461	1.366
07:15	180		202		338		156		518		358	
07:30	232		166		300		113		532		279	
07:45	278		150		334		118		612		268	
08:00	353	1.280	130	498	318	1.247	112	449	671	2.527	242	947
08:15	426		130		316		116		742		246	
08:30	296		116		344		119		640		235	
08:45	205		122		269		102		474		224	
09:00	194	944	124	382	235	909	121	467	429	1,853	245	849
09:15	219		94		210		106		429		200	
09:30	272		84		204		114		476		198	
09:45	259		80		260		126		519		206	
10:00	156	685	80	241	236	834	75	203	392	1.519	155	444
10:15	142		66		206		36		348		102	
10:30	170		51		184		56		354		107	
10:45	217		44		208		36		425		80	
11:00	230	826	39	148	244	1.018	34	115	474	1.844	73	263
11:15	224		41		266		30		490		71	
11:30	184		34		242		31		426		65	
11:45	188		34		266		20		454		54	
Totals	5.181		9.256		6.059		9.227		11.240		18.483	
Split%	46.1		50.1		53.9		49.9					
Day Totals		14.437				15.286				29.723		
Day Splits		48.6				51.4						
Peak Hour	07:45		05:15		07:45		02:15		07:45		03:30	
Volume	1.353		1.186		1.312		1.191		2.665		2.279	
Factor	0.79		0.99		0.95		0.92		0.90		0.90	

* Data File : D2402101

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : N. STATE COLLEGE BOULEVARD
Segment : COMMONWEALTH TO CHAPMAN AVE
Client : CITY FULLERTON

Site: FULLERTON
Date: 02/15/24
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	25	76	168	697	25	79	178	809	50	155	346	1.506
12:15	21		182		24		180		45		362	
12:30	20		173		16		203		36		376	
12:45	10		174		14		248		24		422	
01:00	16	54	136	591	10	53	284	938	26	107	420	1.529
01:15	20		126		13		227		33		353	
01:30	8		160		14		219		22		379	
01:45	10		169		16		208		26		377	
02:00	6	30	180	677	8	24	182	989	14	54	362	1.666
02:15	6		136		5		249		11		385	
02:30	12		171		5		282		17		453	
02:45	6		190		6		276		12		466	
03:00	4	23	158	766	1	38	204	961	5	61	362	1.727
03:15	7		170		9		228		16		398	
03:30	6		240		16		232		22		472	
03:45	6		198		12		297		18		495	
04:00	8	73	202	836	10	79	302	1,070	18	152	504	1.906
04:15	10		212		9		266		19		478	
04:30	29		200		22		272		51		472	
04:45	26		222		38		230		64		452	
05:00	34	155	238	929	31	160	243	1,084	65	315	481	2.013
05:15	28		246		30		292		58		538	
05:30	39		218		51		282		90		500	
05:45	54		227		48		267		102		494	
06:00	36	253	208	788	74	435	230	863	110	688	438	1.651
06:15	52		192		74		199		126		391	
06:30	81		198		127		224		208		422	
06:45	84		190		160		210		244		400	
07:00	110	596	160	569	222	1.084	198	613	332	1.680	358	1.182
07:15	125		154		278		166		403		320	
07:30	163		141		312		129		475		270	
07:45	198		114		272		120		470		234	
08:00	234	808	118	383	264	1.032	136	457	498	1.840	254	840
08:15	232		103		264		122		496		225	
08:30	182		86		274		116		456		202	
08:45	160		76		230		83		390		159	
09:00	164	743	84	259	153	705	131	451	317	1,448	215	710
09:15	168		66		175		122		343		188	
09:30	218		53		180		88		398		141	
09:45	193		56		197		110		390		166	
10:00	118	511	50	188	200	676	76	253	318	1,187	126	441
10:15	117		54		168		68		285		122	
10:30	130		42		160		60		290		102	
10:45	146		42		148		49		294		91	
11:00	158	639	36	126	170	768	35	154	328	1.407	71	280
11:15	156		27		208		44		364		71	
11:30	155		36		208		40		363		76	
11:45	170		27		182		35		352		62	
Totals	3.961		6.809		5.133		8.642		9.094		15.451	
Split%	43.6		44.1		56.4		55.9					
Day Totals		10.770				13.775				24.545		
Day Splits		43.9				56.1						
Peak Hour	07:45		05:00		07:15		03:45		07:30		05:00	
Volume	846		929		1.126		1.137		1.939		2.013	
Factor	0.90		0.94		0.90		0.94		0.97		0.94	

* Data File : D2402100

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : N. STATE COLLEGE BOULEVARD
Segment : ORANGETHORPE TO COMMONWEALTH
Client : CITY FULLERTON

Site: FULLERTON
Date: 02/15/24
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	24	78	144	625	24	78	167	714	48	156	311	1.339
12:15	21		164		14		170		35		334	
12:30	17		158		26		162		43		320	
12:45	16		159		14		215		30		374	
01:00	19	58	124	555	12	47	234	789	31	105	358	1.344
01:15	18		134		12		183		30		317	
01:30	12		150		12		180		24		330	
01:45	9		147		11		192		20		339	
02:00	7	39	168	626	16	33	170	961	23	72	338	1.587
02:15	10		140		4		242		14		382	
02:30	10		142		8		294		18		436	
02:45	12		176		5		255		17		431	
03:00	5	22	146	691	4	46	208	894	9	68	354	1.585
03:15	5		157		9		192		14		349	
03:30	6		216		14		216		20		432	
03:45	6		172		19		278		25		450	
04:00	8	73	202	789	14	96	284	953	22	169	486	1.742
04:15	13		198		19		249		32		447	
04:30	18		191		24		210		42		401	
04:45	34		198		39		210		73		408	
05:00	48	184	212	801	32	163	212	911	80	347	424	1.712
05:15	32		214		38		248		70		462	
05:30	56		182		53		252		109		434	
05:45	48		193		40		199		88		392	
06:00	52	299	196	736	64	402	180	709	116	701	376	1.445
06:15	62		174		64		184		126		358	
06:30	82		174		102		183		184		357	
06:45	103		192		172		162		275		354	
07:00	104	572	144	470	222	1.036	198	550	326	1.608	342	1.020
07:15	110		130		254		136		364		266	
07:30	160		98		306		112		466		210	
07:45	198		98		254		104		452		202	
08:00	248	782	94	335	228	916	107	354	476	1.698	201	689
08:15	226		82		236		98		462		180	
08:30	156		70		236		82		392		152	
08:45	152		89		216		67		368		156	
09:00	152	735	64	239	149	675	106	388	301	1.410	170	627
09:15	161		65		166		96		327		161	
09:30	232		64		180		78		412		142	
09:45	190		46		180		108		370		154	
10:00	128	518	70	220	158	580	61	233	286	1.098	131	453
10:15	124		65		165		64		289		129	
10:30	118		53		135		66		253		119	
10:45	148		32		122		42		270		74	
11:00	133	609	52	143	155	679	36	132	288	1.288	88	275
11:15	166		32		180		32		346		64	
11:30	158		38		188		36		346		74	
11:45	152		21		156		28		308		49	
Totals	3.969		6.230		4.751		7.588		8.720		13.818	
Split%	45.5		45.1		54.5		54.9					
Day Totals		10.199				12.339				22.538		
Day Splits		45.3				54.7						
Peak Hour	07:30		04:30		07:15		03:30		07:30		03:30	
Volume	832		815		1.042		1.027		1.856		1.815	
Factor	0.84		0.95		0.85		0.90		0.97		0.93	

Data File : D2402099

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : N. STATE COLLEGE BLVD

Segment : S.C.L. TO ORANGETHORPE AVE

Client : CITY FULLERTON

Site: FULLERTON

Date: 02/15/24

Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	18	84	164	760	46	124	197	894	64	208	361	1.654
12:15	24		212		30		230		54		442	
12:30	20		168		22		211		42		379	
12:45	22		216		26		256		48		472	
01:00	15	63	162	749	22	71	302	1.078	37	134	464	1.827
01:15	22		203		18		258		40		461	
01:30	12		172		16		260		28		432	
01:45	14		212		15		258		29		470	
02:00	16	62	175	730	21	65	296	1.261	37	127	471	1.991
02:15	10		176		8		265		18		441	
02:30	12		177		22		368		34		545	
02:45	24		202		14		332		38		534	
03:00	20	116	186	805	9	66	280	1.282	29	182	466	2.087
03:15	18		187		14		286		32		473	
03:30	30		226		21		354		51		580	
03:45	48		206		22		362		70		568	
04:00	36	301	210	833	20	116	397	1.294	56	417	607	2.127
04:15	35		190		20		313		55		503	
04:30	88		218		38		306		126		524	
04:45	142		215		38		278		180		493	
05:00	100	408	208	870	40	230	354	1.245	140	638	562	2.115
05:15	79		216		42		327		121		543	
05:30	105		216		72		306		177		522	
05:45	124		230		76		258		200		488	
06:00	99	567	210	773	84	538	252	938	183	1.105	462	1.711
06:15	134		187		100		252		234		439	
06:30	146		208		138		206		284		414	
06:45	188		168		216		228		404		396	
07:00	196	862	165	540	254	1.176	226	710	450	2.038	391	1.250
07:15	192		150		269		177		461		327	
07:30	220		111		365		156		585		267	
07:45	254		114		288		151		542		265	
08:00	324	1.037	103	397	276	1.047	125	476	600	2.084	228	873
08:15	269		115		255		130		524		245	
08:30	230		79		274		116		504		195	
08:45	214		100		242		105		456		205	
09:00	205	929	78	296	206	833	120	478	411	1.762	198	774
09:15	232		82		199		126		431		208	
09:30	265		68		200		120		465		188	
09:45	227		68		228		112		455		180	
10:00	160	704	62	234	226	823	94	352	386	1.527	156	586
10:15	176		81		214		96		390		177	
10:30	167		47		199		98		366		145	
10:45	201		44		184		64		385		108	
11:00	175	779	47	157	210	876	78	248	385	1.655	125	405
11:15	210		38		236		52		446		90	
11:30	204		40		226		78		430		118	
11:45	190		32		204		40		394		72	
Totals	5.912		7.144		5.965		10.256		11.877		17.400	
Split%	49.8		41.1		50.2		58.9					
Day Totals		13.056				16.221				29.277		
Day Splits		44.6				55.4						
Peak Hour	07:45		05:15		07:15		03:30		07:30		03:30	
Volume	1.077		872		1.198		1.426		2.251		2.258	
Factor	0.83		0.95		0.82		0.90		0.94		0.93	

* Data File : D2402098

CITY TRAFFIC COUNTERS

WWW.CTCOUNTERS.COM

State College Boulevard Btwn
North City Limit & La Palma Avenue

Start Time	3/7/2024 Thu	North Morning	North Afternoon	Hour Totals Morning	Hour Totals Afternoon	South Morning	South Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		41	254			44	292				
12:15		28	239			32	271				
12:30		32	270			20	268				
12:45		33	298	134	1061	21	291	117	1122	251	2183
01:00		15	277			30	289				
01:15		20	272			25	307				
01:30		18	272			20	294				
01:45		26	274	79	1095	12	288	87	1178	166	2273
02:00		13	287			12	315				
02:15		15	287			15	299				
02:30		9	269			23	336				
02:45		17	355	54	1198	8	332	58	1282	112	2480
03:00		15	336			14	324				
03:15		10	304			24	326				
03:30		21	326			19	373				
03:45		23	344	69	1310	26	340	83	1363	152	2673
04:00		22	347			24	396				
04:15		23	308			23	396				
04:30		47	329			39	389				
04:45		80	335	172	1319	42	363	128	1544	300	2863
05:00		60	400			62	385				
05:15		79	360			64	378				
05:30		103	339			88	349				
05:45		91	363	333	1462	123	302	337	1414	670	2876
06:00		97	334			142	325				
06:15		129	330			140	303				
06:30		143	311			156	301				
06:45		153	237	522	1212	200	267	638	1196	1160	2408
07:00		156	237			220	261				
07:15		198	212			294	250				
07:30		220	171			318	238				
07:45		273	152	847	772	321	202	1153	951	2000	1723
08:00		272	150			332	158				
08:15		291	130			303	168				
08:30		215	140			357	169				
08:45		276	122	1054	542	287	151	1279	646	2333	1188
09:00		227	141			274	155				
09:15		212	131			220	136				
09:30		209	129			253	122				
09:45		192	158	840	559	262	117	1009	530	1849	1089
10:00		195	131			249	122				
10:15		234	110			211	105				
10:30		233	96			225	104				
10:45		259	87	921	424	241	65	926	396	1847	820
11:00		225	74			241	66				
11:15		225	81			256	90				
11:30		225	53			265	69				
11:45		272	42	947	250	236	51	998	276	1945	526
Total		5972	11204			6813	11898			12785	23102
Percent		34.8%	65.2%			36.4%	63.6%			35.6%	64.4%
Grand Total		5972	11204			6813	11898			12785	23102
Percent		34.8%	65.2%			36.4%	63.6%			35.6%	64.4%
ADT		ADT 35,887		AADT 35,887							

CITY TRAFFIC COUNTERS

WWW.CTCOUNTERS.COM

State College Boulevard Btwn
La Palma Avenue & Lincoln Avenue

Start Time	3/7/2024 Thu	North Morning	North Afternoon	Hour Totals Morning	Hour Totals Afternoon	South Morning	South Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		43	265			18	158				
12:15		33	243			14	179				
12:30		29	272			9	164				
12:45		27	282	132	1062	6	145	47	646	179	1708
01:00		18	271			13	147				
01:15		10	286			6	194				
01:30		10	280			4	190				
01:45		24	287	62	1124	3	173	26	704	88	1828
02:00		8	282			4	160				
02:15		13	326			12	208				
02:30		11	352			6	274				
02:45		18	371	50	1331	5	220	27	862	77	2193
03:00		10	327			0	227				
03:15		7	333			13	195				
03:30		31	343			8	210				
03:45		22	341	70	1344	12	203	33	835	103	2179
04:00		30	373			16	226				
04:15		29	340			13	213				
04:30		41	345			14	240				
04:45		74	390	174	1448	18	249	61	928	235	2376
05:00		35	401			27	247				
05:15		74	367			34	225				
05:30		79	377			33	245				
05:45		84	386	272	1531	50	171	144	888	416	2419
06:00		59	337			46	189				
06:15		84	348			55	171				
06:30		125	289			66	165				
06:45		138	265	406	1239	109	164	276	689	682	1928
07:00		150	210			115	133				
07:15		175	234			191	157				
07:30		241	187			191	110				
07:45		260	183	826	814	131	106	628	506	1454	1320
08:00		256	222			154	91				
08:15		250	194			172	92				
08:30		252	149			218	64				
08:45		271	128	1029	693	218	99	762	346	1791	1039
09:00		236	148			162	98				
09:15		213	142			127	67				
09:30		243	135			119	73				
09:45		204	183	896	608	136	100	544	338	1440	946
10:00		182	134			100	66				
10:15		219	106			126	62				
10:30		206	96			123	50				
10:45		251	110	858	446	128	36	477	214	1335	660
11:00		243	94			124	31				
11:15		217	85			114	30				
11:30		236	54			157	24				
11:45		244	54	940	287	126	23	521	108	1461	395
Total		5715	11927			3546	7064			9261	18991
Percent		32.4%	67.6%			33.4%	66.6%			32.8%	67.2%
Grand Total		5715	11927			3546	7064			9261	18991
Percent		32.4%	67.6%			33.4%	66.6%			32.8%	67.2%
ADT		ADT 28,252		AADT 28,252							

CITY TRAFFIC COUNTERS

WWW.CTCOUNTERS.COM

State College Boulevard Btwn
Lincoln Avenue & South Street

Start Time	3/7/2024 Thu	North Morning	North Afternoon	Hour Totals Morning	Hour Totals Afternoon	South Morning	South Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		28	205			23	235				
12:15		16	202			28	239				
12:30		24	222			22	247				
12:45		14	216	82	845	20	270	93	991	175	1836
01:00		13	205			12	273				
01:15		12	220			15	298				
01:30		7	210			8	226				
01:45		12	230	44	865	16	304	51	1101	95	1966
02:00		6	227			9	289				
02:15		14	223			14	321				
02:30		5	270			14	309				
02:45		9	289	34	1009	10	305	47	1224	81	2233
03:00		10	244			9	315				
03:15		4	277			12	298				
03:30		13	311			19	305				
03:45		14	260	41	1092	13	312	53	1230	94	2322
04:00		19	285			12	350				
04:15		18	282			12	391				
04:30		22	292			27	298				
04:45		53	319	112	1178	42	325	93	1364	205	2542
05:00		31	312			35	348				
05:15		34	294			44	331				
05:30		51	273			48	343				
05:45		45	287	161	1166	72	266	199	1288	360	2454
06:00		60	254			70	260				
06:15		67	253			95	306				
06:30		94	257			102	265				
06:45		103	193	324	957	162	231	429	1062	753	2019
07:00		113	181			214	208				
07:15		126	145			339	231				
07:30		167	114			319	214				
07:45		206	119	612	559	245	162	1117	815	1729	1374
08:00		204	138			262	142				
08:15		201	120			274	146				
08:30		162	110			270	133				
08:45		207	102	774	470	289	134	1095	555	1869	1025
09:00		181	97			295	121				
09:15		239	95			186	120				
09:30		178	81			195	109				
09:45		149	93	747	366	198	113	874	463	1621	829
10:00		123	73			204	88				
10:15		133	76			197	88				
10:30		166	63			188	77				
10:45		155	54	577	266	178	57	767	310	1344	576
11:00		178	64			205	60				
11:15		178	48			221	53				
11:30		178	35			255	45				
11:45		192	29	726	176	227	38	908	196	1634	372
Total		4234	8949			5726	10599			9960	19548
Percent		32.1%	67.9%			35.1%	64.9%			33.8%	66.2%
Grand Total		4234	8949			5726	10599			9960	19548
Percent		32.1%	67.9%			35.1%	64.9%			33.8%	66.2%
ADT		ADT 29,508		AADT 29,508							

CITY TRAFFIC COUNTERS

WWW.CTCOUNTERS.COM

State College Boulevard Btwn
South Street & Wagner Avenue

Start Time	3/7/2024 Thu	North Morning	North Afternoon	Hour Totals Morning	Hour Totals Afternoon	South Morning	South Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		28	193			19	180				
12:15		26	156			25	193				
12:30		40	191			15	207				
12:45		23	172	117	712	14	224	73	804	190	1516
01:00		13	188			16	207				
01:15		20	184			17	232				
01:30		18	206			6	225				
01:45		12	171	63	749	5	184	44	848	107	1597
02:00		7	182			5	215				
02:15		7	169			9	247				
02:30		9	274			17	278				
02:45		11	254	34	879	8	245	39	985	73	1864
03:00		10	222			4	277				
03:15		11	261			16	256				
03:30		5	268			17	263				
03:45		17	332	43	1083	15	257	52	1053	95	2136
04:00		11	266			21	292				
04:15		12	323			17	302				
04:30		33	332			28	266				
04:45		40	286	96	1207	29	249	95	1109	191	2316
05:00		19	367			39	282				
05:15		26	324			39	239				
05:30		44	315			64	243				
05:45		40	310	129	1316	88	235	230	999	359	2315
06:00		54	308			57	197				
06:15		57	239			97	222				
06:30		53	264			107	232				
06:45		72	247	236	1058	179	194	440	845	676	1903
07:00		121	190			204	176				
07:15		177	175			303	172				
07:30		252	171			275	177				
07:45		293	141	843	677	249	156	1031	681	1874	1358
08:00		243	153			236	140				
08:15		295	115			224	145				
08:30		157	119			241	110				
08:45		119	117	814	504	271	105	972	500	1786	1004
09:00		113	108			324	124				
09:15		136	124			197	126				
09:30		136	127			165	98				
09:45		133	115	518	474	179	103	865	451	1383	925
10:00		128	99			170	96				
10:15		102	75			138	81				
10:30		122	95			140	82				
10:45		139	54	491	323	148	74	596	333	1087	656
11:00		151	61			171	56				
11:15		166	60			184	60				
11:30		156	63			194	47				
11:45		176	33	649	217	208	45	757	208	1406	425
Total		4033	9199			5194	8816			9227	18015
Percent		30.5%	69.5%			37.1%	62.9%			33.9%	66.1%
Grand Total		4033	9199			5194	8816			9227	18015
Percent		30.5%	69.5%			37.1%	62.9%			33.9%	66.1%
ADT		ADT 27,242		AADT 27,242							

CITY TRAFFIC COUNTERS

WWW.CTCOUNTERS.COM

State College Boulevard Btwn
Wagner Avenue & Ball Road

Start Time	3/7/2024 Thu	North Morning	North Afternoon	Hour Totals Morning	Hour Totals Afternoon	South Morning	South Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		44	190			38	178				
12:15		38	191			29	188				
12:30		30	166			18	196				
12:45		27	182	139	729	18	198	103	760	242	1489
01:00		16	189			11	219				
01:15		16	191			15	210				
01:30		10	187			7	211				
01:45		10	186	52	753	5	193	38	833	90	1586
02:00		9	191			7	199				
02:15		12	202			13	178				
02:30		7	208			20	261				
02:45		17	225	45	826	12	260	52	898	97	1724
03:00		12	239			13	216				
03:15		7	244			14	208				
03:30		11	252			25	252				
03:45		12	249	42	984	27	223	79	899	121	1883
04:00		9	262			32	227				
04:15		19	289			30	253				
04:30		19	284			47	232				
04:45		29	298	76	1133	45	212	154	924	230	2057
05:00		16	317			43	237				
05:15		23	332			62	231				
05:30		34	314			83	239				
05:45		31	312	104	1275	82	228	270	935	374	2210
06:00		53	268			87	194				
06:15		47	265			113	184				
06:30		63	245			135	208				
06:45		65	234	228	1012	200	183	535	769	763	1781
07:00		91	188			219	151				
07:15		135	176			294	148				
07:30		122	180			320	142				
07:45		152	148	500	692	273	154	1106	595	1606	1287
08:00		146	147			229	139				
08:15		149	139			205	126				
08:30		162	127			220	110				
08:45		209	130	666	543	210	95	864	470	1530	1013
09:00		222	112			220	122				
09:15		172	130			185	128				
09:30		126	105			162	68				
09:45		119	91	639	438	166	90	733	408	1372	846
10:00		111	101			155	93				
10:15		115	88			142	65				
10:30		145	87			157	69				
10:45		129	84	500	360	142	58	596	285	1096	645
11:00		154	84			148	53				
11:15		157	62			189	57				
11:30		194	50			210	40				
11:45		149	45	654	241	165	42	712	192	1366	433
Total		3645	8986			5242	7968			8887	16954
Percent		28.9%	71.1%			39.7%	60.3%			34.4%	65.6%
Grand Total		3645	8986			5242	7968			8887	16954
Percent		28.9%	71.1%			39.7%	60.3%			34.4%	65.6%
ADT	ADT 25,841		AADT 25,841								

CITY TRAFFIC COUNTERS

WWW.CTCOUNTERS.COM

State College Boulevard Btwn
Ball Road & Cerritos Avenue

Start Time	3/7/2024 Thu	North Morning	North Afternoon	Hour Totals Morning	Hour Totals Afternoon	South Morning	South Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		29	173			22	193				
12:15		18	146			16	175				
12:30		23	144			22	227				
12:45		18	146	88	609	19	210	79	805	167	1414
01:00		13	178			12	268				
01:15		14	148			16	196				
01:30		9	151			11	206				
01:45		8	162	44	639	10	217	49	887	93	1526
02:00		14	172			7	200				
02:15		6	155			8	216				
02:30		4	152			23	271				
02:45		8	167	32	646	19	251	57	938	89	1584
03:00		7	190			7	259				
03:15		9	171			17	257				
03:30		7	198			19	265				
03:45		9	188	32	747	21	211	64	992	96	1739
04:00		9	202			20	268				
04:15		10	211			27	282				
04:30		21	221			47	260				
04:45		35	270	75	904	48	226	142	1036	217	1940
05:00		20	283			28	266				
05:15		24	288			34	238				
05:30		42	250			52	215				
05:45		44	264	130	1085	53	201	167	920	297	2005
06:00		54	239			46	181				
06:15		44	206			83	147				
06:30		79	185			90	150				
06:45		66	173	243	803	142	135	361	613	604	1416
07:00		84	148			165	111				
07:15		90	102			210	118				
07:30		115	112			256	98				
07:45		147	118	436	480	233	98	864	425	1300	905
08:00		118	81			209	83				
08:15		131	94			198	77				
08:30		140	69			178	73				
08:45		139	75	528	319	214	74	799	307	1327	626
09:00		161	67			158	72				
09:15		125	80			223	76				
09:30		107	60			190	48				
09:45		106	52	499	259	148	67	719	263	1218	522
10:00		100	66			180	48				
10:15		104	50			171	50				
10:30		117	42			155	38				
10:45		122	46	443	204	183	43	689	179	1132	383
11:00		134	42			157	36				
11:15		128	34			176	43				
11:30		147	21			232	28				
11:45		142	35	551	132	197	34	762	141	1313	273
Total		3101	6827			4752	7506			7853	14333
Percent		31.2%	68.8%			38.8%	61.2%			35.4%	64.6%
Grand Total		3101	6827			4752	7506			7853	14333
Percent		31.2%	68.8%			38.8%	61.2%			35.4%	64.6%
ADT		ADT 22,186		AADT 22,186							

CITY TRAFFIC COUNTERS

WWW.CTCOUNTERS.COM

State College Boulevard Btwn
Cerritos Avenue & Katella Avenue

Start Time	3/7/2024 Thu	North Morning	North Afternoon	Hour Totals Morning	Hour Totals Afternoon	South Morning	South Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		24	157			25	245				
12:15		14	134			17	247				
12:30		17	127			22	254				
12:45		16	140	71	558	19	232	83	978	154	1536
01:00		8	145			12	304				
01:15		10	132			17	290				
01:30		9	138			11	230				
01:45		5	149	32	564	5	252	45	1076	77	1640
02:00		4	167			6	261				
02:15		7	149			4	291				
02:30		5	142			13	372				
02:45		10	150	26	608	8	320	31	1244	57	1852
03:00		8	134			10	338				
03:15		11	162			6	338				
03:30		6	176			12	377				
03:45		10	167	35	639	4	300	32	1353	67	1992
04:00		10	180			13	382				
04:15		20	185			17	397				
04:30		30	189			18	403				
04:45		29	215	89	769	23	374	71	1556	160	2325
05:00		30	234			26	418				
05:15		34	271			26	347				
05:30		57	274			44	353				
05:45		50	195	171	974	47	296	143	1414	314	2388
06:00		58	214			45	266				
06:15		59	158			70	230				
06:30		84	157			100	194				
06:45		86	170	287	699	150	170	365	860	652	1559
07:00		110	129			171	203				
07:15		107	85			260	140				
07:30		147	113			283	121				
07:45		170	90	534	417	309	125	1023	589	1557	1006
08:00		138	71			254	103				
08:15		132	93			225	81				
08:30		145	72			242	104				
08:45		132	65	547	301	255	82	976	370	1523	671
09:00		170	61			240	93				
09:15		135	75			248	92				
09:30		93	60			243	61				
09:45		115	50	513	246	176	56	907	302	1420	548
10:00		94	60			228	58				
10:15		115	41			179	49				
10:30		118	33			223	51				
10:45		121	46	448	180	229	52	859	210	1307	390
11:00		107	41			211	51				
11:15		109	30			213	49				
11:30		149	20			236	34				
11:45		144	24	509	115	239	43	899	177	1408	292
Total		3262	6070			5434	10129			8696	16199
Percent		35.0%	65.0%			34.9%	65.1%			34.9%	65.1%
Grand Total		3262	6070			5434	10129			8696	16199
Percent		35.0%	65.0%			34.9%	65.1%			34.9%	65.1%
ADT		ADT 24,895		AADT 24,895							

CITY TRAFFIC COUNTERS

WWW.CTCOUNTERS.COM

State College Boulevard Btwn
Katella Avenue & South City Limit

Start Time	3/7/2024 Thu	North Morning	North Afternoon	Hour Totals Morning	Hour Totals Afternoon	South Morning	South Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		41	155			15	106				
12:15		29	142			6	147				
12:30		24	134			11	143				
12:45		22	160	116	591	11	132	43	528	159	1119
01:00		27	167			12	139				
01:15		15	138			14	149				
01:30		18	155			9	116				
01:45		10	143	70	603	7	107	42	511	112	1114
02:00		7	161			6	141				
02:15		16	163			5	145				
02:30		10	153			10	152				
02:45		15	185	48	662	4	175	25	613	73	1275
03:00		10	164			4	181				
03:15		10	169			3	173				
03:30		9	208			3	186				
03:45		16	222	45	763	4	169	14	709	59	1472
04:00		12	229			4	206				
04:15		16	273			11	236				
04:30		31	273			13	225				
04:45		36	311	95	1086	15	235	43	902	138	1988
05:00		31	344			19	207				
05:15		42	353			13	242				
05:30		43	375			32	228				
05:45		59	311	175	1383	29	209	93	886	268	2269
06:00		48	267			38	169				
06:15		92	252			49	164				
06:30		87	226			82	135				
06:45		99	211	326	956	84	154	253	622	579	1578
07:00		99	192			114	126				
07:15		136	176			154	118				
07:30		142	140			183	107				
07:45		190	123	567	631	174	102	625	453	1192	1084
08:00		118	127			179	93				
08:15		144	131			123	71				
08:30		161	105			142	89				
08:45		135	114	558	477	134	63	578	316	1136	793
09:00		153	128			99	66				
09:15		121	129			119	75				
09:30		123	81			126	57				
09:45		90	100	487	438	97	56	441	254	928	692
10:00		105	65			112	67				
10:15		142	64			83	51				
10:30		95	48			102	63				
10:45		105	62	447	239	94	40	391	221	838	460
11:00		125	58			123	34				
11:15		116	48			110	47				
11:30		140	32			138	43				
11:45		164	48	545	186	123	35	494	159	1039	345
Total		3479	8015			3042	6174			6521	14189
Percent		30.3%	69.7%			33.0%	67.0%			31.5%	68.5%
Grand Total		3479	8015			3042	6174			6521	14189
Percent		30.3%	69.7%			33.0%	67.0%			31.5%	68.5%
ADT		ADT 20,710		AADT 20,710							

2024 Average Daily Traffic Volume

Site #	Street Name	Segment	2024 ADT
	The City Drive		
191		Garden Grove Blvd. - 22 Fwy	**16,000**
192		22 Fwy - Style Street	**24,000**
193		Style Street- Chapman Ave.	**27,300**
194		Chapman Ave. - North City Limits	**26,800**

Appendix D

AGENCY RESOLUTIONS AND LETTERS OF SUPPORT

RESOLUTION NO. 2024-130

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ANAHEIM AUTHORIZING THE PUBLIC WORKS DIRECTOR OR HIS DESIGNEE TO SUBMIT A GRANT APPLICATION ON BEHALF OF THE CITY OF ANAHEIM TO THE ORANGE COUNTY TRANSPORTATION AUTHORITY FOR FUNDING UNDER THE M2 REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM FOR STATE COLLEGE BOULEVARD/ THE CITY DRIVE REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM (RTSSP) PROJECT, AND IF AWARDED, AUTHORIZING THE ACCEPTANCE OF SUCH GRANT FUNDS ON BEHALF OF THE CITY AND AMENDING THE BUDGET ACCORDINGLY, AND DETERMINE THE ACTION IS EXEMPT FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) PURSUANT TO REGULATION NO. 15301(B) CLASS 1

WHEREAS, the City of Anaheim ("City") wishes to submit funding application to Orange County Transportation Authority ("OCTA") for the Measure M2 Traffic Signal Synchronization Program (the "Grant") to implement signal coordination and upgrade traffic signal communications; and

WHEREAS, if selected, the City will fund the upgrade of signal improvements and synchronize signals on State College Boulevard in the City of Anaheim; and

WHEREAS, the City of Anaheim is the lead agency, in partnership with the cities of Brea, Fullerton, Orange and Caltrans, for the State College Boulevard/ the City Drive Regional Traffic Signal Synchronization Program (RTSSP) Project to synchronize 58 total signals on State College Boulevard/ the City Drive (the "Project"); and

WHEREAS, the City of Anaheim has been declared by the Orange County Transportation Authority to meet the eligibility requirements to receive revenues as part of Measure M2;

WHEREAS, the City Council finds that the acceptance of Measure M2 grant funds and upgrading the signal improvements and synchronizing signals along State College Boulevard in the City of Anaheim is exempt from the California Environmental Quality Act (CEQA) pursuant to Regulation No. 15301(b) Class 1, incorporated herein by this reference which provides CEQA applies only to projects which have the potential for causing a significant effect on the environment; and

WHEREAS, the City of Anaheim has a currently adopted Local Signal Synchronization Plan consistent with the Regional Traffic Signal Synchronization Master Plan as a key component of local agencies' efforts to synchronize traffic signals across local agencies' boundaries; and

WHEREAS, the City of Anaheim will not use Measure M2 funds to supplant Developer Fees or other commitments; and

WHEREAS, Measure M2 Regional Traffic Synchronization Program targets over 2,000 signalized intersections across Orange County to maintain traffic signal synchronization, improve traffic flow and reduce congestion across jurisdictions; and

WHEREAS, the City of Anaheim will provide matching funds for the Project as required by the Comprehensive Transportation Funding Program Procedures Manual; and

WHEREAS, the City of Anaheim desires to implement signal coordination and upgrade traffic signal communications on State College Boulevard in the City of Anaheim.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Anaheim as follows:

1. The Anaheim Public Works Director, or his designee, is hereby authorized to submit a grant application for and on behalf of the City of Anaheim, a public entity established under the laws of the State of California, and is further authorized to execute any actions necessary for the purpose of obtaining the Grant funds, including any extensions and amendments thereof. Said funds shall be matched by funds from City as required and shall be used as supplemental funding to aid the City in the signal improvements and synchronize signals on State College Boulevard in the City of Anaheim.

2. The Anaheim Public Works Director, or his/her designee, is hereby authorized to co-sign the funding application including the commitment of matching funds or in-kind services and is authorized and directed to execute any agreements, assurances, or other documents as may be necessary in connection with the acceptance of said Grant as may be required by the OCTA.

3. Contingent upon the award of said Grant, the annual budget of the City of Anaheim is hereby amended, in the year in which the Grant is awarded, by increasing revenue and expenditures in an amount equal to the amount of the Grant Funds awarded.

THE FOREGOING RESOLUTION is approved and adopted by the City Council of the City of Anaheim this 17th day of December, 2024, by the following roll call vote:

AYES: Mayor Aitken and Council Members Kurtz, Balius, Leon, Rubalcava, Maahs and Meeks

NOES: None

ABSENT: None

ABSTAIN: None

CITY OF ANAHEIM

MAYOR OF THE CITY OF ANAHEIM

ATTEST:

CITY CLERK OF THE CITY OF ANAHEIM

153939.1/bmorley

CLERK'S CERTIFICATE

STATE OF CALIFORNIA)
COUNTY OF ORANGE) ss.
CITY OF ANAHEIM)

I, THERESA BASS, City Clerk of the City of Anaheim, do hereby certify that the foregoing is the original Resolution No. 2024-130 adopted at a regular meeting provided by law, of the Anaheim City Council held on the 17th day of December, 2024 by the following vote of the members thereof:

AYES: Mayor Aitken and Council Members Kurtz, Balius, Leon, Rubalcava, Maahs and Meeks

NOES: None

ABSTAIN: None

ABSENT: None

IN WITNESS WHEREOF, I have hereunto set my hand this 18th day of December, 2024.

CITY CLERK OF THE CITY OF ANAHEIM

(SEAL)

CITY of BREA

October 17, 2024

John Thai, PE
Principal Traffic Engineer
City of Anaheim
200 South Anaheim Boulevard
2nd Floor, Suite 276
Anaheim, CA 92805

Subject: Letter of Support for the Regional Traffic Signal Synchronization Application – State College Boulevard Corridor

Dear Mr. Thai:

The Orange County Transportation Authority recently issued the 2025 Comprehensive Transportation Funding Program (CTFP) Call for Projects for the Regional Traffic Signal Synchronization Program (RTSSP) to coordinate traffic signals across jurisdictional boundaries in the county.

The City of Brea is excited to team with the City of Anaheim, the City of Fullerton, and the City of Orange to submit an RTSSP funding application for the State College Boulevard Corridor. We recognize that revised traffic signal synchronization patterns and improvements to traffic signal control and communications equipment along State College Boulevard between Garden Grove Boulevard in the City of Orange, through the City of Anaheim and the City of Fullerton, to Cliffwood Avenue in the City of Brea will significantly improve traffic operations and safety along this important regional corridor.

The City of Brea is hereby in support of City of Anaheim's effort in pursuing Measure M funds for this project. It is also our intent to provide the required 20% matching funds utilizing a combination of developer funds, Measure M funds, and gas tax funds for work completed within the City of Brea, and to seek City Council adoption of a resolution before the end of the year in support of implementing and funding our portion of this multi-agency project. We will forward the adopted resolution as soon as it is available.

Sincerely,

Ryan Chapman
City Engineer
City of Brea

RESOLUTION NO. 2024-067

A RESOLUTION OF THE CITY OF BREA CITY COUNCIL APPROVING THE SUBMITTAL OF AN APPLICATION FOR THE STATE COLLEGE BOULEVARD/THE CITY DRIVE REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM IMPROVEMENT PROJECT TO THE ORANGE COUNTY TRANSPORTATION AUTHORITY FOR FUNDING UNDER THE COMPETITIVE MEASURE M2 REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM

A. RECITALS:

THE CITY COUNCIL OF THE CITY OF BREA HEREBY RESOLVES, DETERMINES, AND ORDERS AS FOLLOWS THAT:

a) WHEREAS, the Measure M2 Regional Traffic Signal Synchronization Program targets over 2,000 signalized intersections across Orange County to maintain traffic signal synchronization, improve traffic flow, and reduce congestion across jurisdictions; and

b) WHEREAS, the City of Brea has been declared by the Orange County Transportation Authority to meet the eligibility requirements to receive revenues as part of Measure M2;

c) WHEREAS, the CITY must include all projects funded by Net Revenues in the seven-year Capital Improvement Program as part of the Renewed Measure M Ordinance eligibility requirement.

d) WHEREAS, the CITY authorizes a formal amendment to the seven-year Capital Improvement Program to add projects approved for funding upon approval from the Orange County Transportation Authority Board of Directors, if necessary.

e) WHEREAS, the City of Brea has currently adopted a Local Signal Synchronization Plan consistent with the Regional Traffic Signal Synchronization Master Plan as a key component of local agencies' efforts to synchronizing traffic signals across local agencies' boundaries; and

f) WHEREAS, the City of Brea will provide matching funds for each project as required by the Comprehensive Transportation Funding Programs Procedures Manual; and

g) WHEREAS, the City of Brea will not use Renewed Measure M funds to supplant Developer Fees or other commitments; and

h) Whereas, the City of Brea desires to implement multi-jurisdictional signal synchronization listed below; and

B. RESOLUTION:

NOW, THEREFORE, BE IT RESOLVED THAT:

The City Council of the City of Brea hereby requests the Orange County Transportation Authority allocate funds in the amounts specified in the City's application to said City from the Regional Traffic Signal Synchronization Program. Said funds, if approved, shall be matched by funds from said City as required and shall be used as supplemental funding to aid the City in signal synchronization along the following street(s):

State College Boulevard / The City Drive

Regional Traffic Signal Synchronization Program Project

APPROVED AND ADOPTED this 3rd day of December 2024.

Blair Stewart, Mayor

ATTEST:

Lillian Harris-Neal, City Clerk

I, Lillian Harris-Neal, City Clerk of the City of Brea, do hereby certify that the foregoing Resolution was adopted at a regular meeting of the City Council of the City of Brea, held on the 3rd day of December 2024 by the following vote:

AYES: COUNCIL MEMBERS: Stewart, Hupp, Marick, Simonoff, Vargas

NOES: COUNCIL MEMBERS: None

ABSENT: COUNCIL MEMBERS: None

ABSTAIN: COUNCIL MEMBERS: None

DATED: 12/09/2024

Lillian Harris-Neal, City Clerk

CITY OF FULLERTON

Public Works Department – *Engineering Division*

October 18, 2024

John Thai, PE
Principal Traffic Engineer
City of Anaheim
200 South Anaheim Boulevard
2nd Floor, Suite 276
Anaheim, CA 92805

Subject: Letter of Support for the Regional Traffic Signal Synchronization Application – State College Boulevard Corridor

Dear Mr. Thai:

The Orange County Transportation Authority recently issued the 2025 Comprehensive Transportation Funding Program (CTFP) Call for Projects for the Regional Traffic Signal Synchronization Program (RTSSP) to coordinate traffic signals across jurisdictional boundaries in the County.

The City of Fullerton, in coordination with the City of Anaheim, identified the State College Boulevard Corridor for Project P application. Signal synchronization and upgraded traffic signal operational equipment and communication at locations between the intersection of Central Avenue & Cliffwood Avenue in the City of Brea; through the City of Fullerton; and, terminating at the intersection of The City Drive & Garden Grove Boulevard/Memory Lane in the City of Orange will improve the traffic operations along this corridor.

The City of Fullerton is in support of the City of Anaheim's effort in pursuing Renewed Measure M funds for this project. The City is committed to provide the required matching funds (Gas Tax) and will be seeking City Council's adoption of a resolution by December 3, 2024 in support of implementing and funding this project. We will forward the adopted resolution as soon as it is available.

Sincerely,

CITY OF FULLERTON

Michael Plotnik, PE, TE
City Traffic Engineer

2024-10-18 - State College RTSSP - Fullerton Letter of Support

RESOLUTION NO. 2024-053

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF FULLERTON, CALIFORNIA, AUTHORIZING PARTICIPATION IN AN APPLICATION FOR FUNDS FOR THE STATE COLLEGE BOULEVARD REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM TO THE ORANGE COUNTY TRANSPORTATION AUTHORITY UNDER THE COMPETITIVE MEASURE M2 REGIONAL TRANSPORTATION SIGNAL SYNCHRONIZATION PROGRAM

WHEREAS, the Measure M2 Regional Traffic Signal Synchronization Program targets over 2000 signalized intersections across Orange County to maintain traffic signal synchronization, improve traffic flow and reduce congestion across jurisdictions.

WHEREAS, the City of Anaheim is the lead agency, in partnership with the cities of Brea, Fullerton and Orange and Caltrans for the State College Boulevard Regional Traffic Signal Synchronization Program (RTSSP) Project to synchronize 58 total signals on State College Boulevard (the "Project").

WHEREAS, The Orange County Transportation Authority has declared the City of Fullerton met eligibility requirements to receive revenues as part of Measure M2.

WHEREAS, the City of Fullerton has adopted Local Synchronization Plan consistent with the Regional Traffic Signal Synchronization Master Plan as a key component of local agencies' efforts to synchronize traffic signals across local agencies' boundaries.

WHEREAS, the City of Fullerton will provide matching funds for each project as required by the Orange County Comprehensive Transportation Funding Programs Manual.

WHEREAS, the City of Fullerton will not use Measure M funds to supplement Developer Fees or other commitments.

WHEREAS, the City of Fullerton desires to implement multi-jurisdictional signal synchronization listed in this resolution.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF FULLERTON RESOLVES AS FOLLOWS:

1. The City Council of the City of Fullerton requests the Orange County Transportation Authority allocate funds in the amounts specified in the project application to said City from the Regional Transportation Signal Synchronization Program to implement regional signal synchronization along the State College Boulevard Corridor.

ADOPTED BY THE FULLERTON CITY COUNCIL ON NOVEMBER 19, 2024.

Nicholas Dunlap
Mayor

ATTEST:

Lucinda Williams, MMC
City Clerk

November 27, 2024
Date

CITY OF FULLERTON

RESOLUTION CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF ORANGE) SS
CITY OF FULLERTON)

RESOLUTION NO. 2024-053

I, Lucinda Williams, City Clerk and ex-officio Clerk of the City Council of the City of Fullerton, California, hereby certify that the whole number of the members of the City Council of the City of Fullerton is five and that City Council adopted the above and foregoing Resolution No. 2024-053 at a regular meeting of the City Council held November 19, 2024 by the following vote:

COUNCIL MEMBERS IN FAVOR:	Dunlap, Whitaker, Zahra
COUNCIL MEMBERS OPPOSED:	None
COUNCIL MEMBERS ABSTAINED:	None
COUNCIL MEMBERS ABSENT:	Charles, Jung

Lucinda Williams, MMC
City Clerk

City of Orange
Public Works Department
300 E. Chapman Ave.
Orange, CA 92866

October 18, 2024

Mr. John Thai
Principal Traffic Engineer
City of Anaheim
Traffic Management Center
200 S. Anaheim Boulevard
Anaheim, CA 92805

Subject: Letter of Intent for Regional Traffic Signal Synchronization Program Application – State College Boulevard/The City Drive Corridor

Dear Mr. Thai:

The Orange County Transportation Authority recently issued the 2025 Comprehensive Transportation Funding Program Call for Projects for Regional Traffic Signal Synchronization Program (Project P) to coordinate traffic signals across jurisdictional boundaries in the County.

The City of Orange, in coordination with the cities of Anaheim, Brea and Fullerton, identified the State College Boulevard/The City Drive corridor for Project P application. Signal synchronization on this corridor between Cliffwood Avenue in the City of Brea and Garden Grove Boulevard in the City of Orange will improve the signal coordination along this heavily traveled corridor.

The City of Orange is in support of the City of Anaheim's effort in pursuing Renewed Measure M funds for this project.

The City of Orange is committed to providing the required matching funds (cash match only) and will be seeking City Council adoption of a resolution on December 10, 2024, in support of implementing and funding this project. The source of the cash match will be a combination of Gas Tax (local funding) and Measure M2 Fair Share. We will forward the adopted resolution as soon as it is available.

Sincerely,

Christopher S. Cash
Director of Public Works
City of Orange

(714) 744-5525 www.cityoforange.org pwinfo@cityoforange.org

RESOLUTION NO. 11590

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ORANGE APPROVING THE SUBMITTAL OF IMPROVEMENT PROJECTS TO THE ORANGE COUNTY TRANSPORTATION AUTHORITY FOR FUNDING UNDER THE COMPETITIVE MEASURE M2 REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM.

WHEREAS, the Measure M2 Regional Traffic Signal Synchronization Program targets over 2,000 signalized intersections across Orange County to maintain traffic signal synchronization, improve traffic flow, and reduce congestion across jurisdictions; and

WHEREAS, the City of Orange has been declared by the Orange County Transportation Authority to meet the eligibility requirements to receive revenues as part of Measure M2; and

WHEREAS, the City of Orange must include all projects funded by Net Revenues in the seven-year Capital Improvement Program as part of the Renewed Measure M Ordinance eligibility requirement; and

WHEREAS, the City of Orange authorizes a formal amendment to the seven-year Capital Improvement Program to add projects approved for funding upon approval from the Orange County Transportation Authority Board of Directors, if necessary; and

WHEREAS, the City of Orange has currently adopted a Local Signal Synchronization Plan consistent with the Regional Traffic Signal Synchronization Master Plan as a key component of local agencies' efforts to synchronizing traffic signals across local agencies' boundaries; and

WHEREAS, the City of Orange will provide matching funds for each project as required by the Comprehensive Transportation Funding Programs Procedures Manual; and

WHEREAS, the City of Orange will not use Renewed Measure M funds to supplant Developer Fees or other commitments; and

WHEREAS, the City of Orange desires to implement multi-jurisdictional signal synchronization listed below; and

WHEREAS, the City Council delegates signature authority to the Public Works Director or his designee to facilitate delivery of the project.

NOW, THEREFORE, BE IT RESOLVED, the City Council of the City of Orange hereby requests the Orange County Transportation Authority allocate funds in the amounts

specified in the City's application to said City from the Regional Traffic Signal Synchronization Program. Said funds, if approved, shall be matched by funds from said City as required and shall be used as supplemental funding to aid the City in signal synchronization along the State College Boulevard/The City Drive Corridor.

ADOPTED this 14th day of January 2025

Daniel R. Slater, Mayor, City of Orange

ATTEST:

Pamela Coleman, City Clerk, City of Orange

APPROVED AS TO FORM:

Mike Vigliotta, City Attorney, City of Orange

STATE OF CALIFORNIA)
COUNTY OF ORANGE)
CITY OF ORANGE)

I, PAMELA COLEMAN, City Clerk of the City of Orange, California, do hereby certify that the foregoing Resolution was duly and regularly adopted by the City Council of the City of Orange at a regular meeting thereof held on the 14th day of January 2025 by the following vote:

AYES:	COUNCILMEMBERS: Bilodeau, Barrios, Tavoularis, Gutierrez, Gyllenhammer, Slater
NOES:	COUNCILMEMBERS: None
ABSENT:	COUNCILMEMBERS: None
ABSTAIN:	COUNCILMEMBERS: Dumitru

Pamela Coleman, City Clerk, City of Orange

California Department of Transportation

DISTRICT 12
1750 East 4th Street, Suite 100 | SANTA ANA, CA 92705
(657) 328-6000 | FAX (657) 328-6522 TTY 711
https://dot.ca.gov/caltrans-near-me/district-12

October 18, 2024

John Thai
Principal Civil Engineer
City of Anaheim
201 South Anaheim Boulevard, Suite #502
Anaheim, CA 92805

Subject: Letter of Support for Regional Traffic Signal Synchronization Program Application –State College Boulevard Corridor

Dear Mr. Thai:

The Orange County Transportation Authority recently issued the 2025 Comprehensive Transportation Funding Program Call for Projects for the Regional Traffic Signal Synchronization Program to coordinate traffic signals across jurisdictional boundaries in the County.

The State of California Department of Transportation (Caltrans) is in support of the City of Anaheim's submittal of the Call for the Projects application for signal synchronization on the State College Boulevard Corridor from the City of Brea to the City of Orange.

If you have any questions or require additional information, please contact Mr. Mason Nguyen at (949) 279-9175 or by email at Mason.Nguyen@dot.ca.gov

Sincerely,

Peter Ngo

Peter Ngo, P.E.
Branch Chief, Traffic Signals/Ramp Metering/Census
Caltrans District 12
6681 Marine Way
Irvine, CA 92618
Mobile: (949) 285-4262

Appendix E

ADDITIONAL INFORMATION

Implenting Agency	TMC Improvements
Brea	1. Furnish and Install 2 New Work Stations for TMC/Remote TMC, New Cubic ATMS/Synchrogreen Server & Econolite Centracs Server and 2-year maintenance agreement renewal. 2. Two 65" Industrial Monitors for TMC/Remote TMC
Anaheim	1. Server/RAID for central system 2. UPS for TMC Servers
Fullerton	Kinetic Server; Monitor – Samsung or Planar VMS – Milestone Laptop (field hardened) – Panasonic or Dell Layer 3 Switch – Cisco VMS Server (Milestone) – Dell or HP Traffic Server (Kinetic) – Dell or HP Trafficware Synchro - Cubic

ELIGIBLE IMPROVEMENTS	SCORE BASED ON STATUS	
Signal Timing (No Capital)	**Online**	**Offline**
Timing Only	50	30
Timing + Traffic Responsive (license only)	50	15
Timing + Peer-to-Peer (configuration only)	50	40
Timing + Traffic Adaptive (license only)	40	1
Signal Communication	**No Time Source**	**Time Source**
Above ground (e.g. wireless, cellular, etc.)	50	30
Fiber Optic underground	25	15
All other (e.g. copper, aerial fiber, GPS, etc.)	5	1
Field Elements	**None/5+ Years**	**Within 5 Years**
ATC signal controller	50	10
Signal cabinet on existing foundation	30	10
Signal cabinet on new foundation	15	5
BBS/USP (attached)	20	10
BBS/UPS on existing foundation	10	5
BBS/UPS on new foundation	5	1
CCTV	30	10
Vehicle detection (ATSPM inputs + counts)	50	30
Vehicle detection (ATSPM inputs)	40	20
Vehicle detection + bicycle detection	30	15
Vehicle detection	30	15
Bicycle detection	30	15
Pedestrian detection (audible)	50	30
Pedestrian detection	30	15
Active transportation/pedestrian safety	50	30
Transit Signal Priority	50	25
EVP (hybrid or GPS)	40	10
EVP (infrared)	30	10
Speed feedback signs (existing post)	40	10
Speed feedback signs (new post)	20	10
Signal Performance Monitoring	40	10
Minor Signal Operational Improvements	**None/5+ Years**	**Within 5 Years**
Channelization	40	20
Signal phasing improvement	50	25
TMC/TOC	**None/10+ Years**	**Within 10 Years**
Central System (server, licenses, workstations)	40	20
Display (video wall, VMS, etc.)	30	10
UPS for TMC	20	5
Caltrans Participation	**With Coop**	**Without Coop**
Caltrans Cooperative Agreement	50	25

k. Signalized intersections that are part of the project:

	Main Corridor	Cross Street
1	State College Bl	Cliffwood Ave
2	State College Bl	Balsa Ave
3	State College Bl	Lambert Rd
4	State College Bl	Avocado St / Tracks
5	State College Bl	Corporate
6	State College Bl	Birch St
7	State College Bl	Brea Mall North
8	State College Bl	Brea Mall Center
9	State College Bl	Brea Mall South
10	State College Bl	Imperial Hwy*
11	State College Bl	Elm St
12	State College Bl	Rolling Hills Dr
13	State College Bl	Delicata Dr
14	State College Bl	Bastanchury Rd
15	State College Bl	Palmetto Terrace/Mountain Ridge Dr
16	State College Bl	Yorbal Linda Bl
17	State College Bl	Dorothy Ln/Campus Dr
18	State College Bl	Arts Dr
19	State College Bl	Nutwood Ave
20	State College Bl	Chapman Ave (North)
21	State College Bl	Commonwealth Ave
22	State College Bl	Walnut Ave (Fender Ave)
23	State College Bl	Valencia Dr
24	State College Bl	Orangethorpe Ave
25	State College Bl	Via Burton St
26	State College Bl	SR-91WB Off-Ramp*
27	State College Bl	SR-91 EB Off-Ramp*
28	State College Bl	Placentia Ave/Romneya Dr
29	State College Bl	Shopping Center (McDonald's)
30	State College Bl	La Palma Ave
31	State College Bl	Underhill Ave
32	State College Bl	Lincoln Ave
33	State College Bl	Shopping Center (Anaheim Town Square)
34	State College Bl	Santa Ana St
35	State College Bl	South St
36	State College Bl	Vermont Ave
37	State College Bl	Wagner Ave
38	State College Bl	Ball Rd
39	State College Bl	Winston Rd
40	State College Bl	Cerritos Ave
41	State College Bl	Howell Ave
42	State College Bl	Railroad Crossing
43	State College Bl	Katella Ave
44	State College Bl	Gateway
45	State College Bl	Gene Autry Wy
46	State College Bl	Artisan Ct
47	State College Bl	Orangewood Ave
48	State College Bl	Orange Center Dr*
49	State College Bl	I-5 NB Off-Ramp*
50	The City Dr	I-5 SB Off-Ramp*
51	The City Dr	Chapman Ave
52	The City Dr	Medical Center
53	The City Dr	Dawn Way
54	The City Dr	Steiner Way/Style St
55	The City Dr	Outlet Dr
56	The City Dr	Metropolitan Dr
57	The City Dr	SR-22 EB Off/On-Ramp*
58	The City Dr	Garden Grove Bl

Legend

Brea

Fullerton

Anaheim

Orange

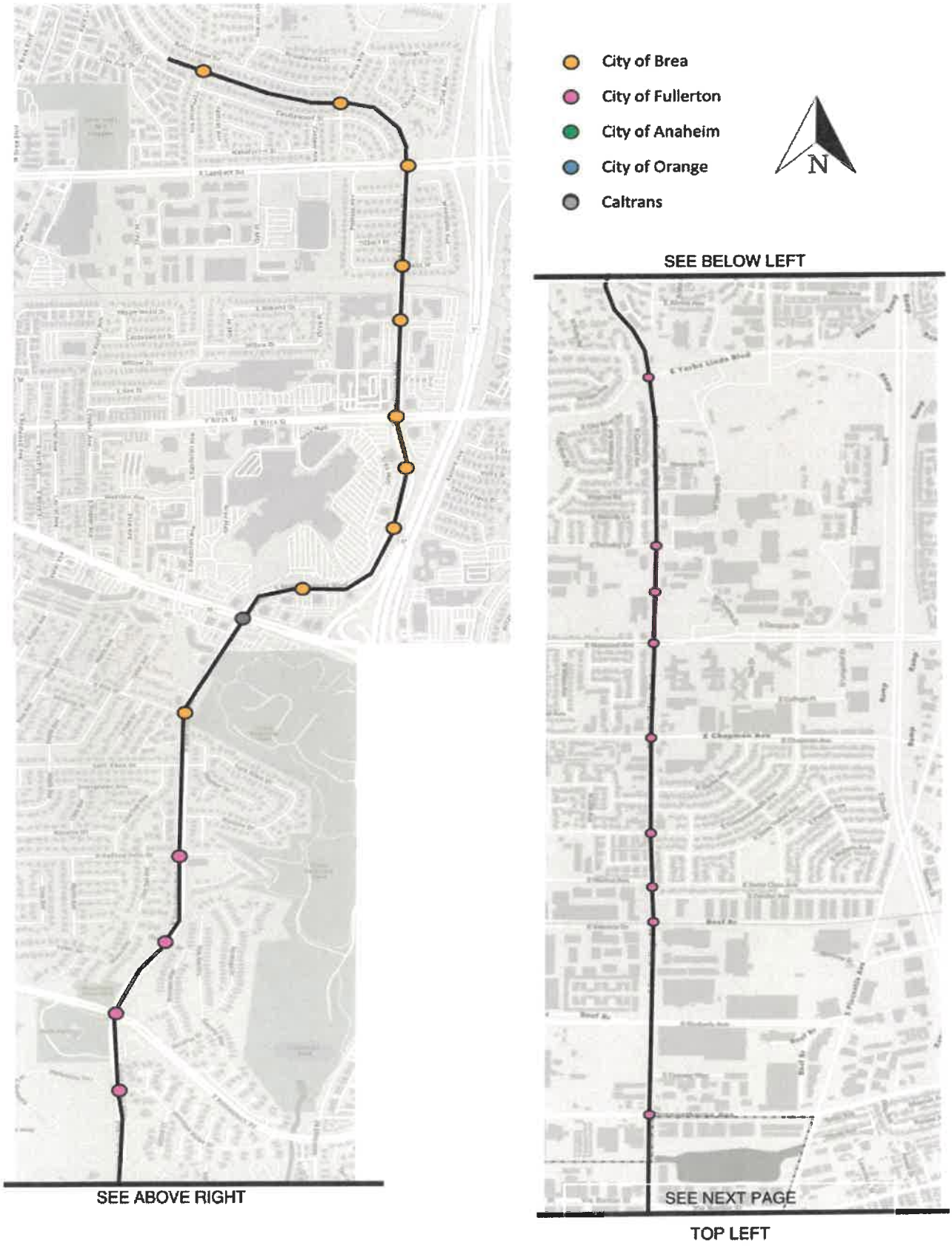
* Caltrans

l. Offset signalized intersections that are part of the project. ***Baseline participants only need to list signals that are requesting improvements***:

	Main Street	Cross Street		Main Street	Cross Street
59			74		
60			75		
61			76		
62			77		
63			78		
64			79		
65			80		
66			81		
67			82		
68			83		
69			84		
70			85		
71			86		
72			87		
73			88		

m. Project Map Depicting the Project Limits and Offset Signals

Map should clearly show project limits, operating agencies, and local juridiction boundaries. Do not use satellite maps as they are hard to read and determine location. Map should also show all offset signals (MPAH only) along corridor/grid/route. Please distinguish the offset signals (MPAH only) that will be included/excluded.Feel free to use multiple maps if necessary.

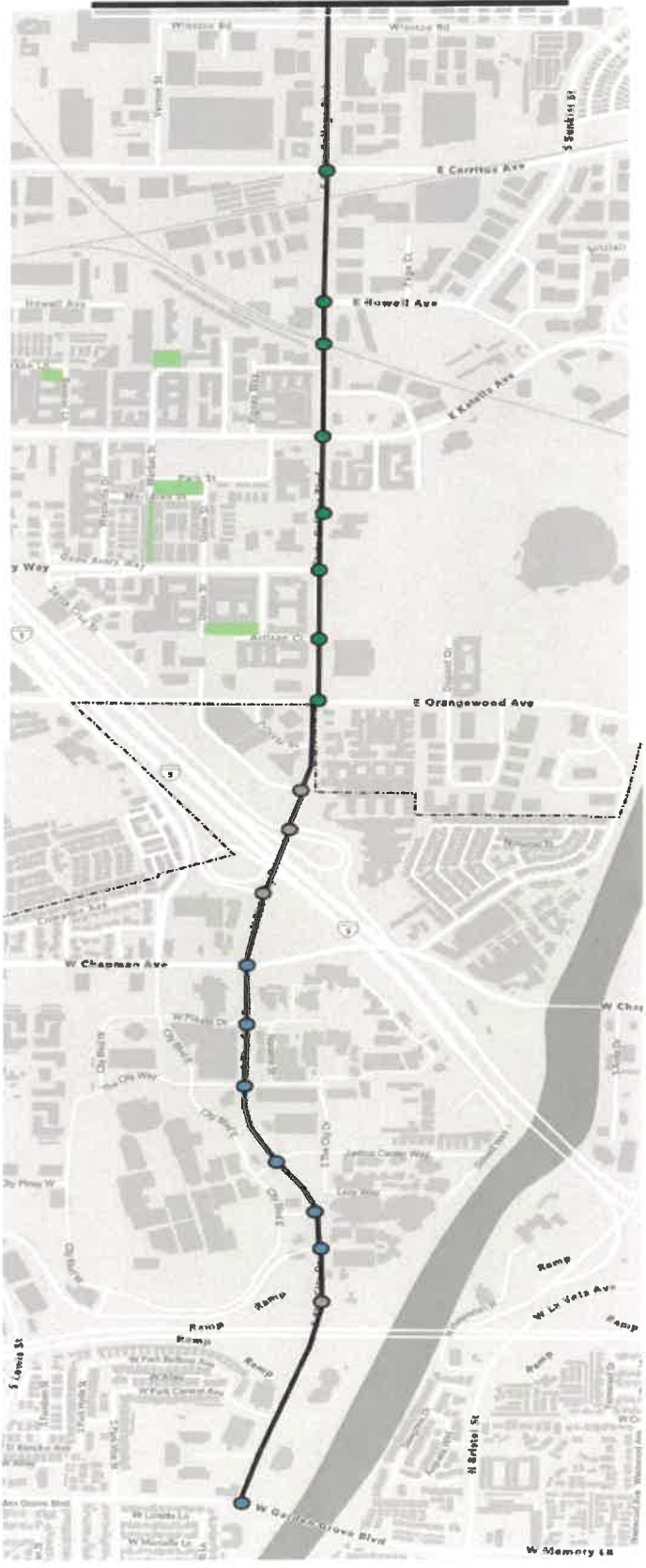


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RESOLUTION NO. 11590

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ORANGE APPROVING THE SUBMITTAL OF IMPROVEMENT PROJECTS TO THE ORANGE COUNTY TRANSPORTATION AUTHORITY FOR FUNDING UNDER THE COMPETITIVE MEASURE M2 REGIONAL TRAFFIC SIGNAL SYNCHRONIZATION PROGRAM.

WHEREAS, the Measure M2 Regional Traffic Signal Synchronization Program targets over 2,000 signalized intersections across Orange County to maintain traffic signal synchronization, improve traffic flow, and reduce congestion across jurisdictions; and

WHEREAS, the City of Orange has been declared by the Orange County Transportation Authority to meet the eligibility requirements to receive revenues as part of Measure M2; and

WHEREAS, the City of Orange must include all projects funded by Net Revenues in the seven-year Capital Improvement Program as part of the Renewed Measure M Ordinance eligibility requirement; and

WHEREAS, the City of Orange authorizes a formal amendment to the seven-year Capital Improvement Program to add projects approved for funding upon approval from the Orange County Transportation Authority Board of Directors, if necessary; and

WHEREAS, the City of Orange has currently adopted a Local Signal Synchronization Plan consistent with the Regional Traffic Signal Synchronization Master Plan as a key component of local agencies' efforts to synchronizing traffic signals across local agencies' boundaries; and

WHEREAS, the City of Orange will provide matching funds for each project as required by the Comprehensive Transportation Funding Programs Procedures Manual; and

WHEREAS, the City of Orange will not use Renewed Measure M funds to supplant Developer Fees or other commitments; and

WHEREAS, the City of Orange desires to implement multi-jurisdictional signal synchronization listed below; and

WHEREAS, the City Council delegates signature authority to the Public Works Director or his designee to facilitate delivery of the project.

NOW, THEREFORE, BE IT RESOLVED, the City Council of the City of Orange hereby requests the Orange County Transportation Authority allocate funds in the amounts

specified in the City's application to said City from the Regional Traffic Signal Synchronization Program. Said funds, if approved, shall be matched by funds from said City as required and shall be used as supplemental funding to aid the City in signal synchronization along the State College Boulevard/The City Drive Corridor.

ADOPTED this 14th day of January 2025

Daniel R. Slater, Mayor, City of Orange

ATTEST:

Pamela Coleman, City Clerk, City of Orange

APPROVED AS TO FORM:

Mike Vigliotta, City Attorney, City of Orange

STATE OF CALIFORNIA)
COUNTY OF ORANGE)
CITY OF ORANGE)

I, PAMELA COLEMAN, City Clerk of the City of Orange, California, do hereby certify that the foregoing Resolution was duly and regularly adopted by the City Council of the City of Orange at a regular meeting thereof held on the 14th day of January 2025 by the following vote:

AYES:	COUNCILMEMBERS: Bilodeau, Barrios, Tavoularis, Gutierrez, Gyllenhammer, Slater
NOES:	COUNCILMEMBERS: None
ABSENT:	COUNCILMEMBERS: None
ABSTAIN:	COUNCILMEMBERS: Dumitru

Pamela Coleman, City Clerk, City of Orange

Agenda Item

Orange City Council

Item #: 3.5. 3/10/2026 **File #:** 26-0119

TO: **Honorable Mayor and Members of the City Council**

FROM: **Jarad Hildenbrand, City Manager**

1. SUBJECT

Production agreement for the inaugural Celebrate Orange event: A collaborative event combining the Orange May Parade, Taste of Orange, and Orange Plaza Rotary Club Car Show

2. SUMMARY

At December 9, 2025, Orange City Council meeting, the Orange Chamber of Commerce Foundation, the Assistance League of Orange, and the Orange Plaza Rotary Club made a presentation to the City Council requesting authorization to combine their respective events into a single two-day event. After the presentation, the City Council unanimously approved their request and directed staff to develop a production agreement for the Celebrate Orange event.

3. RECOMMENDED ACTION

Approve the Celebrate Orange Production Agreement (combining the Orange May Parade, Taste of Orange, & Orange Plaza Rotary Car Show); and authorize the Mayor and City Clerk to execute on behalf of the City.

4. FISCAL IMPACT

None.

5. STRATEGIC PLAN GOALS

Goal 3. Enhance Public Communication Strategy and Quality of Life.

6. DISCUSSION AND BACKGROUND

The Orange May Parade, Taste of Orange, and Orange Plaza Rotary Club Car Show are springtime events that have been held in the Old Towne Orange Plaza area for many years. At the December 9, 2025, City Council Meeting, all three event organizers made a presentation to Council requesting authorization to combine their respective events into a single two-day event. Upon hearing the presentation, the City Council directed staff to develop a production agreement. Attached is the production agreement for the City Council's consideration.

Understanding the event will take place in less than two months, staff have been working with all three groups to plan and finalize event details while this production agreement was being developed. Should the City Council approve this production agreement, staff will continue to work with all three groups and ensure Celebrate Orange proceeds as expected.

7. ATTACHMENTS

- Production Agreement for Celebrate Orange

Agenda Item

Orange City Council

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- Production Agreement for Celebrate Orange

AGREEMENT FOR PRODUCTION OF CELEBRATE ORANGE (ORANGE MAY PARADE, TASTE OF ORANGE, & ORANGE PLAZA ROTARY CAR SHOW COLLAB)

This **AGREEMENT FOR PRODUCTION OF CELEBRATE ORANGE** ("Agreement") is made at Orange, California, on this _____ day of _____, 2026 ("Effective Date") by and between the CITY OF ORANGE, a municipal corporation ("City"), and THE ORANGE CHAMBER OF COMMERCE FOUNDATION, a California non-profit public benefit corporation, THE ASSISTANCE LEAGUE OF ORANGE, a California non-profit public benefit corporation, and THE ORANGE PLAZA ROTARY, a California non- profit public benefit corporation (collectively, "Parties").

RECITALS

A. For many years, the named non-profit organizations above have separately worked with the City to present quality family-friendly events to the Orange community throughout the spring season, such as the Orange May Parade, Taste of Orange, and the Orange Plaza Rotary Car Show.

B. At the Orange City Council meeting on December 9, 2025, the Chamber of Commerce Foundation, the Assistance League of Orange, and the Orange Plaza Rotary proposed a collaborative Celebrate Orange event which essentially unites these three individual spring events into one two-day event to be held the first weekend of May.

C. The collaboration of these three staple community events will provide many benefits to the City including, but not limited to, tax revenue, a well-attended community event, fundraising for local charities, and bringing new people to the City to take part in some of the experiences that make Orange unique.

D. The Celebrate Orange event proposed by the Orange Chamber of Commerce Foundation, the Assistance League of Orange, and the Orange Plaza Rotary Club was unanimously agreed to and supported by the Orange City Council.

NOW, THEREFORE, for and in consideration of the mutual and respective covenants and promises hereinafter contained and made, and subject to all of the terms and conditions hereof, the Parties hereto do agree as follows:

1. Term and Termination of Agreement.

A. The initial term of this Agreement shall commence upon execution and shall terminate December 31, 2031, unless amended or sooner terminated as provided herein. The City has the right to extend the term of this Agreement for up to two (2) additional years upon the same terms and conditions as the initial term, terminating no later than December 31, 2033. Any Extension shall be approved by the City Council and memorialized in the form of an amendment to this Agreement.

B. The Parties or City, acting through its City Manager, reserves the right to terminate this Agreement for any reason by providing a written notice of intent to terminate to the non-terminating party no fewer than 60-days prior to the commencement of Celebrate Orange for said year. The Parties

and/or City shall not be liable to other for any claim of damages or lost profits relating to any such termination.

2. Location.

Celebrate Orange shall take place only on those public streets and rights-of-way in the City, generally described as the area of Chapman Avenue from the center line of Grand Street to the center line of Lemon Street; and Glassell Street, Olive Street, and Orange Street from the center line of Almond Avenue to the center line of Maple Avenue, as well as the surrounding areas identified in the maps attached hereto and incorporated herein as Exhibits "A-C."

3. Dates and Times.

Celebrate Orange shall take place the first weekend of May each year as follows:

- Orange Plaza closure - Saturday from 4:00 a.m. to 11:00 p.m. Sunday
- Orange May Parade event time – Saturday 10:00-11:30 a.m.
- Taste of Orange event time – Saturday 3:00-7:00 p.m.
  Alcohol sales and live musical entertainment will take place during this time
- Orange Plaza Car Show event time – Sunday 8:00 a.m. – 3:00 p.m.

Detailed timelines must be submitted to and approved by the City sixty (60) days prior to the event occurring.

4. The Parties Obligations.

A. Production of Celebrate Orange.

1) The Parties shall produce Celebrate Orange during the days and times stated in Section 3.

2) The "production of Celebrate Orange" as used herein means all aspects of the planning, coordination, and execution of said Celebrate Orange including, but not limited to reviewing and approving applications for booths; preparing and distributing advertising; obtaining all licenses, permits and other applicable governmental approvals; obtaining all insurance set forth in Section 7; and developing a budget and fee schedule.

3) The Parties shall work with designated City representatives for business involving Celebrate Orange to ensure compliance with this Agreement.

B. Staging Layout.

1) The proposed logistics map(s) is contained in Exhibit "B" attached hereto and incorporated herein. Each year, no fewer than sixty (60) days prior to Celebrate Orange, the Parties shall submit a detailed booth layout map for approval by the City Police Department, Fire Department, Community Development, and Public Works Department.

2) All fire lanes, fire breaks, and space between booths shown on the approved plan shall remain free and clear of all objects, materials, vehicles, and other obstructions during set up, throughout the duration of the event and at break down of the event.

3) The Parties shall not block or obstruct public sidewalks with tables, chairs, canopies, or any other equipment preventing pedestrian circulation.

4) The Parties shall not block pedestrian or delivery access to a merchant that is within or immediately adjacent to the event area.

C. Noise.

1) The Parties shall ensure all reasonable measures will be taken to mitigate noise between the hours of 4:00 – 8:00 a.m.

D. Event Ingress/Egress.

1) The Parties shall ensure all vendors and entrants adhere to the designated Ingress and Egress routes identified in the event logistic map(s) contained in Exhibit "B."

E. Protection of Plaza Park.

If the City determines that protection measures are necessary, including temporary closure of Plaza Park or any portion thereof, the Parties shall pay all associated costs, including fencing rental, delivery, installation, labor, and removal. The determination of necessity is within the City's sole discretion.

F. Site Inspection.

1) No fewer than thirty (30) days prior to the event, at least one (1) authorized representative from the Parties, the City Manager's Office or its designee, Community Development, Fire Department, Police Department, and Public Works Department shall walk the footprint of the event to ensure the footprint meets safety standards.

2) At 8:00 a.m. on Saturday, representatives from the Fire Department shall conduct a final inspection of Parade floats to ensure compliance with all Fire Code requirements. Immediately following these inspections, the Fire Department shall conduct inspections with authorized representatives from the Parties and contracted rental vendor(s). This includes tent structure, weight, and fire lane inspections.

G. Parking Lots.

1) The Parties shall have exclusive use of public parking lot 2 on Saturday, from 8:00 a.m. – 8:00 p.m. The public parking lot location shall be located as described in Exhibit "A."

2) The Parties shall have exclusive use of public parking lot 12 on Saturday, from 4:00 a.m. – 1:00 p.m. The public parking location shall be located as described in Exhibit "A".

H. Sanitation.

1) Unless otherwise stated herein, the Parties shall comply with all of the provisions of the Orange Municipal Code and all applicable state and federal mandates as they relate to all storm water issues and as directed by the City.

2) The Parties are responsible for procuring temporary trash receptacles and a separate dumpster for the event.

3) The Parties are expected to collect and dispose of trash throughout the event, as well as upon its conclusion.

4) The Parties are prohibited from disposing of event trash in the dumpsters that are located within the event footprint that are intended for use by the downtown merchants.

I. Alcoholic Beverages.

1) The Parties are responsible for obtaining the proper licensing for public alcohol sales and are expected to provide the City with proof of licensing one-week prior to the event.

2) Alcohol sales shall begin no earlier than Saturday at 3:00 p.m. and conclude by 7:00 p.m.

3) All persons purchasing, consuming, or possessing an alcoholic beverage must be of legal age and wearing an event wristband. Proper signage must be in place at all selling booths informing consumers of this requirement.

4) Only beer, wine, and hard seltzers may be sold. Glass containers and cans are prohibited; all beverages sold shall be served in plastic cups.

5) Open alcohol containers and alcohol consumption are prohibited outside of the event footprint.

6) The Parties shall provide a list of booths permitted to sell alcoholic beverages to the City no fewer than thirty (30) days prior to the event.

7) Vendors selling alcohol must attend an alcohol awareness training as required by the Police Department. This training shall be sponsored and scheduled by the Parties.

J. Vendors and Entertainment.

1) The Parties shall furnish a complete list of vendors and entertainment to the City no fewer than sixty (60) days prior to the event.

2) Both the Police Department and Fire Department have the right to deny or stop vendor operations and/or live entertainment based on conditions that, in their discretion, may cause or create a hazardous situation to the public.

3) The City shall notify the Parties no fewer than thirty (30) days prior to the event of its acceptance or denial of any vendors or performers. If the City rejects any performer, the Parties may request approval for a replacement performer no later than fourteen (14) days prior to the event.

K. Code of Conduct.

The Parties shall comply with and enforce the following guidelines related to its employees and volunteers, the general public, and all vendors within the event.

1) With the exception of parade participants and ADA-recognized service animals, animals are not permitted.

2) With the exception of parade participants, skateboards, roller skates, recreational scooters, bikes, or any motorized or self-propelled device (other than wheelchairs) for the purpose of personal motion are not permitted.

3) Footwear, shirts, and family-friendly clothing are expected to be worn at all times by event attendees.

4) Signs with the information noted above in subsections 1, 2, and 3 must be posted at the event entries.

5) Event representatives and volunteers shall wear clothing that identifies them as event staff. Event staff are also expected to wear appropriate footwear while working/volunteering.

L. Maintenance and Inspection of Records.

1) The Parties shall maintain all records relating to this Agreement and the production of Celebrate Orange for a minimum of three (3) years following the expiration of termination of Agreement. All such records shall be available for inspection or review by an authorized representative of the City within ten (10) days of written notice to the Parties.

M. Equipment, Supplies, Costs.

1) The Parties agree to pay for all actual costs incurred for production of Celebrate Orange including pre and post planning of the event.

a. "Planning" is defined as the process and staff time coordinating the production of Celebrate Orange between the City and the Parties.

2) The Parties agree to furnish all equipment and supplies and shall bear all other costs and expenses reasonably necessary to carry out the purpose of this Agreement except as otherwise provided herein.

3) The Parties agree to reimburse City for all costs and expenses incurred by City in providing materials and services for Celebrate Orange, including public safety and miscellaneous personnel.

a. The number of public safety personnel assigned is at the discretion of the Police Department and Fire Department. If possible, the City will notify the Parties a week prior to the event when public safety personnel levels will exceed those utilized in previous years.

b. Said materials and services may include costs incurred by the City related to damage and cleanup of public and private property directly related to Celebrate Orange activities within the event footprint as set forth in Exhibit "A."

c. Reimbursement for said materials and services shall be due and payable within sixty (60) days of receipt of an itemized statement from the City.

N. Communications and Contacts.

1) The Parties shall designate an individual(s) to serve as a public contact for any and all inquiries, including but not limited to complaints related to the production of Celebrate Orange, and shall provide a list of contacts and phone numbers to the City no fewer than thirty (30) days prior to commencement of the event.

2) The Parties will make reasonable efforts to engage with and educate downtown businesses and residents regarding the event footprint, hours, entertainment schedule, and any other event logistics that may interfere with local business operations and/or resident daily activities.

5. City Obligations.

A. City agrees that the Parties shall have the sole and exclusive right to produce Celebrate Orange.

B. City agrees to prepare the event footprint to a mutually acceptable condition at the City's expense, prior to commencement Celebrate Orange which includes closing the event footprint to vehicular traffic beginning at 4:00 a.m.

C. City agrees to assign a liaison from each of the following departments: Public Works, Police, Fire, City Manager's Office or its designee, and Community Development. The City Manager's Office or its designee will act as a direct liaison with the Parties as it pertains to the production, planning, and follow-up of Celebrate Orange.

D. City agrees that any vendors or merchants within the event footprint and not otherwise participating in Celebrate Orange through the Parties approval process will be required to apply for and obtain a Special Event Permit from the City.

E. If as a result of the Celebrate Orange event, the City responds to a clean-up request made by a local business or neighbor within twenty four (24) hours post event, the City will provide an itemized bill, as well as photos of the area(s) not cleaned to the Parties.

F. City shall reopen all intersections in the Car Show area to through traffic no later than Sunday at 11:00 p.m.

G. City shall provide the Parties with a detailed break-down of the actual costs incurred by City for labor, material, and equipment related to Celebrate Orange by July 30. If there are any delays resulting from unforeseen circumstances or events, the City will communicate when they expect to have the detailed break-down in writing to Celebrate Orange.

6. Insurance.

A. The Parties shall carry workers' compensation insurance as required by law for the protection of its employees during the progress of the work. The Parties understand that it is an independent contractor and not entitled to any worker's compensation benefits under any City program.

B. The Parties shall maintain during the life of this Agreement the following minimum amount of comprehensive general liability insurance or commercial general liability insurance: the greater of (1) One Million Dollars ($1,000,000) per occurrence with a Two Million Dollar ($2,000,000) aggregate; or (2) all the insurance coverage and/or limits carried by or available to the Parties. Said insurance shall cover bodily injury, death, property damage products and completed operations, host liquor liability, and personal & advertising injury and be written on an occurrence basis.

C. The Parties shall maintain during the life of this Agreement, the following minimum amount of automotive liability insurance: the greater of (1) a combined single limit of One Million Dollars ($1,000,000); or (2) all the insurance coverage and/or limits carried by or available to the Parties. Said insurance shall cover bodily injury, death and property damage for all owned, non-owned and hired vehicles and be written on an occurrence basis.

D. Any insurance proceeds in excess of or broader coverage than the minimum required coverage and/or minimum required limits which are applicable to a given loss shall be available to the City. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of The Parties under this Agreement.

E. Each policy of general liability and automotive liability shall provide that City, its officers, officials, agents, and employees are declared to be additional insureds under the terms of the policy, but only with respect to the work performed by the Parties and/or their subcontractors under this Agreement. A policy endorsement to that effect shall be provided to City along with the certificate of insurance. In lieu of an endorsement, City will accept a copy of the policy(ies) which evidences that City is an additional insured as a contracting party. The minimum coverage required by Subsection B and C, above, shall provide that the insurance in force will not be canceled or allowed to lapse without at least ten (10) days prior to written notice to City.

F. The insurance policies maintained by the Parties shall be primary insurance and no insurance held or owned by City shall be called upon to cover any loss under the policy. The Parties will determine their own needs in the procurement of insurance to cover liabilities other than as stated above.

G. Before the Parties perform any work or prepares or delivers any materials, the Parties shall furnish certificates of insurance and endorsements, as required by City, evidencing the aforementioned minimum insurance coverages on forms acceptable to City, which shall provide that the insurance in force will not be canceled or allowed to lapse without at least ten (10) days' prior written notice to City.

H. All insurance maintained by the Parties shall be issued by companies admitted to conduct the pertinent line of insurance business in California.

I. The Parties shall immediately notify City if any required insurance lapses or is otherwise modified and cease performance of this Agreement unless otherwise directed by City.

J. The Parties agree that in the event of loss due to any of the perils for which it has agreed to provide insurance, the Parties shall look solely to their insurance for recovery. The Parties hereby grants to City, on behalf of any insurer providing insurance to either the Parties or City with respect to the services of the Parties herein, a waiver of any right to subrogation which any such insurer may acquire against City by virtue of the payment of any loss under such insurance. Any right of subrogation against the City, its elected officials, officers, employees, volunteers, boards, agents, and representatives shall be waived.

K. The Parties shall include all Parties subcontractors, if any, and Celebrate Orange vendors as additional insureds under their policies or shall require that said subcontractors and Celebrate Orange vendors maintain their own insurance consistent with the requirements stated herein.

8. Indemnity.

A. To the fullest extent permitted by law, the Parties agree to indemnify, defend and hold City, its City Council and each member thereof, and the officers, officials, agents and employees of City (collectively the "Indemnitees") entirely harmless from all liability arising out of:

1) Any and all claims under worker's compensation acts and other employee benefit acts with respect to the Parties employees or subcontractor's employees arising out of the Parties work under this Agreement; and

2) Any claim, loss, injury to or death of persons or damage to property caused by any act, neglect, default, or omission of the Parties, or person, firm or corporation employed by the Parties, either directly or by independent contract, including all damages due to loss or theft sustained by any person, firm or corporation including the Indemnitees, or any of them, arising out of, or in any way connected with the work or services which are the subject of this Agreement, including injury or damage either on or off City's property. The Parties, at their own expense, cost and risk, shall indemnify any and all claims, actions, suits or other proceedings that may be brought or instituted against the Indemnitees on any such claim or liability covered by this Subsection, and shall pay or satisfy any judgment that may be rendered against the Indemnitees, or any of them, in any action, suit or other proceedings as a result of coverage under this Subsection.

B. Except for the Indemnitees, the indemnifications provided in this Agreement shall not be construed to extend any third-party indemnification rights of any kind to any person or entity which is not a signatory to this Agreement.

C. The indemnitees set forth in this section shall survive any closing, rescission, or termination of this Agreement, and shall continue to be binding and in full force and effect in perpetuity with respect to the Parties and its successors.

9. Standard Provisions.

A. Licenses. The Parties represent that it and any subcontractors it may engage possess any and all licenses which are required under state or federal law to perform the work contemplated by this Agreement and that the Parties and subcontractors, if any, shall maintain all appropriate licenses, including a City of Orange business license, at its cost, during the performance of this Agreement.

B. Independent Contractor. At all times during the term of this Agreement, the Parties shall be an independent contractor and not an employee of City. City shall have the right to control the Parties only insofar as the result of the Parties services rendered pursuant to this Agreement. City shall not have the right to control the means by which the Parties accomplishes services rendered pursuant to this Agreement. The Parties shall, at its sole cost and expense, furnish all facilities, materials and equipment which may be required for furnishing services pursuant to this Agreement. The Parties shall be solely responsible for, and shall indemnify, defend and save City harmless from all matters relating to the payment of its subcontractors, agents and employees, including compliance with social security, withholding and all other wages, salaries, benefits, taxes, exactions, and regulations of any nature whatsoever. The Parties acknowledge that the Parties and any subcontractors, agents or employees employed by the Parties shall not, under any circumstances, be considered employees of City, and that they shall not be entitled to any of the benefits or rights afforded employees of City, including, but not limited to, sick leave, vacation leave, holiday pay, Public Employees Retirement System benefits, or health, life, dental, long-term disability or workers' compensation insurance benefits.

C. The Parties Not Agent. Except as City may specify in writing, The Parties shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent. The Parties shall have no authority, express or implied, to bind City to any obligation whatsoever.

D. Amendment. No amendment of this Agreement or its Exhibits shall be effective unless in writing, signed by the Parties and City. City Manager is specifically authorized to execute amendments to this Agreement on behalf of City.

E. Assignment or Subcontracting. No assignment or subcontracting by the Parties of any part of this Agreement or of funds to be received under this Agreement shall be of any force or effect unless the assignment has had the prior written approval of City. City may terminate this Agreement rather than accept any proposed assignment or subcontracting. Such assignment or subcontracting may be approved by the City Manager.

F. Equal Employment Opportunity. During the performance of this Agreement, The Parties agree as follows:

1) The Parties shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. The Parties shall ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Such actions shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The Parties agree to post in conspicuous places, available to employees and applicants for employment, a notice setting forth provisions of this non-discrimination clause.

2) The Parties shall, in all solicitations and advertisements for employees placed by, or on behalf of the Parties, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law.

3) The Parties shall cause the foregoing paragraphs 1) and 2) to be inserted in all subcontracts for any work covered by this Agreement, provided that the foregoing provisions shall not apply to subcontracts for standard commercial supplies or raw materials.

G. Conflicts of Interest. The Parties agree it shall not make, participate in the making, or in any way attempt to use its position as a contractor to influence any decision of City in which The Parties know or has reason to know that The Parties, its officers, partners, or employees have a financial interest as defined in Section 87103 of the Government Code. The Parties further agree it shall not be eligible to work as the design/build firm for the project that is the subject of this Agreement.

H. Compliance with all Laws/Immigration Laws.

1) The Parties shall be knowledgeable of and comply with all local, state and federal laws which may apply to the performance of this Agreement.

2) The Parties shall comply with all applicable Fire Department guidelines in effect January 1st of any given year during which Celebrate Orange is produced. Additional requirements may be added by the Fire Department as necessary, and at the Fire Department's discretion.

3) The Parties represent and warrant that The Parties:

a. Has complied and shall at all times during the term of this Agreement comply, in all respects, with all immigration laws, regulations, statutes, rules, codes, and orders, including, without limitation, the Immigration Reform and Control Act of 1986 (IRCA); and

b. Has not and will not knowingly employ any individual to perform services under this Agreement who is ineligible to work in the United States or under the terms of this Agreement; and

c. Has properly maintained, and shall at all times during the term of this Agreement properly maintain, all related employment documentation records including, without limitation, the completion and maintenance of the Form I-9 for each of the Parties employees; and

d. Has responded, and shall at all times during the term of this Agreement respond, in a timely fashion to any government inspection requests relating to immigration law compliance and/or Form I-9 compliance and/or worksite enforcement by the Department of Homeland Security, the Department of Labor, or the Social Security Administration.

4) The Parties shall require all subcontractors to make the same representations and warranties as set forth in Subsection 3 above.

5) The Parties shall require all subcontractors to make the same verification as set forth in Subsection 5 above.

6) If the Parties or subcontractor knowingly employs an employee providing work under this Agreement who is not authorized to work in the United States, and/or fails to follow federal laws to determine the status of such employee, that shall constitute a material breach of this Agreement and may be cause for immediate termination of this Agreement by City.

7) The Parties agree to indemnify and hold City, its officials, and employees harmless for, of and from any loss, including but not limited to fines, penalties and corrective measures, City may sustain by reason of the Contractor's failure to comply with said laws, rules and regulations in connection with the performance of this Agreement.

I. Governing Law and Venue. This Agreement shall be construed in accordance with and governed by the laws of the State of California and the Parties agree to submit to the jurisdiction of California courts. Venue for any dispute arising under this Agreement shall be in Orange County, California.

J. Integration. This Agreement constitutes the entire agreement of the parties. No other agreement, oral or written, pertaining to the work to be performed under this Agreement shall be of any force or effect unless it is in writing and signed by both parties.

10. Notice.

Except as otherwise provided herein, all notices required under this Agreement shall be in writing and delivered personally, by e-mail, or by first class mail, postage prepaid, to each party at the address listed below. Either party may change the notice address by notifying the other party in writing. Notices shall be deemed received upon receipt of same or within 3 days of deposit in the U.S. Mail, whichever is earlier. Notices sent by e-mail shall be deemed received on the date of the e-mail transmission.

"CITY"
City of Orange
300 E. Chapman Avenue
Orange, CA 92866
Attn: City Manager
cminfo@cityoforange.org

"THE PARTIES"
Orange Chamber of Commerce Foundation
34 Plaza Square
Orange, CA 92866
Attn: Elizabeth Holloman

Assistance League of Orange
124 S. Orange St.
Orange, CA 92866
Attn: Wendi Forrest

Orange Plaza Rotary Club
P.O. Box 1591
Orange, CA 92856
Attn: Tracey L. Curtis

IN WITNESS of this Agreement, the parties enter into this Agreement on the year and day first above written.

ORANGE CHAMBER OF COMMERCE FOUNDATION, a California non-profit public benefit corporation

DocuSigned by:
By: Angie Catale
Printed Name: Angie Catale
Title: President

CITY OF ORANGE, a municipal corporation

By: _____
Daniel R. Slater, Mayor

ASSISTANCE LEAGUE OF ORANGE, a non-profit public benefit corporation

Signed by:
By: Wendi A. Forrest
Printed Name: Wendi A. Forrest
Title: VP, Resource Development

ATTEST:

_____
Pamela Coleman, City Clerk

ORANGE PLAZA ROTARY CLUB, a non-profit public benefit corporation

Signed by:
By: Tracey L. Curtis
Printed Name: Tracey L. Curtis
Title: Annual Orange Plaza Rotary Car Show Chair

APPROVED AS TO FORM:

_____
Nathalie Adourian, City Attorney √

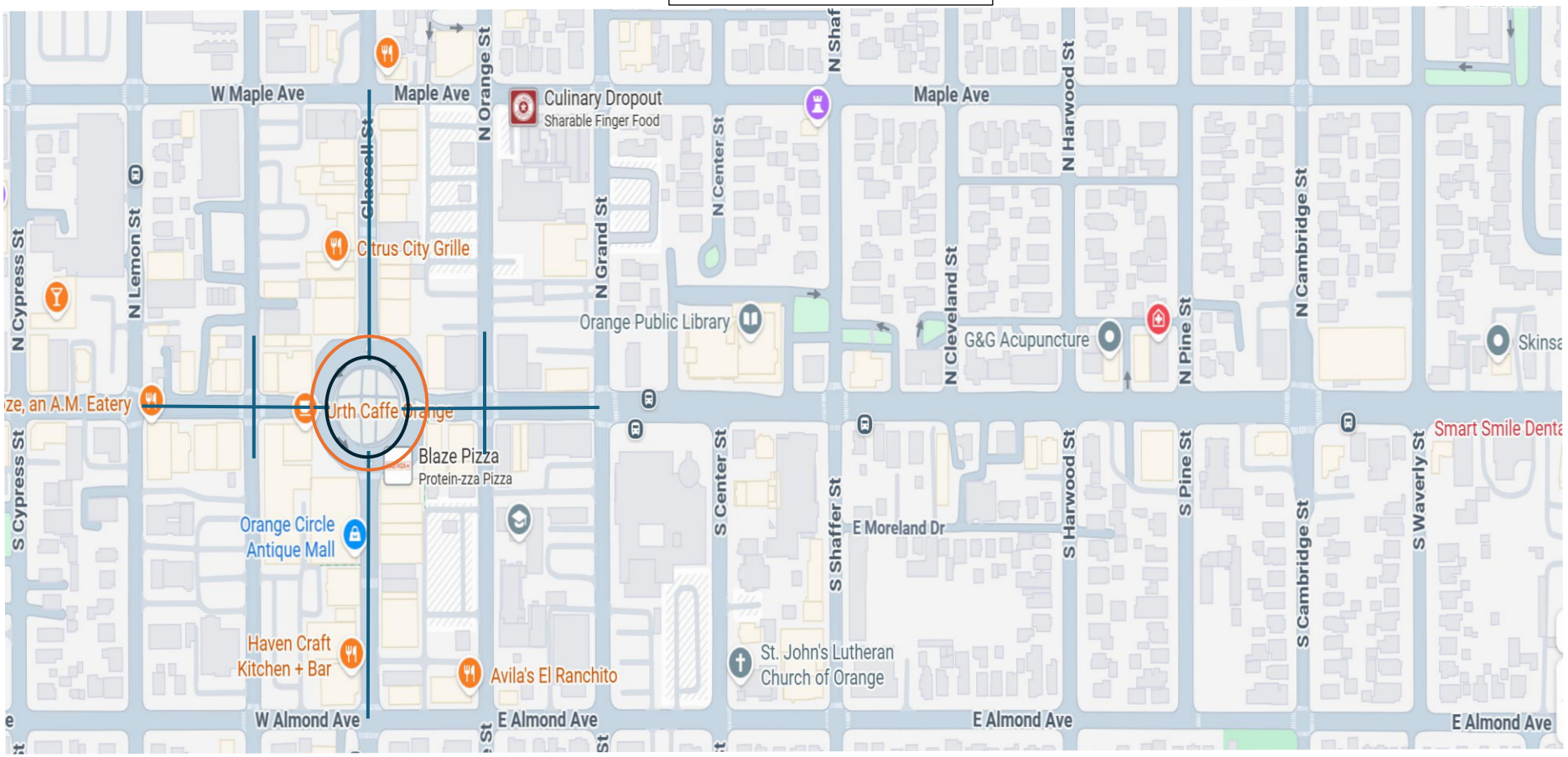
EXHIBIT "A"

FOOTPRINT OF CELEBRATE ORANGE

[Behind this sheet.]

This item is determined and provided annually by Celebrate Orange

EXHIBIT A – 1 of 2



Footprint/street use for May Parade – May 2, 2026

Footprint for Taste of Orange event – May 2, 2026

Footprint/street closure for Orange Plaza Rotary Car Show – May 3, 2026

Exhibit A - 2 of 2

Lots 2 & 12 have been approved for exclusive use on the following dates and times:

Lot 12 - Saturday, May 2, 2026 4:00 a.m. - 1:00 p.m.

Lot 2 - Saturday, May 2, 2026 8:00 a.m. - 8:00 p.m.

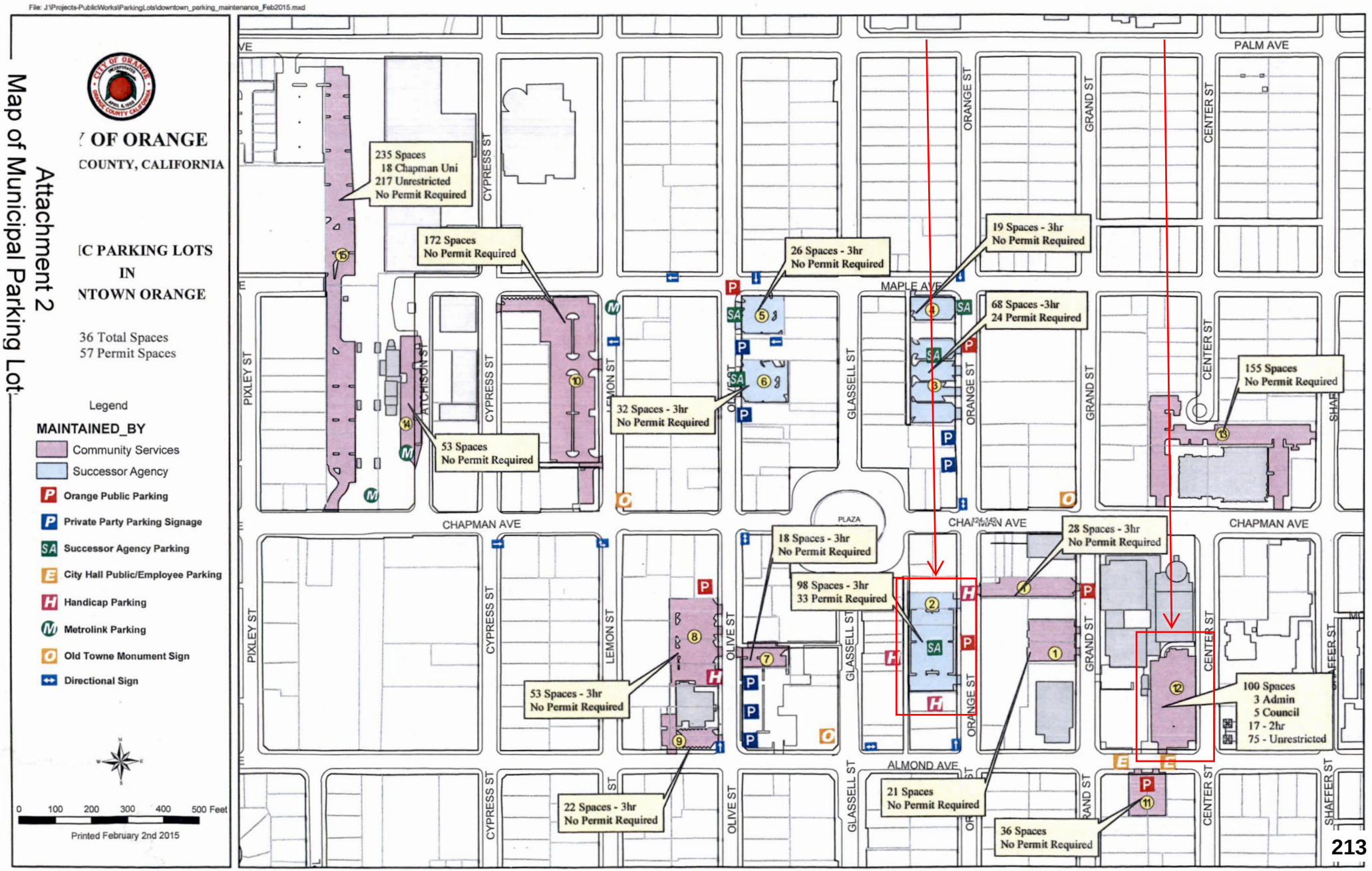


EXHIBIT "B"

LOGISTICS MAP OF CELEBRATE ORANGE

[Behind this sheet.]

This item is determined and provided annually by Celebrate Orange


Orange May Parade
Staging / Parade Route
N Cambridge St
S Cambridge St
Participant Drop-off
Staging Areas
Parade Route
Staging Entrances
Disbanding
Announcers
N. Pine St.
MARCHERS / ENTERTAINMENT UNITS
S. Pine St.
EQUESTRIANS
N. Harwood St.
MARCHERS / ENTERTAINMENT UNITS
S. Harwood St.
MARCHERS / ENTERTAINMENT UNITS
N. Cleveland St.
MARCHERS / ENTERTAINMENT UNITS
Floats and Large Vehicles
Chapman Avenue
N. Shaffer St.
GUESTS / INDIVIDUAL VEHICLES
Start
S. Shaffer St.
BANDS
Maple Ave
E Almond Ave
S Harwood St
E Moreland Dr
E Washington Ave
St. John's
Walker Hall
N Center St
S Center St
Band Bus Parking
VIP TENT
City Hall
MERCH BOOTH
Band Bus Parking Overflow
Disbanding
S Grand St
END
S Orange St
Plaza Square
Glassell
W Almond Ave
S Olive St

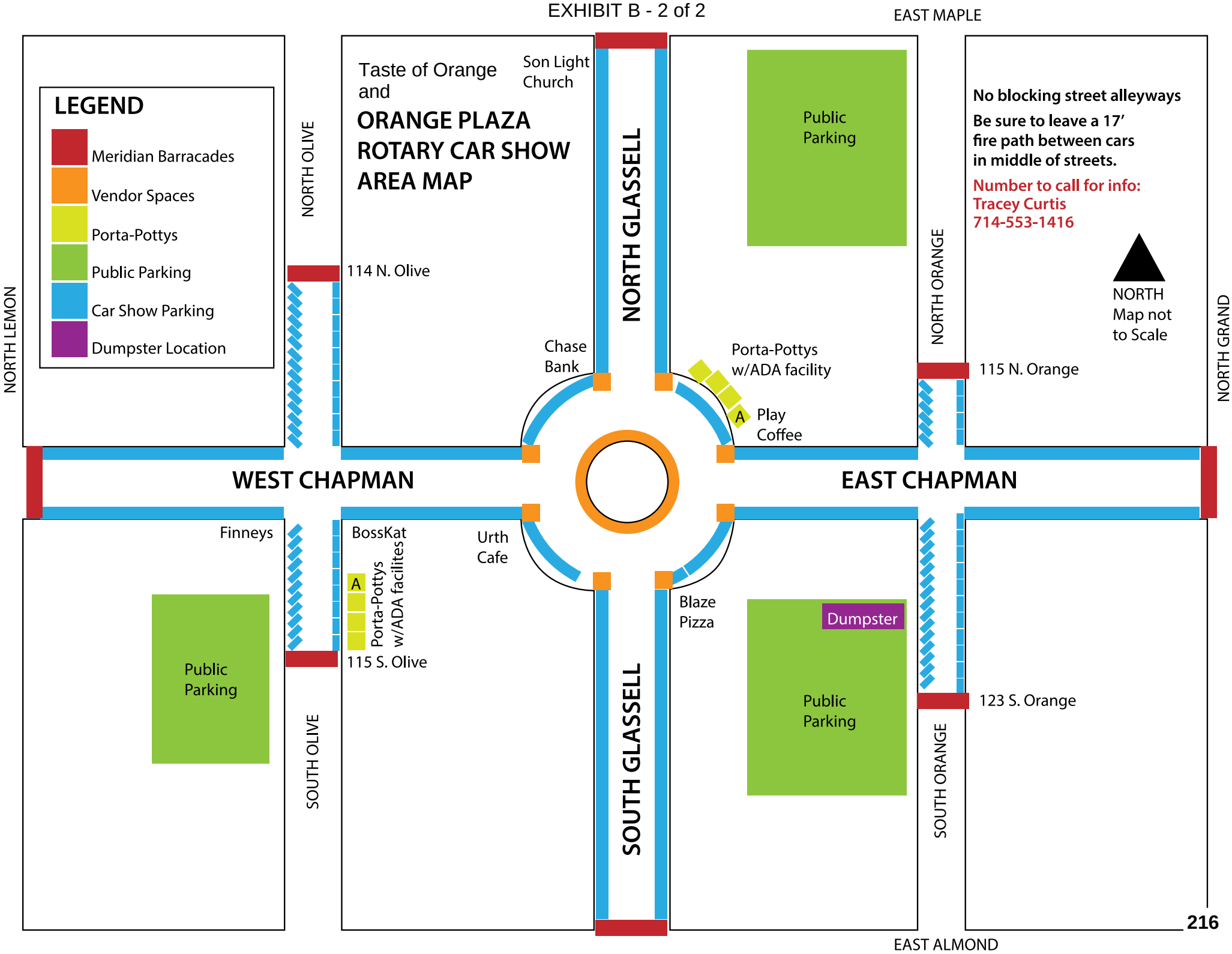

EAST MAPLE
LEGEND
Meridian Barracades
Vendor Spaces
Porta-Pottys
Public Parking
Car Show Parking
Dumpster Location
Taste of Orange
and
ORANGE PLAZA
ROTARY CAR SHOW
AREA MAP
Son Light
Church
NORTH OLIVE
NORTH GLASSELL
Public
Parking
No blocking street alleyways
Be sure to leave a 17'
fire path between cars
in middle of streets.
Number to call for info:
Tracey Curtis
714-553-1416
NORTH
Map not
to Scale
NORTH LEMON
114 N. Olive
Chase
Bank
Porta-Pottys
w/ADA facility
A
Play
Coffee
NORTH ORANGE
115 N. Orange
NORTH GRAND
WEST CHAPMAN
EAST CHAPMAN
Finneys
BossKat
A
Porta-Pottys
w/ADA facilites
115 S. Olive
Urth
Cafe
Blaze
Pizza
Dumpster
Public
Parking
Public
Parking
SOUTH OLIVE
SOUTH GLASSELL
SOUTH ORANGE
123 S. Orange
EAST ALMOND

EXHIBIT "C"

CELEBRATE ORANGE TIMELINE

[Behind this sheet.]

This item is determined and provided annually by Celebrate Orange

EXHIBIT C
1 of 3

Orange May Parade Timeline 2026

- 6:30 am. Upbeat parade Production crew begins to place staging numbers throughout staging area. City has closed parade streets. are closed.
- By 7:00 a.m., OPW drops off trash liners and boxes.
- By 8:00 a.m., OCCF assembles and distributes trash boxes with liners throughout Celebrate Orange
- footprint.
- 8:00 am Floats begin to arrive on Chapman Ave
- 8:30 am Other parade participants arrive (staggered times)
- Between 9:00 a.m. – 9:30 a.m., representatives from Orange Fire Department conduct a final
- inspection of Parade floats to ensure compliance with all Fire Code requirements.
- By 9:00 a.m., OCCF sets up seating, tents, audio equipment, and any other equipment or
- materials related to the Parade not provided by City.
- 9:45 am First entries brought up to starting line.
- OPW places traffic signals on flash.
- OPW provides and places barricades and coordinates with Police for the removal of vehicles
- from the closure area and other posted parking within the footprint of the Parade.
- OPW staff periodically monitors right-of-way areas within Parade footprint for cleanliness and
- safety items.
- OPW notifies OCCF of any areas out of compliance.
- OPW monitors trash boxes throughout the Parade footprint.
- OPW remains on-site to assist critical intersections (Grand/Chapman, Almond/Orange).
- OCCF inspects Parade footprint and reports areas in need of OPW assistance.
- OCCF provides directional signs to portable restrooms throughout the Parade footprint.
- 10:00am Parade starts
- 10:25 am First entries hit disbanding area
- 11:15 am Last entry pulls out of staging area
    - Cleanup of staging area and parade route begins
- 11:45am Last entry hits disbanding area

- **Post Event**
- OCCF coordinates removal of portable toilets and related directional signage.
- OCCF removes seating, tents, audio equipment, and any other equipment or materials set
- up by Chamber and not by City.
- OPW sweeps entire Parade footprint.

EXHIBIT C
2 of 3



4 a.m.	Street Closure
6 – 9:30 a.m.	Set-up around the Plaza begins
9:30 – 11:30 a.m.	Break in set-up for Parade
11:30 a.m. – 2:30 p.m.	Set-up continues
3 – 7 p.m.	Event
7 – 8 p.m.	Clean-up

EXHIBIT C
3 of 3

30th Annual Orange Plaza Rotary Car Show Timeline of Events

SUNDAY, MAY 3

Schedule

- 2:00 AM – Classic cars line up on East Chapman
- 4:00–6:00 AM – Vendor booth setup
- 5:00–8:00 AM – Entrant vehicles parked
- 9:00 AM – Opening ceremonies
- 9:00 AM–2:00 PM – Opportunity drawings
- 2:00–3:00 PM – Awards ceremony
- 3:00–4:00 PM – Vehicle exit
- 3:00–5:00 PM – Vendor breakdown & cleanup
- 5:00 PM – Plaza traffic reopens

Agenda Item

Orange City Council

Item #: 3.6. 3/10/2026 **File #:** 26-0096

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT
First Amendment to agreement with HF&H Consultants, LLC for Solid Waste Consulting Services

2. SUMMARY
The City engaged HF&H Consultants, LLC to support SB 1383 compliance, including program development and regulatory audits. As requirements and complexity increased, the City expanded HF&H's scope and now recommends a $60,000 amendment to continue essential consulting services and ensure ongoing support and compliance with State regulations.

3. RECOMMENDED ACTION
Approve the First Amendment to Agreement No. 7697.A with HF&H Consultants, LLC in the amount of $60,000 for Solid Waste Consulting Services; and authorize the Mayor and the City Clerk to execute on behalf of the City

4. FISCAL IMPACT
The expense for this amendment is $60,000 and will be funded through General Fund (100):
100-5001-55999-255041 Other Prof/Technical Services

5. STRATEGIC PLAN GOALS
Goal 3: Enhance Public Communication Strategy and Quality of Life

6. DISCUSSION AND BACKGROUND
The passage of Senate Bill 1383 established statewide methane-reduction targets and requires local jurisdictions to implement comprehensive organic-waste diversion regulations. To adhere to these requirements, jurisdictions must monitor, record, inspect, address contamination, educate the public, track procurement activities, and document enforcement efforts.

On September 17, 2025, the City entered into an agreement with HF&H Consultants, LLC (HF&H) for $30,000 to prepare for a CalRecycle Jurisdictional Annual Compliance Evaluation review. As the complexity of the documentation and regulatory requirements became apparent, it was clear that additional support was necessary. Under this amendment, HF&H will assist the City with program implementation, preparation of compliance documentation, development of recordkeeping systems, and preparation for CalRecycle audits. Their expertise has helped ensure the City meets State

mandate requirements and significantly reduces the risk of enforcement actions and penalties.

As SB 1383 regulations continue to evolve, the City faces ongoing obligations to monitor, report, administer ordinances, and adapt programs. The technical and ever-changing regulatory landscape requires continuous consulting support. HF&H remains essential to maintaining effective, adaptable organics compliance and fulfilling State reporting requirements.

To sustain proactive compliance and allow HF&H to continue providing critical support, staff recommends approving a First Amendment in the amount of $60,000, which will bring the total agreement amount to $90,000. This support includes ongoing SB 1383 monitoring, annual reporting and recordkeeping, program implementation guidance, regulatory advice, franchise fee valuation, and preparation for future CalRecycle inspections and audits.

7. ATTACHMENTS

- First Amendment to Agreement with HF&H Consultants, LLC

Agenda Item

Orange City Council

Item #: 3.6. 3/10/2026 **File #:** 26-0096

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

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7. ATTACHMENTS

- First Amendment to Agreement with HF&H Consultants, LLC

FIRST AMENDMENT
TO
PROFESSIONAL SERVICES AGREEMENT
[SB 1383 Solid Waste Consulting Services]

THIS FIRST AMENDMENT TO PROFESSIONAL SERVICES AGREEMENT (the "First Amendment") is made and entered into as of _____, 2026, by and between the CITY OF ORANGE, a municipal corporation ("City"), and HF&H CONSULTANTS, LLC, a California limited liability company ("Contractor"), with reference to the following.

A. City and Contractor entered into a Professional Services Agreement (Agreement No. AGR-7697.A) dated as of September 17, 2025, which is incorporated herein by this reference (the "Original Agreement"); and

B. City and Contractor desire to amend the Original Agreement to modify, amend, and supplement certain portions of the Original Agreement by revising the Scope of Services and increasing the compensation.

NOW, THEREFORE, the parties hereby agree as follows:

Section 1. **Defined Terms.** Except as otherwise defined herein, all capitalized terms used herein shall have the meanings set forth for such terms in the Original Agreement.

Section 2. **Cross-References.** City and Contractor agree that all references in this First Amendment are deemed and construed to refer to the Original Agreement, as implemented by this First Amendment.

Section 3. **Revised Scope of Services**. The Scope of Services, Section 1, Exhibit A of the Original Agreement, is hereby amended, modified and supplemented to include the services described on Exhibit A attached hereto and incorporated herein by this reference.

Section 4. **Compensation**. The total not-to-exceed compensation for the services to be rendered as set forth in Section 2.a of the Original Agreement is increased by SIXTY THOUSAND DOLLARS and 00/100 ($60,000.00) and Section 2.a is hereby amended in its entirety to read as follows:

> "Contractor's total compensation for all services performed under this Agreement, shall not exceed NINETY THOUSAND DOLLARS and 00/100 ($90,000.00) without the prior written authorization of City."

Section 5. **Integration**. This First Amendment amends, as set forth herein, the Original Agreement and, except as specifically amended hereby, the Original Agreement shall remain in full force and effect. To the extent that there is any conflict or inconsistency between the terms and provisions of this First Amendment and the terms and provisions of the Original

Agreement, the terms and provisions of this First Amendment shall control and govern the rights and obligations of the parties.

IN WITNESS of this Agreement, the parties enter into this Agreement on the year and day first above written.

"CONTRACTOR"	"CITY"
HF&H CONSULTANTS, LLC, a California limited liability company	CITY OF ORANGE, a municipal corporation
*By:_____ Printed Name:_____ Title:_____	By:_____ Daniel R. Slater, Mayor
*By: _____ Printed Name: _____ Title: _____	ATTEST: _____ Pamela Coleman, City Clerk
	APPROVED AS TO FORM: _____ Nathalie Adourian, City Attorney

NOTE:** ***If CONTRACTOR is a corporation, the City requires the following signature(s):

-- ***(1) the Chairman of the Board, the President or a Vice-President, AND (2) the Secretary, the Chief Financial Officer, the Treasurer, an Assistant Secretary or an Assistant Treasurer. If only one corporate officer exists or one corporate officer holds more than one corporate office, please so indicate. OR***

-- ***The corporate officer named in a corporate resolution as authorized to enter into this Agreement. A copy of the corporate resolution, certified by the Secretary close in time to the execution of the Agreement, must be provided to the City.***

√

Agreement, the terms and provisions of this First Amendment shall control and govern the rights and obligations of the parties.

IN WITNESS of this Agreement, the parties enter into this Agreement on the year and day first above written.

"CONTRACTOR"	"CITY"
HF&H CONSULTANTS, LLC, a California limited liability company	CITY OF ORANGE, a municipal corporation
*By: Laith Ezzet Printed Name: LAITH EZZET Title: Senior Vice President	By: _____ Daniel R. Slater, Mayor
*By: _____ Printed Name: _____ Title: _____	ATTEST: _____ Pamela Coleman, City Clerk
	APPROVED AS TO FORM: _____ Nathalie Adourian, City Attorney

NOTE:
-- ***If CONTRACTOR is a corporation, the City requires the following signature(s): (1) the Chairman of the Board, the President or a Vice-President, AND (2) the Secretary, the Chief Financial Officer, the Treasurer, an Assistant Secretary or an Assistant Treasurer. If only one corporate officer exists or one corporate officer holds more than one corporate office, please so indicate. OR***

-- ***The corporate officer named in a corporate resolution as authorized to enter into this Agreement. A copy of the corporate resolution, certified by the Secretary close in time to the execution of the Agreement, must be provided to the City.***

√

EXHIBIT "A"

SUPPLEMENTAL SCOPE OF SERVICES

[Behind this page.]

HF&H Consultants
590 Ygnacio Valley Rd. Suite 105
Walnut Creek, CA 94596
Phone: (925) 977-6950
Web: hfh-consultants.com

January 27, 2026

Christopher Cash
Director of Public Works
City of Orange
300 E. Chapman
Orange, CA 92866

Subject: Proposal to Perform Franchise Fee Valuation Analysis for the City of Orange

Dear Christopher Cash,

HF&H Consultants, LLC (HF&H) is pleased to submit this proposal to the City of Orange (City) to assist with an analysis of the value and costs associated with the City's solid waste franchise and other expenses incurred by the City's General Fund to provide solid waste-related services to its residents and businesses. This proposal describes the reason for this work, HF&H's proposed scope of work, and our estimated fees to perform the work. HF&H has made a best effort to define the work to be performed and the costs associated therewith. Due to the lack of clarity in the legal decisions that are driving the City's need for this work, it is important to understand that the early work with the City's legal team on defining valuation methodology(ies) may require changes to the approach described here.

Scope of Work

PHASE I: METHODOLOGY DEVELOPMENT

Task 1a: Kick-off Meeting. HF&H will facilitate a virtual project kick-off meeting with all City stakeholders to the project. It is critical for all members of the project team to attend the initial meeting to thoroughly review and reach consensus on the project's scope and schedule. This meeting should also clarify individual roles, delineate responsibilities concerning information sharing and participation, establish confidentiality requirements, and define the project's critical success factors. Additionally, this meeting is an opportunity for all team members to share their thoughts about approaches, risks, opportunities, and other relevant context that may impact the project.

Task 1b: Methodology Development. HF&H will facilitate a series of up to two scoping and methodology definition meetings with the City Attorney's office, any outside legal counsel, and staff from the City's solid waste and recycling operations to present potential methodologies following the kick-off meeting described in Task 1a. Prior to the first scoping meeting, HF&H will develop options for the valuation methodology using economic principles, and methodologies used in similar settings.

These meetings will also be used to review the detailed methodology required to perform the enterprise reimbursement study. That approach will be customized for the City's unique considerations.

It is also possible that more than one approach will be selected for testing. Conducting multiple valuation analyses is not included in our scope or budget assumptions and including such analyses would require scope and budget modification.

Task 1c: Request for Information. HF&H will prepare a request for information (RFI) to collect data required to conduct the various analyses contemplated by this study. It is our goal to gather all required information at the beginning of the project; however, due to the somewhat novel nature of this work, HF&H may find additional data needs during the performance of the analytical work that warrants the solicitation of additional information from specific data providers, which may require the issuance of a supplemental RFI to gather the required clarification or additional detail.

PHASE II: CONDUCT FRANCHISE FEE COST REVIEW

Task 2a: Develop Franchise Fee Cost Model. HF&H will develop an analytical model (using Microsoft Excel) specific to the franchise fee valuation methodology selected by the stakeholder team in Task 1b. The analytical model will be prepared in a transparent and easy-to-follow manner to allow the City's various stakeholders to fully digest the information and communicate it out to interested parties. HF&H will submit the analytical framework to the City's stakeholder group for review and to gather input on data concerns, assumptions required, legal viability, or to further refine the approach. HF&H will use the information gathered from that input cycle to finalize the model.

HF&H will conduct a comprehensive review and quantification of various costs currently borne by the City's General Fund associated with the City's franchise agreement with CR&R Incorporated (CR&R). This assessment will include expenses related to solid waste collection conducted by City staff as well as costs incurred in mitigating operational impacts from CR&R. Areas of analysis may include:

- The encroachment value of containers (carts and bins) positioned within the City's right-of-way during collection days.
- City staff hours required for participation in local or regional solid waste and recycling-related commissions and for effective management of the franchise agreement with CR&R – including tasks such as rate setting, contract compliance monitoring, contract negotiations, and enforcement.
- Outreach expenditures related to recycling and organics programs not otherwise addressed through interfund transfers from the City's General Fund.
- Street tree trimming required to be performed in order for CR&R's large collection vehicles to navigate on City streets.
- City code enforcement efforts concerning anti-scavenging and other solid waste code provisions, such as those pertaining to SB 1383.

The specific areas of analysis will be based on feedback received from the City Attorney and/or outside legal counsel received during Phase I.

Task 2b Calculate Franchise Fee Valuation. HF&H will calculate the franchise fee value based on the methodology approved by the City Attorney's office in Task 1b, the analytical framework prepared by HF&H and reviewed by the City in Task 2a, and the data gathered in Task 1c from the City and outside parties. The preliminary calculations will be shared with appropriate members of the City's stakeholder team. HF&H staff will be happy to discuss the model with City staff to ensure that they are satisfied with our methodology; however, we do not propose including this model as a work product. HF&H anticipates two rounds of review and comments on the calculations prior to finalizing the calculations and preparing the report (Task 2c).

Task 2c Report on Franchise Fee Value. HF&H will prepare a franchise fee valuation report or memorandum (depending on approach selected by City Attorney/outside legal counsel) documenting the franchise fee valuation methodology and results of the calculations.

LIMITATIONS

Every engagement includes certain limitations and HF&H has attempted to document the scope of those limitations as they pertain to this engagement (e.g., number of meetings, number of review cycles for work products) in the description of the tasks in the "Scope of Work" section of this proposal. Our analysis relies in part on documents prepared by City staff whom we believe to be knowledgeable as well as professionally and technically qualified to perform the work. This study does not entail independent verification of the accuracy or completeness of all the sources of documents provided by the City or CR&R. Our study is based on reasonable assumptions about future events; however, actual results are often different than anticipated and that difference can be significant HF&H is not a law firm and does not provide legal advice. HF&H will rely upon the City Attorney or other outside legal counsel to review and approve the methodology(ies) used in this study to ensure compliance with applicable law and judicial decisions.

FIXED FEE

We propose to complete the above scope of work for a fixed fee of $60,000. HF&H will bill twenty five percent (25%) upon completion of Task 1, fifty percent (50%) upon delivery of a draft report, and the remaining twenty five percent (25%) billed upon delivery of a final report or sixty days after submittal of the draft if the City provides no response to the draft or chooses not to finalize the report.

SCHEDULE

The schedule will be approximately two months from the time HF&H receives all of the requested data from the City and CR&R. If the data is not provided within the mutually-agreed-upon timeline, HF&H will meet and confer with the City to discuss representative data as placeholder values until accurate data can be provided. We plan to adjust the timeline as needed upon completion of the initial kick-off meeting and discussions with City staff.

* * * * *

Should you have any questions regarding this submittal, please call me directly at (925) 977-6959 or rchilton@hfh-consultants.com.

Very truly yours,
HF&H CONSULTANTS, LLC

Rob Hilton
President

cc: Dave Hilton, HF&H Consultants, LLC

The authorized party's signature below indicates acceptance of this proposal and authorization to commence work.

Signature: _____ Name: Christopher S. Cash

Title: Director of Public Works Date: 1/28/26

Agenda Item

Orange City Council

Item #: 3.7. 3/10/2026 **File #:** 26-0114

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Approval of plans and specifications for Almond Avenue and Collins Avenue Street Improvements and authorization to advertise for bids; and finding of California Environmental Quality Act (CEQA) exemption

2. SUMMARY

Plans and specifications have been completed, and the project is ready to be advertised for bids. The total estimated construction cost, including contingencies and construction engineering is $1,997,732.

3. RECOMMENDED ACTION

1. Approve the plans and specifications and authorize advertising for Bid No. 25-26.13 (SP-4327), Almond Avenue and Collins Avenue Street Improvements.
2. Find that the proposed project is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) per State CEQA Guidelines 15301 (Class 1(c) - Existing Facilities).

4. FISCAL IMPACT

No fiscal impact with this action. Construction funding will be requested at award.

5. STRATEGIC PLAN GOALS

Goal 5: Improve infrastructure, mobility, and technology.

6. DISCUSSION AND BACKGROUND

Almond Avenue from Main Street to Cypress Street, and Collins Avenue from Tustin Street to Handy Street Improvements project is part of the City's Pavement Management Program activities and is designed to prolong pavement life of city streets. This portion of the annual pavement project is being advanced separately to allow construction to begin in July and be completed prior to the start of the upcoming school year.

The pavement rehabilitation methods vary depending on the sustained damage, but in general, consist of asphalt concrete overlays with localized areas of pavement reconstruction, replacement of damaged curb and gutter, cross gutter, sidewalk, and access ramps within the project limits to conform to federal guidelines, and construction of new curb and gutter at locations that are missing or in need of replacement. The rehabilitated pavement will have a longer service life and will provide a

safe and smooth ride for the public.

The streets selected for maintenance are in accordance with the City's pavement management plan and generally fall into the "poor to fair" category, requiring work at this time to prevent total pavement failure and avoid the significantly higher cost of complete reconstruction in the future. Advancing this segment of the annual project separately allows the City to minimize impacts to school traffic circulation and improves the effectiveness of the traffic control plan by scheduling construction during the summer recess.

The total cost is estimated at $1,997,732, including construction engineering and a 15% contingency. Upon receipt of public bids, staff will return to the City Council and recommend award of contract and any necessary funding adjustments based on the outcome of the public bid.

Construction is anticipated to begin in July 2026 and is expected to be completed prior to the start of the new school year.

Specifications and cost estimates are available for review in the Public Works Department.

7. ENVIRONMENTAL REVIEW

The proposed project is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) per state CEQA guidelines 15301 (Class 1(c) - Existing Facilities) in that it involves pavement maintenance and rehabilitation of existing streets and does not create additional roadway capacity. No public review is required.

8. ATTACHMENTS

- Location Maps

Agenda Item

Orange City Council

Item #: 3.7. 3/10/2026 **File #:** 26-0114

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Approval of plans and specifications for Almond Avenue and Collins Avenue Street Improvements and authorization to advertise for bids; and finding of California Environmental Quality Act (CEQA) exemption

2. SUMMARY

Plans and specifications have been completed, and the project is ready to be advertised for bids. The total estimated construction cost, including contingencies and construction engineering is $1,997,732.

3. RECOMMENDED ACTION

1. Approve the plans and specifications and authorize advertising for Bid No. 25-26.13 (SP-4327), Almond Avenue and Collins Avenue Street Improvements.
2. Find that the proposed project is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) per State CEQA Guidelines 15301 (Class 1(c) - Existing Facilities).

4. FISCAL IMPACT

No fiscal impact with this action. Construction funding will be requested at award.

5. STRATEGIC PLAN GOALS

Goal 5: Improve infrastructure, mobility, and technology.

6. DISCUSSION AND BACKGROUND

Almond Avenue from Main Street to Cypress Street, and Collins Avenue from Tustin Street to Handy Street Improvements project is part of the City's Pavement Management Program activities and is designed to prolong pavement life of city streets. This portion of the annual pavement project is being advanced separately to allow construction to begin in July and be completed prior to the start of the upcoming school year.

The pavement rehabilitation methods vary depending on the sustained damage, but in general, consist of asphalt concrete overlays with localized areas of pavement reconstruction, replacement of damaged curb and gutter, cross gutter, sidewalk, and access ramps within the project limits to conform to federal guidelines, and construction of new curb and gutter at locations that are missing or in need of replacement. The rehabilitated pavement will have a longer service life and will provide a

safe and smooth ride for the public.

The streets selected for maintenance are in accordance with the City's pavement management plan and generally fall into the "poor to fair" category, requiring work at this time to prevent total pavement failure and avoid the significantly higher cost of complete reconstruction in the future. Advancing this segment of the annual project separately allows the City to minimize impacts to school traffic circulation and improves the effectiveness of the traffic control plan by scheduling construction during the summer recess.

The total cost is estimated at $1,997,732, including construction engineering and a 15% contingency. Upon receipt of public bids, staff will return to the City Council and recommend award of contract and any necessary funding adjustments based on the outcome of the public bid.

Construction is anticipated to begin in July 2026 and is expected to be completed prior to the start of the new school year.

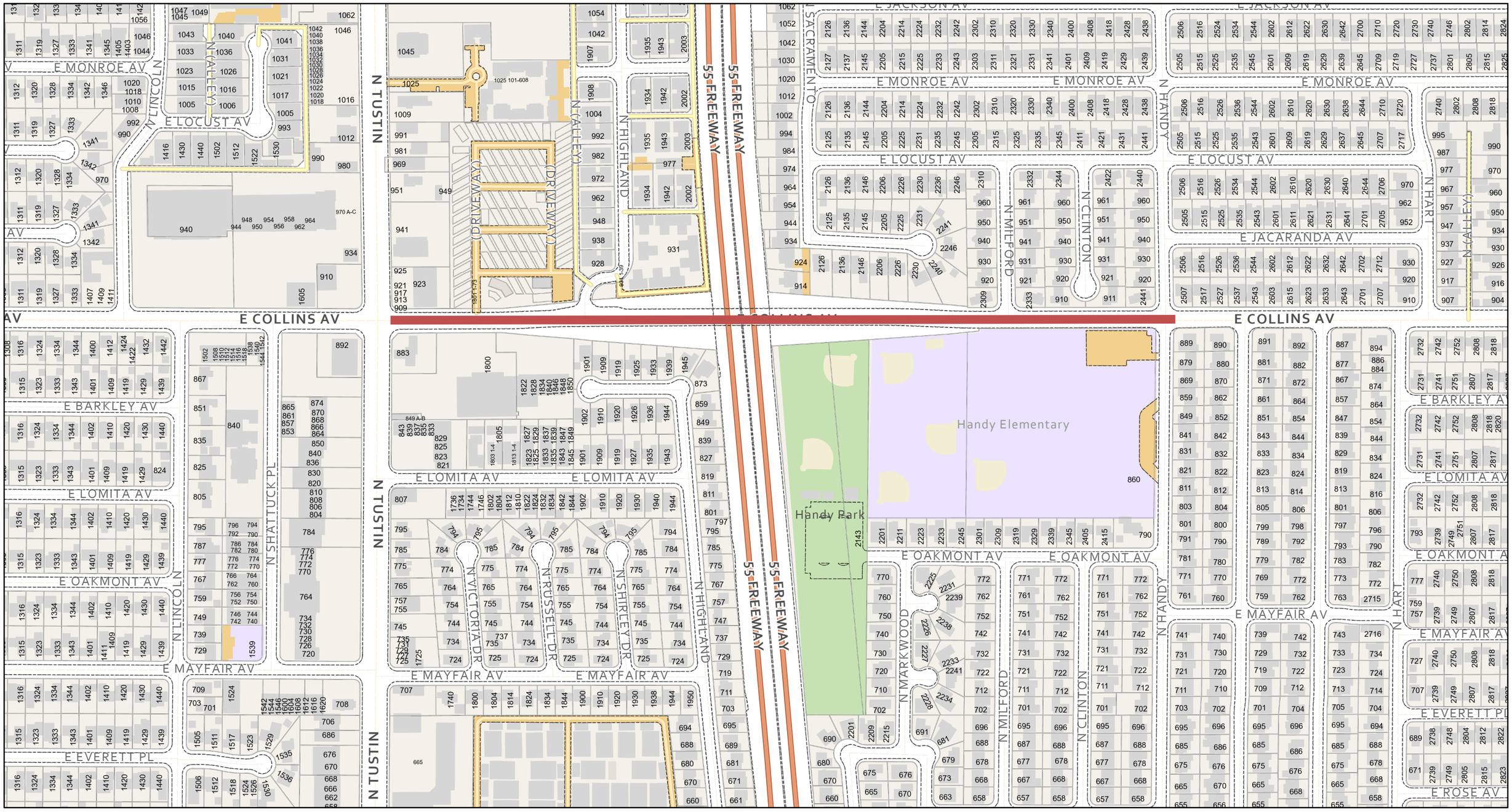
Specifications and cost estimates are available for review in the Public Works Department.

7. ENVIRONMENTAL REVIEW

The proposed project is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) per state CEQA guidelines 15301 (Class 1(c) - Existing Facilities) in that it involves pavement maintenance and rehabilitation of existing streets and does not create additional roadway capacity. No public review is required.

8. ATTACHMENTS

- Location Maps



Parcel Lines

Curb Type

NOTE: Recent data updates may not be reflected on this map at the time of printing, use at your discretion. No part of this map shall be reproduced for commercial purposes.

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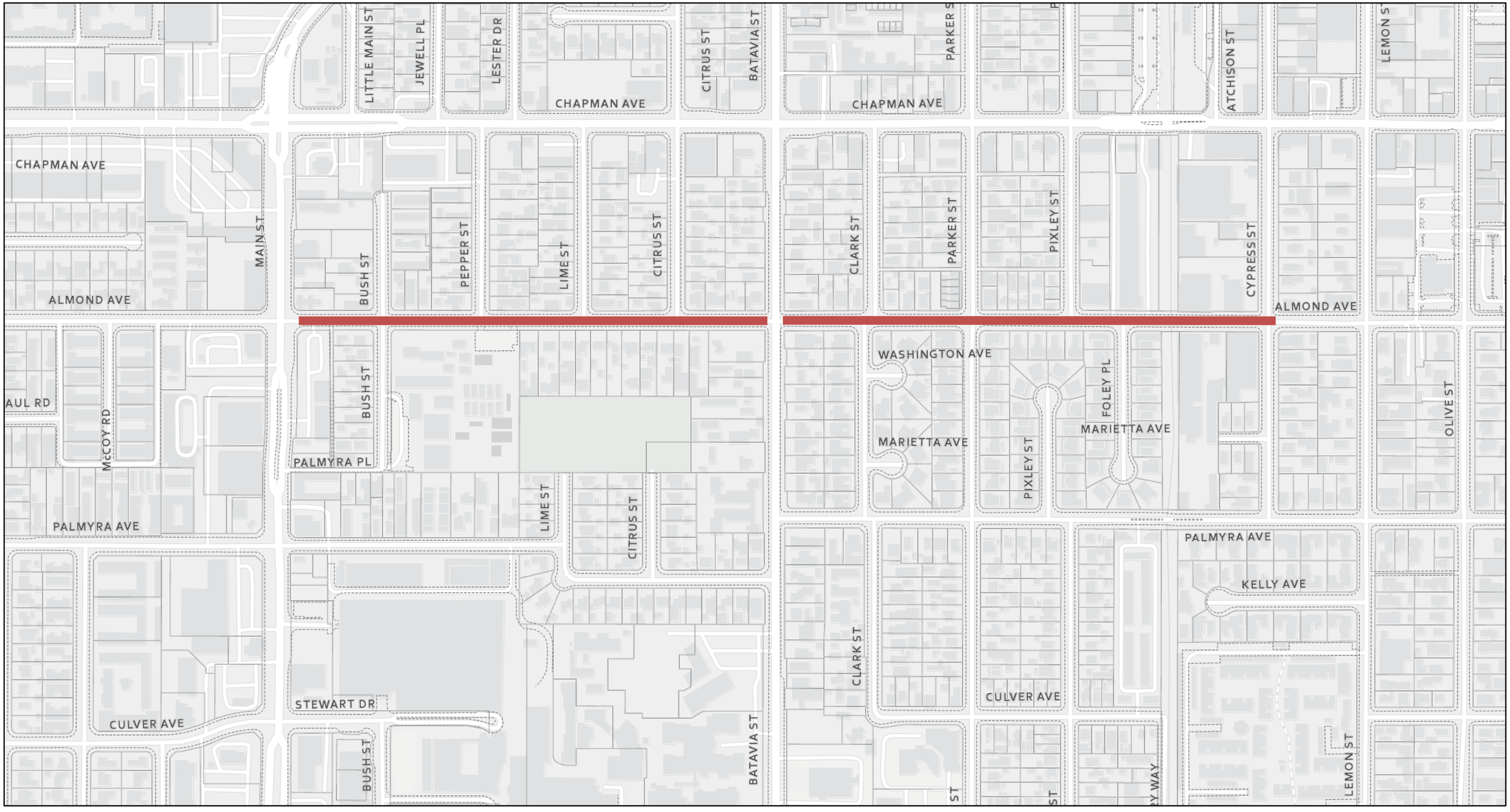
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Date Exported: 7/29/2025

Credits: City of Orange (2025)

CITY OF ORANGE

Location Map #1



NOTE: Recent data updates may not be reflected on this map at the time of printing, use at your discretion. No part of this map shall be reproduced for commercial purposes.

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Date Exported: 6/2/2025

Credits: City of Orange (2025)

CITY OF ORANGE

Location Map #2

Agenda Item

Orange City Council

Item #: 3.8. 3/10/2026 **File #:** 26-0085

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Award of contracts to ABM Electrical & Lighting Solutions, Inc. and Interior Resources, Inc., dba Commercial Interior Resources for lighting, paint, and flooring improvements at the Police Department

2. SUMMARY

Purchase and install lighting at the Police Department through Sourcewell Master Contract No. CA-R8-E-101723AEL with ABM Electrical & Lighting Solutions for $199,971. Purchase and installation of flooring and paint services at the Police Department through OMNIA Partners Contract 2020002149 with Commercial Interior Resources for $204,763.

3. RECOMMENDED ACTION

1. Approve the contract with ABM Electrical & Lighting Solutions, Inc. in the total amount of $199,971, representing a cost of $198,971, plus a contingency of $1,000; and authorize the Mayor and City Clerk to execute on behalf of the City.

2. Approve the contract with Interior Resources, Inc., dba Commercial Interior Resources, in the amount of $204,763, representing a cost of $186,148, plus a contingency of 10% or $18,615; and authorize the Mayor and City Clerk to execute on behalf of the City.

3. Authorize the appropriation of $204,763 from the Developer Impact Fees-Police (570) fund balance to:

   570-5601-84101-255019 Developer Impact Fees-Police

4. Authorize the appropriation of $199,971 from the Merged 2008 Tax Exempt Bonds (954) fund balance to:

   954-5601-84101-255019 Merged 2008 Tax Exempt Bonds

4. FISCAL IMPACT

The total expenditure for both contracts is $404,734 and will be funded through Developer Impact Fees-Police (570) and Merged 2008 Tax Exempt Bonds (954), respectively:

570-5601-84101-255019 Police Facility Improvements $204,763

954-5601-84101-255019 Police Facility Improvements $199,971

Upon approval of this appropriation, the estimated Developer Impact Fees-Police (570) and Merged 2008 Tax Exempt Bonds (954) fund balances at June 30, 2026 will be $731,739 and $2,801,089, respectively.

5. STRATEGIC PLAN GOALS

Goal 1: Maintain Strong Emergency and Safety Services

Objective 1.9: Police facility improvements to the Field and Support Services Division to improve workflow.

6. DISCUSSION AND BACKGROUND

On December 9, 2025, the City Council authorized the replacement of furniture in the Police Department Field Services Division workspace at the Police Department. This phase of the project prioritizes upgrading lighting and flooring, along with comprehensive interior refreshment, before furniture installation. Key initiatives include removing outdated wall sconces and downlights, installing energy-efficient LED fixtures in the drop ceiling to optimize lighting performance, repainting the space, and replacing nearly 20-year-old flooring. These enhancements are part of a strategic effort to extend the facility's lifespan and ensure compliance with contemporary operational and safety standards.

Staff conducted a thorough review of the references and qualifications for ABM Electrical & Lighting Solutions and Interior Resources, Inc., dba Commercial Interior Resources, confirming their credentials and extensive experience with comparable projects. The Public Works Department, in conjunction with the Police Department, recommends approval of the agreement with ABM Electrical & Lighting Solutions, Inc., using Sourcewell Master Contract No. CA-R8-E-101723AEL for lighting installation in the amount of $199,971, representing a cost of $198,971 for interior facility lighting improvements plus a $1,000 contingency.

Staff also recommend approval of the agreement with Interior Resources, Inc., dba Commercial Interior Resources, in the amount of $204,763, using OMNIA Partners Contract 2020002149, for interior facility flooring and paint improvements representing a cost of $186,148, plus a 10% contingency.

Construction is projected to commence in June 2026 and be completed by September 2026.

7. ATTACHMENTS

- Contract with ABM Electrical & Lighting Solutions, Inc.
- Contract with Interior Resources, Inc., dba Commercial Interior Resources

Agenda Item

Orange City Council

Item #: 3.8. 3/10/2026 **File #:** 26-0085

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Award of Contracts to ABM Electrical & Lighting Solutions, Inc. and Interior Resources, Inc., dba Commercial Interior Resources for lighting, paint, and flooring improvements at the Police Department

2. SUMMARY

Purchase and install lighting at the Police Department through Sourcewell Master Contract No. CA-R8-E-101723AEL with ABM Electrical & Lighting Solutions for $199,971. Purchase and installation of flooring and paint services at the Police Department through OMNIA Partners Contract 2020002149 with Commercial Interior Resources for $204,763.

3. RECOMMENDED ACTION

1. Approve the contract with ABM Electrical & Lighting Solutions, Inc. in the total amount of $199,971, representing a cost of $198,971, plus a contingency of $1,000; and authorize the Mayor and City Clerk to execute on behalf of the City.

2. Approve the contract with Interior Resources, Inc., dba Commercial Interior Resources, in the amount of $204,763, representing a cost of $186,148, plus a contingency of 10% or $18,615; and authorize the Mayor and City Clerk to execute on behalf of the City.

3. Authorize the appropriation of $204,763 from the Developer Impact Fees-Police (570) fund balance to:

   570-5601-84101-255019 Developer Impact Fees-Police

4. Authorize the appropriation of $199,971 from the Merged 2008 Tax Exempt Bonds (954) fund balance to:

   954-5601-84101-255019 Merged 2008 Tax Exempt Bonds

4. FISCAL IMPACT

The total expenditure for both contracts is $404,734 and will be funded through Developer Impact Fees-Police (570) and Merged 2008 Tax Exempt Bonds (954), respectively:

570-5601-84101-255019 Police Facility Improvements $204,763

954-5601-84101-255019 Police Facility Improvements $199,971

Upon approval of this appropriation, the estimated Developer Impact Fees-Police (570) and Merged 2008 Tax Exempt Bonds (954) fund balances at June 30, 2026 will be $731,739 and $2,801,089, respectively.

5. STRATEGIC PLAN GOALS

Goal 1: Maintain Strong Emergency and Safety Services

Objective 1.9: Police facility improvements to the Field and Support Services Division to improve workflow.

6. DISCUSSION AND BACKGROUND

On December 9, 2025, the City Council authorized the replacement of furniture in the Police Department Field Services Division workspace at the Police Department. This phase of the project prioritizes upgrading lighting and flooring, along with comprehensive interior refreshment, before furniture installation. Key initiatives include removing outdated wall sconces and downlights, installing energy-efficient LED fixtures in the drop ceiling to optimize lighting performance, repainting the space, and replacing nearly 20-year-old flooring. These enhancements are part of a strategic effort to extend the facility's lifespan and ensure compliance with contemporary operational and safety standards.

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Staff also recommend approval of the agreement with Interior Resources, Inc., dba Commercial Interior Resources, in the amount of $204,763, using OMNIA Partners Contract 2020002149, for interior facility flooring and paint improvements representing a cost of $186,148, plus a 10% contingency.

Construction is projected to commence in June 2026 and be completed by September 2026.

7. ATTACHMENTS

- Contract with ABM Electrical & Lighting Solutions, Inc.
- Contract with Interior Resources, Inc., dba Commercial Interior Resources

CONTRACT
[Facility Lighting Improvements for Police Department
Sourcewell EZIQC Contract No. CA-R8-E-101723-AEL (SP-4325)]

THIS CONTRACT (the "Contract") is made and entered into as of _____, 2026 ("Effective Date") by and between the CITY OF ORANGE, a municipal corporation ("City"), and ABM ELECTRICAL & LIGHTING SOLUTIONS, INC., a Delaware corporation ("Contractor"), who agree as follows.

ARTICLE 1
Work Performed

a. For and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by City, and under the conditions expressed in the two (2) bonds presented to City with this Contract and incorporated herein by this reference, Contractor hereby agrees to and shall do all the work and furnish all the labor, materials, tools and equipment, except such as are mentioned in the specifications to be furnished by City to Contractor, necessary to complete in good workmanship and substantial manner the work (the "Work") described in:

(1) The latest edition of the "City of Orange Standard Plans and Specifications" (the "Orange Book") with the term "Engineer," as used in the Orange Book and in this Contract, to specifically include the City Engineer (or designee);

(2) The "Standard Specifications for Public Works Construction" (the "Greenbook"), and all amendments thereto, except the definition of "Subcontractor" in Section 1.2 (General – Terms and Definitions) of Part 1 (General Provisions) of the Greenbook, which is hereby amended in its entirety to read as follows: "Subcontractor – An individual, firm, or corporation having a direct contract with the Contractor for the performance of a part of the Work;"

(3) The "City of Orange Standard Special Provisions;"

(4) The Standard Plans; and

(5) Contractor's Bid Proposal, which is on file with City's Department of Public Works.

b. Contractor acknowledges that it has received the Plans from City and that a complete copy of the Plans are in its possession and are hereby specifically referred to and by such reference made a part hereof. The Orange Book, Greenbook and City of Orange Standard Special Provisions and Standard Plans are on file with City's Public Works Director and are hereby specifically referred to and by such reference made a part hereof. Contractor hereby acknowledges that it has read, reviewed and understands the Plans, the Orange Book, the Greenbook, the Special Provisions, the Standard Plans, and the Encroachment Permit as they relate to the Work, all of which documents shall be referred to herein collectively as the "Plans and Specifications."

c. Contractor acknowledges the provisions of Chapter 8.28 of the Orange Municipal Code which requires, among other things, that Contractor utilize City's exclusive solid waste hauler for the rental of bins for trash and debris removal and imposes mandatory recycling requirements for self-hauled construction and demolition waste. The terms and conditions set forth in this Contract shall control over any terms and conditions in the Plans and Specifications to the contrary.

d. The Work shall be performed in conformity with the Plans and Specifications and the Bid Proposal, referenced as Exhibit A and all applicable laws, including any and all applicable federal and state labor laws and standards and applicable prevailing wage requirements and any and all state, federal and local statutes, regulations and ordinances relating to the protection of human health or the environment.

e. Unless and until otherwise notified in writing by City's Public Works Director, City's Assistant Field Services Manager, Rachael Gomez ("Authorized City Representative"), shall be the person to whom Contractor will report for the performance of the Work hereunder. It is understood that Contractor's performance hereunder shall be under the direction and supervision of the Authorized City Representative or such other person as City's Public Works Director may designate from time to time, that Contractor shall coordinate the Work hereunder with the Authorized City Representative to the extent required by the Authorized City Representative, and that all performances required hereunder by Contractor shall be performed to the satisfaction of the Authorized City Representative or City's Public Works Director.

f. It is expressly agreed by and between the parties hereto that should there be any conflict between the terms of this instrument and Contractor's Bid Proposal, then this instrument shall control and nothing herein shall be considered as an acceptance of the said terms of said Bid Proposal conflicting herewith.

ARTICLE 2
Commencement of Work

Contractor shall commence the Work provided for in this Contract within fifteen (15) days of the date of the issuance by City of a Notice to Proceed and diligently prosecute completion of the Work within thirty (30) calendar days from such date, unless legal extension is granted in accordance with the terms set forth in the Greenbook. Time is of the essence in this Contract. Contractor shall do all things necessary and incidental to the prosecution of Contractor's Work.

ARTICLE 3
Compensation

a. Contractor agrees to receive and accept an amount not to exceed ONE HUNDRED NINETY-EIGHT THOUSAND NINE HUNDRED SEVENTY-ONE DOLLARS and 00/100 ($198,971.00) as compensation for furnishing all materials and doing all the Work contemplated and embraced in this Contract. Said compensation covers (1) all loss or damage arising out of the nature of the Work, from the acts of the elements; (2) any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the Work until its acceptance by City,

other than as provided below; (3) all risks of every description connected with the Work; (4) all expenses incurred by or in consequence of the suspension or discontinuance of the Work; and (5) well and faithfully completing the Work, and for the whole thereof, in the manner and according to the Plans and Specifications, and requirements of the Authorized City Representative under them. Retention amounts shall be withheld from progress payments as required by law unless Contractor provides securities in lieu of retention.

b. In addition to the scheduled Work to be performed by the Contractor, the parties recognize that additional, unforeseen work and services may be required by the Authorized City Representative. In anticipation of such contingencies, the sum of ONE THOUSAND DOLLARS and 00/100 ($1,000.00) has been added to the total compensation of this Contract. The Authorized City Representative may approve the additional work and the actual costs incurred by the Contractor in performance of additional work or services in accordance with such amount as the Authorized City Representative and the Contractor may agree upon in advance. Said additional work or services and the amount of compensation therefor, up to the amount of the authorized contingency, shall be memorialized in the form of a Contract Amendment approved by the City Manager on a form acceptable to the City Attorney. The Contractor agrees to perform only that work or those services that are specifically requested by the Authorized City Representative. Any and all additional work and services performed under this Contract shall be completed in such sequence as to assure their completion as expeditiously as is consistent with professional skill and care in accordance with a cost estimate or proposal submitted to and approved by the Authorized City Representative prior to the commencement of such Work or services.

c. The total amount of compensation under this Contract, including contingencies, shall not exceed ONE HUNDRED NINETY-NINE THOUSAND NINE HUNDRED SEVENTY-ONE DOLLARS and 00/100 ($199,971.00).

ARTICLE 4
Licenses

Contractor represents that it and any subcontractors it may engage, possess any and all licenses which are required under state or federal law to perform the Work contemplated by this Contract and that Contractor and subcontractors shall maintain all appropriate licenses, including a City of Orange business license, at its cost, during the performance of this Contract.

ARTICLE 5
Guarantees

a. Contractor guarantees the construction and installation of all Work included in the Plans and Specifications for which Contractor has been awarded this Contract.

b. Should any of the materials or equipment installed pursuant to this Contract prove defective or should the Work as a whole prove defective, due to faulty equipment, workmanship, materials furnished or methods of installations, or should said Work or any part thereof fail to function properly, as designed, due to any of the above causes within twelve (12) months after the date on which said Work is accepted by City, Contractor shall make repairs and furnish such

materials and equipment as are necessary to be furnished and installed within fifteen (15) calendar days after the receipt of a demand from City.

c. Said Work will be deemed defective within the meaning of this guarantee in the event that it fails to function as originally intended either by the Plans and Specifications of this Contract or by the manufacturer(s) of the equipment incorporated into the Work.

d. In the event repairs are not made within fifteen (15) calendar days after Contractor's receipt of a demand from City, City shall have the unqualified option to make any needed repairs or replacements itself or by any other contractor. Contractor shall reimburse City, upon demand, for all expenses incurred in restoring said Work to the condition contemplated in this Contract, including the cost of any equipment or materials replaced.

e. It is understood that emergency repairs may, by necessity, be made by City. Therefore, when defective equipment, materials or workmanship result in emergency repairs by City, Contractor shall reimburse City, upon demand, for all expenses incurred. Emergency repairs will be deemed as those repairs determined by City's Director of Public Works to be necessary due to an immediate detriment to the health, safety, welfare or convenience of the residents of City.

ARTICLE 6
Water Quality

a. The Santa Ana Regional Water Quality Control Board ("RWQCB") has issued National Pollutant Discharge Elimination System ("NPDES") Permit No. R8-2009-0030 (the "Permit"), which governs storm water and non-storm water discharges resulting from municipal activities performed by City or its contractors. In order to comply with the Permit requirements, the County of Orange has prepared a Drainage Area Management Plan ("DAMP"), containing Model Maintenance Procedures with Best Management Practices ("BMPs") that City and its contractors must adhere to. The Model Maintenance Procedures contain pollution prevention and source control techniques to minimize the impact of those activities upon dry-weather urban runoff, storm water runoff, and receiving water quality. Examples include: wash water from cleaning of sidewalks or parking lots must be collected and disposed of in the sewer or landscaped areas.

b. The Permit, the DAMP and the Model Maintenance Procedures are on file in the office of City's Director of Public Works. Contractor hereby acknowledges that it has read, reviewed and understands the Permit, the DAMP and the Model Maintenance Procedures, as they relate to the Work and hereby shall perform the Work in conformance therewith.

ARTICLE 7
Independent Contractor; Contractor not Agent

a. At all times during the term of this Contract, Contractor shall be an independent contractor and not an employee of City. City shall have the right to control Contractor only insofar as the result of Contractor's services rendered pursuant to this Contract. City shall not have the

right to control the means by which Contractor accomplishes services rendered pursuant to this Contract. Contractor shall, at its sole cost and expense, furnish all facilities, materials and equipment which may be required for furnishing services pursuant to this Contract. Contractor shall be solely responsible for, and shall indemnify, defend and save City harmless from all matters relating to the payment of its subcontractors, agents and employees, including compliance with social security, withholding and all other wages, salaries, benefits, taxes, exactions, and regulations of any nature whatsoever. Contractor acknowledges that Contractor and any subcontractors, agents or employees employed by Contractor shall not, under any circumstances, be considered employees of City, and that they shall not be entitled to any of the benefits or rights afforded employees of City, including, but not limited to, sick leave, vacation leave, holiday pay, Public Employees Retirement System benefits, or health, life, dental, long-term disability or workers' compensation insurance benefits.

b. Except as City may specify in writing, Contractor shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent. Contractor shall have no authority, express or implied, to bind City to any obligation whatsoever.

ARTICLE 8
Public Work; Prevailing Wage

a. The Work which is the subject of this Contract is a "public work," as that term is defined in Section 1720 of the California Labor Code, for which prevailing wages must be paid. To the extent Contractor's employees will perform any work that falls within any of the classifications for which the Department of Labor Relations of the State of California promulgates prevailing wage determinations, Contractor hereby agrees that Contractor, and any subcontractor under it, shall pay not less than the specified prevailing rates of wages to all such workers. The general prevailing wage determinations for crafts can be located on the website of the Department of Industrial Relations (www.dir.ca.gov/DLSR). Additionally, to perform work under this Contract, Contractor must meet all State registration requirements and criteria, including project compliance monitoring.

b. Attached hereto as Attachment No. 1 and incorporated herein by this reference is a copy of the provisions of Sections 1725.5, 1771, 1771.1, 1771.4, 1775, 1776, 1777.5, 1813 and 1815 of the California Labor Code. Contractor hereby acknowledges that it has read, reviewed and understands those provisions of the Labor Code and shall prosecute and complete the Work under this Contract in strict compliance with all of those terms and provisions.

c. Contractor shall secure the payment of compensation to its employees in accordance with the provisions of Section 3700 of the California Labor Code. Accordingly, and as required by Section 1861 of the California Labor Code, Contractor hereby certifies as follows:

> "I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

d. Contractor shall indemnify, protect, defend and hold harmless City and its officers, employees, contractors and agents, with counsel reasonably acceptable to City, from and against any and all loss, liability, damage, claim, cost, expense, and/or "increased costs" (including reasonable attorney's fees, court and litigation costs, and fees of expert witnesses) which result or arise in any way from the noncompliance by Contractor of any applicable local, state and/or federal law, including, without limitation, any applicable federal and/or state labor laws (including, without limitation, the requirement to pay state prevailing wages). It is agreed by the parties that, in connection with the construction of the Work which is the subject of this Contract, Contractor shall bear all risks of payment or non-payment of state prevailing wages. "Increased costs" as used in this paragraph shall have the meaning ascribed to it in Labor Code Section 1781, as the same may be enacted, adopted or amended from time to time. The foregoing indemnity shall survive termination of this Contract.

ARTICLE 9
Equal Employment Opportunity

During the performance of this Contract, Contractor agrees as follows:

a. Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Contractor shall ensure that applicants are employed and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Such actions shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. Contractor shall post in conspicuous places, available to employees and applicants for employment, a notice setting forth provisions of this non-discrimination clause.

b. Contractor shall, in all solicitations and advertisements for employees placed by, or on behalf of Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law.

c. Contractor shall cause the foregoing paragraphs (a) and (b) to be inserted in all subcontracts for any Work covered by this Contract, provided that the foregoing provisions shall not apply to subcontracts for standard commercial supplies or raw materials.

ARTICLE 10
Conflicts of Interest

Contractor agrees that it shall not make, participate in the making, or in any way attempt to use its position as a contractor to influence any decision of City in which Contractor knows or has reason to know that Contractor, its officers, partners, or employees have a financial interest as

defined in Section 87103 of the Government Code. Contractor further agrees that it shall not be eligible to work as the builder for any project for which the design work is part of this Contract.

ARTICLE 11
Indemnity

Contractor shall defend, indemnify and hold harmless City and its officers, officials, agents, and employees from and against:

a. Any and all claims, liabilities, losses, damages, penalties, costs or expenses (including reasonable attorneys' fees and court costs) which City may directly or indirectly sustain or suffer arising from or as a result of the death of any person or any accident, injury, loss or damage whatsoever caused to any person or the property of any person which shall occur on or adjacent to the real property which is the subject of this Contract, or in connection with performance of this Contract which may be directly or indirectly caused by the acts or omissions of Contractor or its officers, employees, contractors or agents, or as a consequence of any use, generation, manufacture, storage, disposal, release or threatened release of a hazardous waste or substance. Contractor shall not be responsible for (and such indemnity shall not apply to) any willful misconduct, negligence or breach of this Contract by City or its officers, officials, agents, and employees. The foregoing indemnity shall survive termination of this Contract.

b. Any and all claims under workers' compensation acts and other employee benefit acts with respect to Contractor's employees or Contractor's subcontractor's employees arising out of Contractor's Work under this Contract, including any and all claims under any law pertaining to Contractor's status as an independent contractor.

ARTICLE 12
Insurance

a. Contractor shall procure and maintain for the duration of this Contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work hereunder and the results of that Work by Contractor, its agents, representatives, employees or subcontractors. Any umbrella liability insurance that is provided as part of the general or automobile liability minimums set forth below shall be maintained for the duration of the Contract.

b. Contractor shall maintain the following minimum amount of insurance: the greater of either the limits set forth in (1) through (4), below; or all of the insurance coverage and/or limits carried by or available to Contractor.

(1)	General Liability	$2,000,000	per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this

			project/location or the general aggregate limit shall be twice the required occurrence limit.
(2)	Automobile Liability	$1,000,000	per accident for bodily injury and property damage.
(3)	Workers' Compensation		as required by the State of California.
(4)	Employer's Liability	$1,000,000	per accident for bodily injury or disease.

c. Any insurance proceeds in excess of or broader than the minimum required coverage and/or minimum required limits which are applicable to a given loss shall be available to City. No representation is made that the minimum insurance requirements of this Contract are sufficient to cover the obligations of Contractor under this Contract.

d. Any deductibles or self-insured retentions must be declared to and approved by City. At the option of City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions with respect to City, its officers, officials, agents and employees; or Contractor shall provide a financial guarantee satisfactory to City guaranteeing payment of losses and related investigations, claim administration, and defense expenses.

e. Each policy of general liability and automotive liability insurance shall contain, or be endorsed to contain, the following provisions:

(1) City, its officers, officials, agents, and employees are declared to be additional insureds under the terms of the policy, with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of Contractor (any auto), and with respect to liability arising out of Work or operations performed by or on behalf of Contractor, including materials, parts or equipment furnished in connection with such Work or operations. A policy endorsement to that effect shall be provided to City along with the certificate of insurance. In lieu of an endorsement, City will accept a copy of the policy(ies) which evidences that City is an additional insured as a contracting party. The minimum coverage required by Subsection 12.b, above, shall apply to City as an additional insured.

(2) For any claims related to this Contract, Contractor's insurance coverage shall be primary insurance with respect to City, its officers, officials, agents and employees. Any insurance or self-insurance maintained by City, its officers, officials, agents and employees shall be excess of Contractor's insurance and shall not contribute with it.

(3) Coverage shall not be canceled, except after thirty (30) days' prior written notice has been provided to City.

f. Contractor shall furnish City with original certificates of insurance and endorsements effecting coverage required by this Article 12. The endorsements shall be on forms acceptable to City. All certificates and endorsements are to be received and approved by City

before the Work commences. However, failure to do so shall not operate as a waiver of these insurance requirements. City reserves the right to require complete, certified copies of all required insurance policies, including endorsements effecting the coverage required by these specifications at any time.

g. All insurance procured and maintained by Contractor shall be issued by insurers admitted to conduct the pertinent line of insurance business in California and having a rating of Grade A or better and Class VII or better by the latest edition of Best Key Rating Guide.

h. Contractor shall immediately notify City if any required insurance lapses or is otherwise modified and cease performance of this Contract unless otherwise directed by City. In such a case, City may procure insurance or self-insure the risk and charge Contractor for such costs and any and all damages resulting therefrom by way of set-off from any sums owed Contractor.

i. Contractor agrees that in the event of loss due to any of the perils for which it has agreed to provide insurance, Contractor shall look solely to its insurance for recovery. Contractor hereby grants to City, on behalf of any insurer providing insurance to either Contractor or City with respect to the services of Contractor herein, a waiver of any right to subrogation which any such insurer may acquire against City by virtue of the payment of any loss under such insurance. The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of City for all Work performed by Contractor, its employees, agents and subcontractors. Contractor shall obtain any other endorsement that may be necessary to effect this waiver of subrogation.

j. Contractor shall require and verify that all subcontractors maintain insurance meeting all of the requirements stated herein.

ARTICLE 13
Termination

City, acting through its City Manager or designee, reserves the right to terminate this Contract for any reason by giving five (5) days' written notice of intent to terminate to Contractor. Upon receipt of notice, Contractor shall immediately cease work, unless the notice provides otherwise. Should City terminate this Contract, City shall pay Contractor for services satisfactorily provided and all allowable reimbursements incurred to the date of termination in compliance with this Contract, unless such termination shall be for cause, in which event City may withhold any disputed compensation. City shall not be liable for any claim of lost profits.

ARTICLE 14
Maintenance and Inspection of Records

In accordance with generally accepted accounting principles, Contractor and its subcontractors shall maintain reasonably full and complete books, documents, papers, accounting records and other information (collectively, the "records") pertaining to the costs of and completion of services performed under this Contract. During the term of this Contract and for a period of three (3) years after termination or completion of this Contract, City shall have the right to inspect and/or audit Contractor's records pertaining to the performance of this Contract at

Contractor's office. Contractor shall make available all such records for inspection or audit at its offices during normal business hours and upon three (3) days' notice from City, and copies thereof shall be furnished if requested.

ARTICLE 15
Compliance with Laws

a. Contractor shall be knowledgeable of and comply with all local, state and federal laws pertaining to the subject matter hereof or in any way regulating the activities undertaken by Contractor or any subcontractor hereunder.

b. Contractor represents and warrants that it:

(1) Has complied and shall at all times during the term of this Contract comply, in all respects, with all immigration laws, regulations, statutes, rules, codes, and orders, including, without limitation, the Immigration Reform and Control Act of 1986 (IRCA); and

(2) Has not and will not knowingly employ any individual to perform services under this Contract who is ineligible to work in the United States or under the terms of this Contract; and

(3) Has properly maintained, and shall at all times during the term of this Contract properly maintain, all related employment documentation records including, without limitation, the completion and maintenance of the Form I-9 for each of Contractor's employees; and

(4) Has responded, and shall at all times during the term of this Contract respond, in a timely fashion to any government inspection requests relating to immigration law compliance and/or Form I-9 compliance and/or worksite enforcement by the Department of Homeland Security, the Department of Labor, or the Social Security Administration.

c. Contractor shall require all subcontractors and/or subconsultants to make the same representations and warranties required by this Article 15 when hired to perform services under this Contract.

d. Contractor shall, upon request of City, provide a list of all employees working under this Contract and shall provide, to the reasonable satisfaction of City, verification that all such employees are eligible to work in the United States. All costs associated with such verification shall be borne by Contractor. Once such request has been made, Contractor may not change employees working under this Contract without written notice to City, accompanied by the verification required herein for such employees. Contractor shall require all subcontractors and/or sub-consultants to make the same verification when hired to perform services under this Contract.

e. If Contractor, or a subcontractor or subconsultant, knowingly employs an employee providing Work under this Contract who is not authorized to work in the United States, and/or fails to follow federal laws to determine the status of such employee, such shall constitute a

material breach of this Contract and may be cause for immediate termination of this Contract by City.

f. Contractor shall indemnify and hold City, its officials and employees harmless for, of and from any loss, including but not limited to fines, penalties and corrective measures, City may sustain by reason of Contractor's failure to comply with said laws, rules and regulations in connection with the performance of this Contract.

ARTICLE 16
Governing Law and Venue

This Contract shall be construed in accordance with and governed by the laws of the State of California and Contractor shall submit to the jurisdiction of California courts. Venue for any dispute arising under this Contract shall be in Orange County, California.

ARTICLE 17
Integration and Amendment

a. This Contract constitutes the entire agreement of the parties. No other agreement, oral or written, pertaining to the Work to be performed under this Contract shall be of any force or effect unless it is in writing and signed by both parties. Any Work performed which is inconsistent with or in violation of the provisions of this Contract shall not be compensated.

b. Amendments to this Contract must be in writing and signed by both parties. The City Manager is authorized to execute amendments to this Contract up to the amounts specified in Chapter 3.08 of the Orange Municipal Code.

ARTICLE 18
Notice

Except as otherwise provided herein, all notices required under this Contract shall be in writing and delivered personally, by e-mail, or by first class mail, postage prepaid, to each party at the address listed below. Either party may change the notice address by notifying the other party in writing. Notices shall be deemed received upon receipt of same or within three (3) days of deposit in the U.S. Mail, whichever is earlier. Notices sent by e-mail shall be deemed received on the date of the e-mail transmission.

"CONTRACTOR"	"CITY"
ABM Electrical & Lighting Solutions, Inc. 14201 Franklin Avenue Tustin, CA 92780 Attn: Nate Piorek	City of Orange 300 E. Chapman Avenue Orange, CA 92866-1591 Attn: Rachael Gomez
Telephone: 949-330-3049 E-Mail: nate.piorek@abm.com	Telephone: 714-744-5588 E-Mail: rgomez@cityoforange.org

ARTICLE 19
Claim Resolution

City and Contractor agree that the claim resolution process applicable to any claim by Contractor in connection with the Work provided herein shall be subject to the procedures set forth in California Public Contract Code Section 9204, attached hereto as Attachment No. 2, and incorporated herein by this reference.

ARTICLE 20
Counterparts

This Contract may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Signatures transmitted electronically shall have the same effect as original signatures.

[Remainder of page intentionally left blank; signatures on next page]

"CITY"

CITY OF ORANGE, a municipal corporation

By:_____
Daniel R. Slater
Mayor of the City of Orange

CONTRACT, BONDS AND INSURANCE APPROVED BY:

_____
Nathalie Adourian, City Attorney

ATTEST:

_____
Pamela Coleman, City Clerk

"CONTRACTOR"

ABM ELECTRICAL & LIGHTING SOLUTIONS, INC., a Delaware corporation

[Note: Signature of Chairman of the Board, President or Vice President is required]

By:_____
Printed Name:_____
Title:_____

[Note: Signature of Secretary, Assistant Secretary, Chief Financial Officer or Assistant Treasurer is also required]

By:_____
Printed Name:_____
Title:_____

√

"CITY"

CITY OF ORANGE, a municipal corporation

By:_____
Daniel R. Slater
Mayor of the City of Orange

CONTRACT, BONDS AND INSURANCE APPROVED BY:

_____
Nathalie Adourian, City Attorney

ATTEST:

_____
Pamela Coleman, City Clerk

"CONTRACTOR"

ABM ELECTRICAL & LIGHTING SOLUTIONS, INC., a Delaware corporation

[Note: Signature of Chairman of the Board, President or Vice President is required]

By: Kory L Reeves
Printed Name: Kory L Reeves
Title: VP of Ops - West Region

[Note: Signature of Secretary, Assistant Secretary, Chief Financial Officer or Assistant Treasurer is also required]

By: David Goldman
Printed Name: David Goldman
Title: Secretary

√

ATTACHMENT NO. 1

CALIFORNIA LABOR CODE
SECTIONS 1725.5, 1771, 1771.1, 1771.4, 1775, 1776, 1777.5, 1813 and 1815

Section 1725.5. Registration of contractors; mandatory registration; qualifications and application; fees; exempt contractors

A contractor shall be registered pursuant to this section to be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any public work contract that is subject to the requirements of this chapter. For the purposes of this section, "contractor" includes a subcontractor as defined by Section 1722.1.

(a) To qualify for registration under this section, a contractor shall do all of the following:

(1)(A) Register with the Department of Industrial Relations in the manner prescribed by the department and pay an initial nonrefundable application fee of four hundred dollars ($400) to qualify for registration under this section and an annual renewal fee on or before July 1 of each year thereafter. The annual renewal fee shall be in a uniform amount set by the Director of Industrial Relations, and the initial registration and renewal fees may be adjusted no more than annually by the director to support the costs specified in Section 1771.3.

(B) Beginning June 1, 2019, a contractor may register or renew according to this subdivision in annual increments up to three years from the date of registration. Contractors who wish to do so will be required to prepay the applicable nonrefundable application or renewal fees to qualify for the number of years for which they wish to preregister.

(2) Provide evidence, disclosures, or releases as are necessary to establish all of the following:

(A) Workers' compensation coverage that meets the requirements of Division 4 (commencing with Section 3200) and includes sufficient coverage for any worker whom the contractor employs to perform work that is subject to prevailing wage requirements other than a contractor who is separately registered under this section. Coverage may be evidenced by a current and valid certificate of workers' compensation insurance or certification of self-insurance required under Section 7125 of the Business and Professions Code.

(B) If applicable, the contractor is licensed in accordance with Chapter 9 (commencing with Section 7000) of the Business and Professions Code.

(C) The contractor does not have any delinquent liability to an employee or the state for any assessment of back wages or related damages, interest, fines, or penalties pursuant to any final judgment, order, or determination by a court or any federal, state, or local administrative agency, including a confirmed arbitration award. However, for purposes of this paragraph, the contractor shall not be disqualified for any judgment, order, or determination that is under appeal, provided that the contractor has secured the payment of any amount eventually found due through a bond or other appropriate means.

(D) The contractor is not currently debarred under Section 1777.1 or under any other federal or state law providing for the debarment of contractors from public works.

(E) The contractor has not bid on a public works contract, been listed in a bid proposal, or engaged in the performance of a contract for public works without being lawfully registered in accordance with this section, within the preceding 12 months or since the effective date of the requirements set forth in subdivision (e), whichever is earlier. If a contractor is found to be in violation of the requirements of this paragraph, the period of disqualification shall be waived if both of the following are true:

(i) The contractor has not previously been found to be in violation of the requirements of this paragraph within the preceding 12 months.

(ii) The contractor pays an additional nonrefundable penalty registration fee of two thousand dollars ($2,000).

(b) Fees received pursuant to this section shall be deposited in the State Public Works Enforcement Fund established by Section 1771.3 and shall be used only for the purposes specified in that section.

(c) A contractor who fails to pay the renewal fee required under paragraph (1) of subdivision (a) on or before the expiration of any prior period of registration shall be prohibited from bidding on or engaging in the performance of any contract for public work until once again registered pursuant to this section. If the failure to pay the renewal fee was inadvertent, the contractor may renew its registration retroactively by paying an additional nonrefundable penalty renewal fee equal to the amount of the renewal fee within 90 days of the due date of the renewal fee.

(d) If, after a body awarding a contract accepts the contractor's bid or awards the contract, the work covered by the bid or contract is determined to be a public work to which Section 1771 applies, either as the result of a determination by the director pursuant to Section 1773.5 or a court decision, the requirements of this section shall not apply, subject to the following requirements:

(1) The body that awarded the contract failed, in the bid specification or in the contract documents, to identify as a public work that portion of the work that the determination or decision subsequently classifies as a public work.

(2) Within 20 days following service of notice on the awarding body of a determination by the Director of Industrial Relations pursuant to Section 1773.5 or a decision by a court that the contract was for public work as defined in this chapter, the contractor and any subcontractors are registered under this section or are replaced by a contractor or subcontractors who are registered under this section.

(3) The requirements of this section shall apply prospectively only to any subsequent bid, bid proposal, contract, or work performed after the awarding body is served with notice of the determination or decision referred to in paragraph (2).

(e) The requirements of this section shall apply to any bid proposal submitted on or after March 1, 2015, to any contract for public work, as defined in this chapter, executed on or after April 1, 2015, and to any work performed under a contract for public work on or after January 1, 2018, regardless of when the contract for public work was executed.

(f) This section does not apply to work performed on a public works project of twenty-five thousand dollars ($25,000) or less when the project is for construction, alteration, demolition, installation, or repair work or to work performed on a public works project of fifteen thousand dollars ($15,000) or less when the project is for maintenance work.

Section 1771. Payment of general prevailing rate

Except for public works projects of one thousand dollars ($1,000) or less, not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the public work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in this chapter, shall be paid to all workers employed on public works.

This section is applicable only to work performed under contract, and is not applicable to work carried out by a public agency with its own forces. This section is applicable to contracts let for maintenance work.

Section 1771.1. Registration as a contractor or subcontractor required prior to bid submission; exceptions; violations; penalties

(a) A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

(b) Notice of the requirement described in subdivision (a) shall be included in all bid invitations and public works contracts, and a bid shall not be accepted nor any contract or subcontract entered into without proof of the contractor or subcontractor's current registration to perform public work pursuant to Section 1725.5.

(c) An inadvertent error in listing a subcontractor who is not registered pursuant to Section 1725.5 in a bid proposal shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive, provided that any of the following apply:

(1) The subcontractor is registered prior to the bid opening.

(2) Within 24 hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in subparagraph (E) of paragraph (2) of subdivision (a) of Section 1725.5.

(3) The subcontractor is replaced by another registered subcontractor pursuant to Section 4107 of the Public Contract Code.

(d) Failure by a subcontractor to be registered to perform public work as required by subdivision (a) shall be grounds under Section 4107 of the Public Contract Code for the contractor, with the consent of the awarding authority, to substitute a subcontractor who is registered to perform public work pursuant to Section 1725.5 in place of the unregistered subcontractor.

(e) The department shall maintain on its Internet Web site a list of contractors who are currently registered to perform public work pursuant to Section 1725.5.

(f) A contract entered into with any contractor or subcontractor in violation of subdivision (a) shall be subject to cancellation, provided that a contract for public work shall not be unlawful, void, or voidable solely due to the failure of the awarding body, contractor, or any subcontractor to comply with the requirements of Section 1725.5 or this section.

(g) If the Labor Commissioner or his or her designee determines that a contractor or subcontractor engaged in the performance of any public work contract without having been registered in accordance with this section, the contractor or subcontractor shall forfeit, as a civil penalty to the state, one hundred dollars ($100) for each day of work performed in violation of the registration requirement, not to exceed an aggregate penalty of eight thousand dollars ($8,000) in addition to any penalty registration fee assessed pursuant to clause (ii) of subparagraph (E) of paragraph (2) of subdivision (a) of Section 1725.5.

(h)(1) In addition to, or in lieu of, any other penalty or sanction authorized pursuant to this chapter, a higher tiered public works contractor or subcontractor who is found to have entered into a subcontract with an unregistered lower tier subcontractor to perform any public work in violation of the requirements of Section 1725.5 or this section shall be subject to forfeiture, as a civil penalty to the state, of one hundred dollars ($100)

for each day the unregistered lower tier subcontractor performs work in violation of the registration requirement, not to exceed an aggregate penalty of ten thousand dollars ($10,000).

(2) The Labor Commissioner shall use the same standards specified in subparagraph (A) of paragraph (2) of subdivision (a) of Section 1775 when determining the severity of the violation and what penalty to assess, and may waive the penalty for a first time violation that was unintentional and did not hinder the Labor Commissioner's ability to monitor and enforce compliance with the requirements of this chapter.

(3) A higher tiered public works contractor or subcontractor shall not be liable for penalties assessed pursuant to paragraph (1) if the lower tier subcontractor's performance is in violation of the requirements of Section 1725.5 due to the revocation of a previously approved registration.

(4) A subcontractor shall not be liable for any penalties assessed against a higher tiered public works contractor or subcontractor pursuant to paragraph (1). A higher tiered public works contractor or subcontractor may not require a lower tiered subcontractor to indemnify or otherwise be liable for any penalties pursuant to paragraph (1).

(i) The Labor Commissioner or his or her designee shall issue a civil wage and penalty assessment, in accordance with the provisions of Section 1741, upon determination of penalties pursuant to subdivision (g) and subparagraph (B) of paragraph (1) of subdivision (h). Review of a civil wage and penalty assessment issued under this subdivision may be requested in accordance with the provisions of Section 1742. The regulations of the Director of Industrial Relations, which govern proceedings for review of civil wage and penalty assessments and the withholding of contract payments under Article 1 (commencing with Section 1720) and Article 2 (commencing with Section 1770), shall apply.

(j)(1) Where a contractor or subcontractor engages in the performance of any public work contract without having been registered in violation of the requirements of Section 1725.5 or this section, the Labor Commissioner shall issue and serve a stop order prohibiting the use of the unregistered contractor or the unregistered subcontractor on all public works until the unregistered contractor or unregistered subcontractor is registered. The stop order shall not apply to work by registered contractors or subcontractors on the public work.

(2) A stop order may be personally served upon the contractor or subcontractor by either of the following methods:

(A) Manual delivery of the order to the contractor or subcontractor personally.

(B) Leaving signed copies of the order with the person who is apparently in charge at the site of the public work and by thereafter mailing copies of the order by first class mail, postage prepaid to the contractor or subcontractor at one of the following:

(i) The address of the contractor or subcontractor on file with either the Secretary of State or the Contractors' State License Board.

(ii) If the contractor or subcontractor has no address on file with the Secretary of State or the Contractors' State License Board, the address of the site of the public work.

(3) The stop order shall be effective immediately upon service and shall be subject to appeal by the party contracting with the unregistered contractor or subcontractor, by the unregistered contractor or subcontractor, or both. The appeal, hearing, and any further review of the hearing decision shall be governed by the procedures, time limits, and other requirements specified in subdivision (a) of Section 238.1.

(4) Any employee of an unregistered contractor or subcontractor who is affected by a work stoppage ordered by the commissioner pursuant to this subdivision shall be paid at his or her regular hourly prevailing wage rate by that employer for any hours the employee would have worked but for the work stoppage, not to exceed 10 days.

(k) Failure of a contractor or subcontractor, owner, director, officer, or managing agent of the contractor or subcontractor to observe a stop order issued and served upon him or her pursuant to subdivision (j) is guilty of a misdemeanor punishable by imprisonment in county jail not exceeding 60 days or by a fine not exceeding ten thousand dollars ($10,000), or both.

(l) This section shall apply to any bid proposal submitted on or after March 1, 2015, and any contract for public work entered into on or after April 1, 2015. This section shall also apply to the performance of any public work, as defined in this chapter, on or after January 1, 2018, regardless of when the contract for public work was entered.

(m) Penalties received pursuant to this section shall be deposited in the State Public Works Enforcement Fund established by Section 1771.3 and shall be used only for the purposes specified in that section.

(n) This section shall not apply to work performed on a public works project of twenty-five thousand dollars ($25,000) or less when the project is for construction, alteration, demolition, installation, or repair work or to work performed on a public works project of fifteen thousand dollars ($15,000) or less when the project is for maintenance work.

Section 1771.4. Additional requirements when bidding and awarding public works contracts

(a) All of the following are applicable to all public works projects that are otherwise subject to the requirements of this chapter:

(1) The call for bids and contract documents shall specify that the project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

(2) The awarding body shall post or require the prime contractor to post job site notices, as prescribed by regulation.

(3) Each contractor and subcontractor shall furnish the records specified in Section 1776 directly to the Labor Commissioner, in the following manner:

(A) At least monthly or more frequently if specified in the contract with the awarding body.

(B) In a format prescribed by the Labor Commissioner.

(4) If the contractor or subcontractor is not registered pursuant to Section 1725.5 and is performing work on a project for which registration is not required because of subdivision (f) of Section 1725.5, the unregistered contractor or subcontractor is not required to furnish the records specified in Section 1776 directly to the Labor Commissioner but shall retain the records specified in Section 1776for at least three years after completion of the work.

(5) The department shall undertake those activities it deems necessary to monitor and enforce compliance with prevailing wage requirements.

(b) The Labor Commissioner may exempt a public works project from compliance with all or part of the requirements of subdivision (a) if either of the following occurs:

(1) The awarding body has enforced an approved labor compliance program, as defined in Section 1771.5, on all public works projects under its authority, except those deemed exempt pursuant to subdivision (a) of Section 1771.5, continuously since December 31, 2011.

(2) The awarding body has entered into a collective bargaining agreement that binds all contractors performing work on the project and that includes a mechanism for resolving disputes about the payment of wages.

(c) The requirements of paragraph (1) of subdivision (a) shall only apply to contracts for public works projects awarded on or after January 1, 2015.

(d) The requirements of paragraph (3) of subdivision (a) shall apply to all contracts for public work, whether new or ongoing, on or after January 1, 2016.

Section 1775. Penalties for violations

(a)(1) The contractor and any subcontractor under the contractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit not more than two hundred dollars ($200) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rates as determined by the director for the work or craft in which the worker is employed for any public work done under the contract by the contractor or, except as provided in subdivision (b), by any subcontractor under the contractor.

(2)(A) The amount of the penalty shall be determined by the Labor Commissioner based on consideration of both of the following:

(i) Whether the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the contractor or subcontractor.

(ii) Whether the contractor or subcontractor has a prior record of failing to meet its prevailing wage obligations.

(B)(i) The penalty may not be less than forty dollars ($40) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, unless the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the contractor or subcontractor.

(ii) The penalty may not be less than eighty dollars ($80) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the contractor or subcontractor has been assessed penalties within the previous three years for failing to meet its prevailing wage obligations on a separate contract, unless those penalties were subsequently withdrawn or overturned.

(iii) The penalty may not be less than one hundred twenty dollars ($120) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the Labor Commissioner determines that the violation was willful, as defined in subdivision (c) of Section 1777.1.

(C) If the amount due under this section is collected from the contractor or subcontractor, any outstanding wage claim under Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 against that contractor

or subcontractor shall be satisfied before applying that amount to the penalty imposed on that contractor or subcontractor pursuant to this section.

(D) The determination of the Labor Commissioner as to the amount of the penalty shall be reviewable only for abuse of discretion.

(E) The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the contractor or subcontractor, and the body awarding the contract shall cause to be inserted in the contract a stipulation that this section will be complied with.

(b) If a worker employed by a subcontractor on a public works project is not paid the general prevailing rate of per diem wages by the subcontractor, the prime contractor of the project is not liable for any penalties under subdivision (a) unless the prime contractor had knowledge of that failure of the subcontractor to pay the specified prevailing rate of wages to those workers or unless the prime contractor fails to comply with all of the following requirements:

(1) The contract executed between the contractor and the subcontractor for the performance of work on the public works project shall include a copy of the provisions of this section and Sections 1771, 1776, 1777.5, 1813, and 1815.

(2) The contractor shall monitor the payment of the specified general prevailing rate of per diem wages by the subcontractor to the employees, by periodic review of the certified payroll records of the subcontractor.

(3) Upon becoming aware of the failure of the subcontractor to pay his or her workers the specified prevailing rate of wages, the contractor shall diligently take corrective action to halt or rectify the failure, including, but not limited to, retaining sufficient funds due the subcontractor for work performed on the public works project.

(4) Prior to making final payment to the subcontractor for work performed on the public works project, the contractor shall obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages to his or her employees on the public works project and any amounts due pursuant to Section 1813.

(c) The Division of Labor Standards Enforcement shall notify the contractor on a public works project within 15 days of the receipt by the Division of Labor Standards Enforcement of a complaint of the failure of a subcontractor on that public works project to pay workers the general prevailing rate of per diem wages.

Section 1776. Payroll records; retention; inspection; redacted information; agencies entitled to receive nonredacted copies of certified records; noncompliance penalties; rules

(a) Each contractor and subcontractor shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct.

(2) The employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by his or her employees on the public works project.

(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the contractor on the following basis:

(1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

(2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract and the Division of Labor Standards Enforcement of the Department of Industrial Relations.

(3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the body awarding the contract or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the contractor, subcontractors, and the entity through which the request was made. The public may not be given access to the records at the principal office of the contractor.

(c) Unless required to be furnished directly to the Labor Commissioner in accordance with paragraph (3) of subdivision (a) of Section 1771.4, the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the division. The payroll records may consist of printouts of payroll data that are maintained as computer records, if the printouts contain the same information as the forms provided by the division and the printouts are verified in the manner specified in subdivision (a).

(d) A contractor or subcontractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested the records within 10 days after receipt of a written request.

(e) Except as provided in subdivision (f), any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract or the subcontractor performing the contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a multiemployer Taft-Hartley trust fund (29 U.S.C. Sec. 186(c)(5)) that requests the records for the purposes of allocating contributions to participants shall be marked or obliterated only to prevent disclosure of an individual's full social security number, but shall provide the last four digits of the social security number. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (29 U.S.C. Sec. 175a) shall be marked or obliterated only to prevent disclosure of an individual's social security number.

(f)(1) Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided nonredacted copies of certified payroll records. Any copies of records or certified payroll made available for inspection and furnished upon request to the public by an agency included in the Joint Enforcement Strike Force on the Underground Economy or to a law enforcement agency investigating a violation of law shall be marked or redacted to prevent disclosure of an individual's name, address, and social security number.

(2) An employer shall not be liable for damages in a civil action for any reasonable act or omission taken in good faith in compliance with this subdivision.

(g) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city, and county, and shall, within five working days, provide a notice of a change of location and address.

(h) The contractor or subcontractor has 10 days in which to comply subsequent to receipt of a written notice requesting the records enumerated in subdivision (a). In the event that the contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit one hundred dollars ($100) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due. A contractor is not subject to a penalty assessment pursuant to this section due to the failure of a subcontractor to comply with this section.

(i) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section.

(j) The director shall adopt rules consistent with the California Public Records Act (Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code) and the Information Practices Act of 1977 (Title 1.8 (commencing with Section 1798) of Part 4 of Division 3 of the Civil Code) governing the release of these records, including the establishment of reasonable fees to be charged for reproducing copies of records required by this section.

Section 1777.5. Employment of registered apprentices; wages; standards; number; apprenticeable craft or trade; exemptions; contributions; compliance program

(a)(1) This chapter does not prevent the employment upon public works of properly registered apprentices who are active participants in an approved apprenticeship program.

(2) For purposes of this chapter, “apprenticeship program” means a program under the jurisdiction of the California Apprenticeship Council established pursuant to Section 3070.

(b)(1) Every apprentice employed upon public works shall be paid the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered and shall be employed only at the work of the craft or trade to which he or she is registered.

(2) Unless otherwise provided by a collective bargaining agreement, when a contractor requests the dispatch of an apprentice pursuant to this section to perform work on a public works project and requires the apprentice to fill out an application or undergo testing, training, an examination, or other preemployment process as a condition of employment, the apprentice shall be paid for the time spent on the required preemployment activity, including travel time to and from the required activity, if any, at the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered. Unless otherwise provided by a collective bargaining agreement, a contractor is not required to compensate an apprentice for the time spent on preemployment activities if the apprentice is required to take a preemployment drug or alcohol test and he or she fails to pass that test.

(c) Only apprentices, as defined in Section 3077, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written

apprentice agreements under Chapter 4 (commencing with Section 3070) of Division 3 are eligible to be employed at the apprentice wage rate on public works. The employment and training of each apprentice shall be in accordance with either of the following:

(1) The apprenticeship standards and apprentice agreements under which he or she is training.

(2) The rules and regulations of the California Apprenticeship Council.

(d) If the contractor to whom the contract is awarded by the state or any political subdivision, in performing any of the work under the contract, employs workers in any apprenticeable craft or trade, the contractor shall employ apprentices in at least the ratio set forth in this section and may apply to any apprenticeship program in the craft or trade that can provide apprentices to the site of the public work for a certificate approving the contractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the contractor, shall arrange for the dispatch of apprentices to the contractor. A contractor covered by an apprenticeship program's standards shall not be required to submit any additional application in order to include additional public works contracts under that program. "Apprenticeable craft or trade," as used in this section, means a craft or trade determined as an apprenticeable occupation in accordance with rules and regulations prescribed by the California Apprenticeship Council. As used in this section, "contractor" includes any subcontractor under a contractor who performs any public works not excluded by subdivision (o).

(e) Before commencing work on a contract for public works, every contractor shall submit contract award information to an applicable apprenticeship program that can supply apprentices to the site of the public work. The information submitted shall include an estimate of journeyman hours to be performed under the contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the awarding body, if requested by the awarding body. Within 60 days after concluding work on the contract, each contractor and subcontractor shall submit to the awarding body, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the contract. The information under this subdivision shall be public. The apprenticeship programs shall retain this information for 12 months.

(f) The apprenticeship program supplying apprentices to the area of the site of the public work shall ensure equal employment and affirmative action in apprenticeship for women and minorities.

(g) The ratio of work performed by apprentices to journeymen employed in a particular craft or trade on the public work may be no higher than the ratio stipulated in the apprenticeship standards under which the apprenticeship program operates if the contractor agrees to be bound by those standards. However, except as otherwise provided in this section, in no case shall the ratio be less than one hour of apprentice work for every five hours of journeyman work.

(h) This ratio of apprentice work to journeyman work shall apply during any day or portion of a day when any journeyman is employed at the jobsite and shall be computed on the basis of the hours worked during the day by journeymen so employed. Any work performed by a journeyman in excess of eight hours per day or 40 hours per week shall not be used to calculate the ratio. The contractor shall employ apprentices for the number of hours computed as above before the end of the contract or, in the case of a subcontractor, before the end of the subcontract. However, the contractor shall endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the jobsite. When an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Administrator

of Apprenticeship, upon application of an apprenticeship program, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification.

(i) A contractor covered by this section who has agreed to be covered by an apprenticeship program's standards upon the issuance of the approval certificate, or who has been previously approved for an apprenticeship program in the craft or trade, shall employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the applicable apprenticeship standards, but in no event less than the 1-to-5 ratio required by subdivision (g).

(j) Upon proper showing by a contractor that he or she employs apprentices in a particular craft or trade in the state on all of his or her contracts on an annual average of not less than one hour of apprentice work for every five hours of labor performed by journeymen, the Administrator of Apprenticeship may grant a certificate exempting the contractor from the 1-to-5 hourly ratio, as set forth in this section for that craft or trade.

(k) An apprenticeship program has the discretion to grant to a participating contractor or contractor association a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting the contractor from the 1-to-5 ratio set forth in this section when it finds that any one of the following conditions is met:

(1) Unemployment for the previous three-month period in the area exceeds an average of 15 percent.

(2) The number of apprentices in training in the area exceeds a ratio of 1 to 5.

(3) There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either on a statewide basis or on a local basis.

(4) Assignment of an apprentice to any work performed under a public works contract would create a condition that would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large, or the specific task to which the apprentice is to be assigned is of a nature that training cannot be provided by a journeyman.

(l) If an exemption is granted pursuant to subdivision (k) to an organization that represents contractors in a specific trade from the 1-to-5 ratio on a local or statewide basis, the member contractors shall not be required to submit individual applications for approval to local joint apprenticeship committees, if they are already covered by the local apprenticeship standards.

(m)(1) A contractor to whom a contract is awarded, who, in performing any of the work under the contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the director determines is the prevailing amount of apprenticeship training contributions in the area of the public works site. A contractor may take as a credit for payments to the council any amounts paid by the contractor to an approved apprenticeship program that can supply apprentices to the site of the public works project. The contractor may add the amount of the contributions in computing his or her bid for the contract.

(2)(A) At the conclusion of the 2002-03 fiscal year and each fiscal year thereafter, the California Apprenticeship Council shall distribute training contributions received by the council under this subdivision, less the expenses of the Department of Industrial Relations for administering this subdivision, by making grants to approved apprenticeship programs for the purpose of training apprentices. The grant funds shall be distributed as follows:

(i) If there is an approved multiemployer apprenticeship program serving the same craft or trade and geographic area for which the training contributions were made to the council, a grant to that program shall be made.

(ii) If there are two or more approved multiemployer apprenticeship programs serving the same craft or trade and county for which the training contributions were made to the council, the grant shall be divided among those programs based on the number of apprentices from that county registered in each program.

(iii) All training contributions not distributed under clauses (i) and (ii) shall be used to defray the future expenses of the Department of Industrial Relations for the administration and enforcement of apprenticeship and preapprenticeship standards and requirements under this code.

(B) An apprenticeship program shall only be eligible to receive grant funds pursuant to this subdivision if the apprenticeship program agrees, prior to the receipt of any grant funds, to keep adequate records that document the expenditure of grant funds and to make all records available to the Department of Industrial Relations so that the Department of Industrial Relations is able to verify that grant funds were used solely for training apprentices. For purposes of this subparagraph, adequate records include, but are not limited to, invoices, receipts, and canceled checks that account for the expenditure of grant funds. This subparagraph shall not be deemed to require an apprenticeship program to provide the Department of Industrial Relations with more documentation than is necessary to verify the appropriate expenditure of grant funds made pursuant to this subdivision.

(C) The Department of Industrial Relations shall verify that grants made pursuant to this subdivision are used solely to fund training apprentices. If an apprenticeship program is unable to demonstrate how grant funds are expended or if an apprenticeship program is found to be using grant funds for purposes other than training apprentices, then the apprenticeship program shall not be eligible to receive any future grant pursuant to this subdivision and the Department of Industrial Relations may initiate the process to rescind the registration of the apprenticeship program.

(3) All training contributions received pursuant to this subdivision shall be deposited in the Apprenticeship Training Contribution Fund, which is hereby created in the State Treasury. Upon appropriation by the Legislature, all moneys in the Apprenticeship Training Contribution Fund shall be used for the purpose of carrying out this subdivision and to pay the expenses of the Department of Industrial Relations.

(n) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. The stipulations shall fix the responsibility of compliance with this section for all apprenticeable occupations with the prime contractor.

(o) This section does not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor when the contracts of general contractors or those specialty contractors involve less than thirty thousand dollars ($30,000).

(p) An awarding body that implements an approved labor compliance program in accordance with subdivision (b) of Section 1771.5 may, with the approval of the director, assist in the enforcement of this section under the terms and conditions prescribed by the director.

Section 1813. Forfeiture for violations; contract stipulation; report of violations

The contractor or subcontractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty- five dollars ($25) for each worker employed in the execution of

the contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of this article. In awarding any contract for public work, the awarding body shall cause to be inserted in the contract a stipulation to this effect. The awarding body shall take cognizance of all violations of this article committed in the course of the execution of the contract, and shall report them to the Division of Labor Standards Enforcement.

Section 1815. Overtime

Notwithstanding the provisions of Sections 1810 to 1814, inclusive, of this code, and notwithstanding any stipulation inserted in any contract pursuant to the requirements of said sections, work performed by employees of contractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon public work upon compensation for all hours worked in excess of 8 hours per day at not less than 1 ½ times the basic rate of pay.

ATTACHMENT NO. 2

CALIFORNIA PUBLIC CONTRACT CODE SECTION 9204

Section 9204. Legislative findings and declarations regarding timely and complete payment of contractors for public works projects; claims process (Eff: January 1, 2017)

(a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3)(A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d)(1)(A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2)(A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party

shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on their own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2027, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2027, deletes or extends that date.

EXHIBIT “A”

COMPENSATION AND SCOPE OF SERVICES

[Beneath this sheet.]

GORDIAN®

Work Order Signature Document

EZIQC Contract No.: CA-R8-E-101723-AEL

[X] **New Work Order** [ ] **Modify an Existing Work Order**

Work Order Number.:	151148.00	Work Order Date:	01/02/2026
Work Order Title:	Orange PD Lighting Upgrade		
Owner Name:	City of Orange	Contractor Name:	ABM Electrical & Lighting Solutions Inc.
Contact:	Kirk Wudzke	Contact:	Nate Piorek
Phone:	7143138641	Phone:	(949) 330-3049

Work to be Performed

Work to be performed as per the Final Detailed Scope of Work Attached and as per the terms and conditions of Sourcewell EZIQC Contract No CA-R8-E-101723-AEL.

Brief Work Order Description:

Lighting upgrade on first floor of Orange PD building.

Time of Performance Estimated Start Date:
Estimated Completion Date:

Liquidated Damages Will apply: [ ] Will not apply: [X]

Work Order Firm Fixed Price: $198,970.29

Owner Purchase Order Number:

Approvals

City of Orange Date

ABM Electrical & Lighting Solutions Inc. Date

Detailed Scope of Work

To: Nate Piorek
ABM Electrical & Lighting Solutions Inc.
14201 Franklin Avenue
Tustin, CA 92780
(949) 330-3049

From: Kirk Wudzke
City of Orange
300 E Chapman Ave
Orange, CA 92866
7143138641

Date Printed: January 02, 2026

Work Order Number: 151148.00

Work Order Title: Orange PD Lighting Upgrade

Brief Scope: Lighting upgrade on first floor of Orange PD building.

☐ **Preliminary**	☐ **Revised**	☒ **Final**

The following items detail the scope of work as discussed at the site. All requirements necessary to accomplish the items set forth below shall be considered part of this scope of work.

Attn: Kirk Wudzke
Re: City of Orange PD LED Lighting Upgrade
Scope of work

- Remove and dispose of existing linear fluorescent pendant lighting throughout the PD.
- Repair and replace existing ceiling tiles as needed
- Modify existing T-bar where needed with 2’ cross bars to receive 2x2 LED Panel fixtures
- Demo back existing electrical and install new electrical infrastructure to support new fixture layout.
- Install (153) 2x2 Maxlite LED panels in the ceiling, Spec Maxlite MLFP22V15WCS, per layout supplied by customer
- Install (41) 2x4 Maxlite LED panels in the ceiling, Spec Maxlite MLFP24V25WCS, per layout supplied by customer
- Install (54) Emergency LED driver battery back ups for emergency egress lighting
- Install (7) Intermatic IOS-DOV-D-WH Occ sensor /Dimmer
- Install control wiring for fixture dimming controls
- Test all fixtures for proper operation
- Painting and drywall patch not included, to be completed by others
- Permitting, Engineered drawings and Title 24 certification not included
- Work to be performed 2nd shift prevailing wage Orange County

Material Lead time 2-3 weeks
Project Scheduling 2 weeks
Project Durations 3 weeks

Subject to the terms and conditions of EZIQC Contract **CA-R8-E-101723-AEL**.

Detailed Scope of Work Continues..

Work Order Number: 151148.00
Work Order Title: Orange PD Lighting Upgrade

ABM Electrical & Lighting Solutions Inc. Date

City of Orange Date

Contractor's Price Proposal - Summary

Date: January 02, 2026

Re:

IQC Master Contract #:	CA-R8-E-101723-AEL
Work Order #:	151148.00
Owner PO #:	
Title:	Orange PD Lighting Upgrade
Contractor:	ABM Electrical & Lighting Solutions Inc.
Proposal Value:	$198,970.29

Section - 01	**$16,277.34**
Section - 09	**$3,779.09**
Section - 26	**$169,916.42**
Section - 27	**$8,997.44**
Proposal Total	**$198,970.29**

Thisl total represents the correct total for the proposal. Any discrepancy between line totals, sub-totals and the proposal total is due to rounding.

The Percentage of NPP on this Proposal: %

Contractor's Price Proposal - Detail

Date: January 02, 2026

Re:

IQC Master Contract #:	CA-R8-E-101723-AEL
Work Order #:	151148.00
Owner PO #:	
Title:	Orange PD Lighting Upgrade
Contractor:	ABM Electrical & Lighting Solutions Inc.
Proposal Value:	$198,970.29

	Sect.	Item	Mod.	UOM	Description	Line Total
Labor	Equip.	Material	(Excludes)			
Section - 01						
1	01 22 16	00 0002		EA	Reimbursable FeesReimbursable Fees will be paid to the contractor for eligible costs as directed by Owner. Insert the appropriate quantity to adjust the base cost to the actual Reimbursable Fee. If there are multiple Reimbursable Fees, list each one separately and add a comment in the "note" block to identify the Reimbursable Fee (e.g. sidewalk closure, road cut, various permits, extended warranty, expedited shipping costs, etc.). A copy of each receipt, invoice, or proof of payment shall be submitted with the Price Proposal.	$4,283.11
					Quantity x Unit Price x Factor = Total	
				Installation	3,893.74 x 1.00 x 1.1000 = 4,283.11	
					Bonding: 194,687.18x 2% =3893.74	
2	01 22 23	00 1601		WK	3 Ton Capacity, 12' To 16' Bed, 4 x 2 Flat Bed Truck With Full-Time Truck Driver	$16,205.27
					Quantity x Unit Price x Factor = Total	
				Installation	3.00 x 5,132.31 x 1.0525 = 16,205.27	
					Disposal Logistics	
3	01 22 23	00 1601	0042	MOD	For Equipment Without Operator, Deduct	-$4,211.04
					Quantity x Unit Price x Factor = Total	
				Installation	1.00 x -4,000.99 x 1.0525 = -4,211.04	
Subtotal for Section - 01						**$16,277.34**
Section - 09						
4	09 51 13	00 0013		SF	2' x 2' x 5/8" Thick, Square Edge, Mineral Fiber Acoustical Ceiling Panel (Armstrong Random Textured)	$1,995.54
					Quantity x Unit Price x Factor = Total	
				Installation	800.00 x 2.37 x 1.0525 = 1,995.54	
					Replacement ceiling tiles for linear pendant removal	
5	09 51 13	00 0013	0095	MOD	For >200 To 500, Add	$79.99
					Quantity x Unit Price x Factor = Total	
				Installation	400.00 x 0.19 x 1.0525 = 79.99	
6	09 51 13	00 0014		SF	2' x 4' x 5/8" Thick, Square Edge, Mineral Fiber Acoustical Ceiling Panel (Armstrong Random Textured)	$371.01
					Quantity x Unit Price x Factor = Total	
				Installation	150.00 x 2.35 x 1.0525 = 371.01	
					Replacement ceiling tiles for linear pendant removal	
7	09 51 13	00 0014	0094	MOD	For >50 To 200, Add	$113.67
					Quantity x Unit Price x Factor = Total	
				Installation	200.00 x 0.54 x 1.0525 = 113.67	
8	09 53 23	00 0016		EA	2', Exposed 15/16" Hot-dipped Galvanized Steel, Suspended Ceiling Cross TeeCan be used to convert an existing 2' x 4' suspension system to a 2' x 2' system or to replace an individual component.	$1,218.88
					Quantity x Unit Price x Factor = Total	
				Installation	154.00 x 7.52 x 1.0525 = 1,218.88	
					Replacement cross t for 2x4 conversion to 2x2 fixture install	
Subtotal for Section - 09						**$3,779.09**

Work Order Number: 151148.00
Work Order Title: Orange PD Lighting Upgrade

Section - 26

9	26 01 50 51 0382			EA	Recycle 4' Length Linear Fluorescent Lamps									$1,161.92
						Quantity		Unit Price		Factor	=	Total		
				Installation		425.00	x	2.79	x	0.9799		1,161.92		
				Disposal										
10	26 01 50 52 0317			EA	Up To 2,600 Lumens, Ninety Minute Illumination, 120-277 Volt, 20 Watt Output, Emergency LED Driver (Bodine BSL20LV)										$28,957.69
						Quantity		Unit Price		Factor	=	Total		
				Installation		54.00	x	490.06	x	1.0525		27,852.56		
				Demolition		40.00	x	26.25	x	1.0525	=	1,105.13		
				Emergency Battery Backup drivers for emergency lighting										
11	26 05 19 16 0199			MLF	3 Conductors, #12 AWG, Type MC, Solid Or Stranded, Galvanized Steel Armored Cable									$21,107.48
						Quantity		Unit Price		Factor	=	Total		
				Installation		3.00	x	5,608.77	x	1.0525		17,709.69		
				Demolition		2.00	x	1,614.15	x	1.0525	=	3,397.79		
				Rework electrical circuits in the ceiling to support new fixture layout										
12	26 05 19 16 0247			EA	3/4" Armored Cable Connector									$4,787.82
						Quantity		Unit Price		Factor	=	Total		
				Installation		500.00	x	7.95	x	1.0525		4,183.69		
				Demolition		200.00	x	2.87	x	1.0525	=	604.14		
				Rework electrical circuits in the ceiling to support new fixture layout electrical infrastructure										
13	26 05 19 16 0247	0031		MOD	For Work In Restricted Working Space, Add									$1,131.44
						Quantity		Unit Price		Factor	=	Total		
				Installation		500.00	x	2.15	x	1.0525		1,131.44		
14	26 05 19 16 0247	0032		MOD	For Elevated Installation >10' To 15', Add									$378.90
						Quantity		Unit Price		Factor	=	Total		
				Installation		500.00	x	0.72	x	1.0525		378.90		
15	26 27 26 00 0175			EA	8 Amperes, 120/277 Volt, 0 To 10 Volt Dimmer LED Control Switch, White (Lutron DVSTV-WH)									$757.82
						Quantity		Unit Price		Factor	=	Total		
				Installation		7.00	x	89.76	x	1.0525		661.31		
				Demolition		7.00	x	13.10	x	1.0525	=	96.51		
				Install Dimmers in select areas per customer layout, Spec Intermatic IOS-DOV-D-WH										
16	26 51 16 00 0272			EA	2 T8 Lamps, 2 Lamp Wide Cross Section, 4' Length, Pendant Mounted, Fluorescent Downlight Fixture (Finelite Series 10)										$16,093.69
						Quantity		Unit Price		Factor	=	Total		
				Installation		0.00	x	533.63	x	1.0525		0.00		
				Demolition		251.00	x	60.92	x	1.0525	=	16,093.69		
				Demo Existing Pendants										
17	26 51 19 00 0241			EA	2' x 2', 3,100 Lumens, Panel Type, Lay-In/Troffer LED Fixture (PlanLED Galaxy GL220-34)										$74,641.78
						Quantity		Unit Price		Factor	=	Total		
				Installation		153.00	x	463.52	x	1.0525		74,641.78		
				Install Spec: Maxlite LED panels MLFP22V15WCS										
18	26 51 19 00 0241	0659		MOD	For >100 To 250, Deduct									-$4,069.29
						Quantity		Unit Price		Factor	=	Total		
				Installation		153.00	x	-25.27	x	1.0525		-4,069.29		
19	26 51 19 00 0242			EA	2' x 4', 4,000 Lumens, Panel Type, Lay-In/Troffer LED Fixture (PlanLED Galaxy GL240-40)										$24,967.17
						Quantity		Unit Price		Factor	=	Total		
				Installation		41.00	x	578.58	x	1.0525		24,967.17		
				Install Spec: Maxlite LED panels MLFP24V25WCS										

Work Order Number: 151148.00
Work Order Title: Orange PD Lighting Upgrade

Subtotal for Section - 26	**$169,916.42**

Section - 27

20	27	15	13	00 0037		MLF	2 Pair #18 AWG, Solid, Shielded, Non-Plenum Rated, Low Voltage, Alarm And Communications Cable, Installed In Conduit					$7,224.74
								Quantity		Unit Price	Factor	Total
							Installation	4.00	x	1,716.09 x	1.0525 =	7,224.74
							Low Voltage Dimming control wire for all fixtures in the controlled space					
21	27	15	13	00 0037	0030	MOD	For Work In Restricted Working Space, Add					$1,772.70
								Quantity		Unit Price	Factor	Total
							Installation	4.00	x	421.07 x	1.0525 =	1,772.70

Subtotal for Section - 27	**$8,997.44**
Proposal Total	**$198,970.29**

This total represents the correct total for the proposal. Any discrepancy between line totals, sub-totals and the proposal total is due to rounding.

The Percentage of NPP on this Proposal: **%**

CONTRACT
[Facility Flooring and Paint Improvements for Police Department
Omnia Partners Contract 2020002149 (SP-4326)]

THIS CONTRACT (the "Contract") is made and entered into as of _____, 2026 ("Effective Date") by and between the CITY OF ORANGE, a municipal corporation ("City"), and INTERIOR RESOURCES, INC., a California corporation, dba COMMERCIAL INTERIOR RESOURCES, ("Contractor"), who agree as follows.

ARTICLE 1
Work Performed

a. For and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by City, and under the conditions expressed in the two (2) bonds presented to City with this Contract and incorporated herein by this reference, Contractor hereby agrees to and shall do all the work and furnish all the labor, materials, tools and equipment, except such as are mentioned in the specifications to be furnished by City to Contractor, necessary to complete in good workmanship and substantial manner the work (the "Work") described in:

(1) The latest edition of the "City of Orange Standard Plans and Specifications" (the "Orange Book") with the term "Engineer," as used in the Orange Book and in this Contract, to specifically include the City Engineer (or designee);

(2) The "Standard Specifications for Public Works Construction" (the "Greenbook"), and all amendments thereto, except the definition of "Subcontractor" in Section 1.2 (General – Terms and Definitions) of Part 1 (General Provisions) of the Greenbook, which is hereby amended in its entirety to read as follows: "Subcontractor – An individual, firm, or corporation having a direct contract with the Contractor for the performance of a part of the Work;"

(3) The "City of Orange Standard Special Provisions;"

(4) The Standard Plans; and

(5) Contractor's Bid Proposal, which is on file with City's Department of Public Works.

b. Contractor acknowledges that it has received the Plans from City and that a complete copy of the Plans are in its possession and are hereby specifically referred to and by such reference made a part hereof. The Orange Book, Greenbook and City of Orange Standard Special Provisions and Standard Plans are on file with City's Public Works Director and are hereby specifically referred to and by such reference made a part hereof. Contractor hereby acknowledges that it has read, reviewed and understands the Plans, the Orange Book, the Greenbook, the Special Provisions, the Standard Plans, and the Encroachment Permit as they relate to the Work, all of which documents shall be referred to herein collectively as the "Plans and Specifications."

c. Contractor acknowledges the provisions of Chapter 8.28 of the Orange Municipal Code which requires, among other things, that Contractor utilize City's exclusive solid waste hauler for the rental of bins for trash and debris removal and imposes mandatory recycling requirements for self-hauled construction and demolition waste. The terms and conditions set forth in this Contract shall control over any terms and conditions in the Plans and Specifications to the contrary.

d. The Work shall be performed in conformity with the Plans and Specifications and the Bid Proposal, reference as Exhibit A and all applicable laws, including any and all applicable federal and state labor laws and standards and applicable prevailing wage requirements and any and all state, federal and local statutes, regulations and ordinances relating to the protection of human health or the environment.

e. Unless and until otherwise notified in writing by City's Public Works Director, City's Assistant Field Services Manager, Rachael Gomez ("Authorized City Representative"), shall be the person to whom Contractor will report for the performance of the Work hereunder. It is understood that Contractor's performance hereunder shall be under the direction and supervision of the Authorized City Representative or such other person as City's Public Works Director may designate from time to time, that Contractor shall coordinate the Work hereunder with the Authorized City Representative to the extent required by the Authorized City Representative, and that all performances required hereunder by Contractor shall be performed to the satisfaction of the Authorized City Representative or City's Public Works Director.

f. It is expressly agreed by and between the parties hereto that should there be any conflict between the terms of this instrument and Contractor's Bid Proposal, then this instrument shall control and nothing herein shall be considered as an acceptance of the said terms of said Bid Proposal conflicting herewith.

ARTICLE 2
Commencement of Work

Contractor shall commence the Work provided for in this Contract within fifteen (15) days of the date of the issuance by City of a Notice to Proceed and diligently prosecute completion of the Work within sixty (60) calendar days from such date, unless legal extension is granted in accordance with the terms set forth in the Greenbook. Time is of the essence in this Contract. Contractor shall do all things necessary and incidental to the prosecution of Contractor's Work.

ARTICLE 3
Compensation

a. Contractor agrees to receive and accept an amount not to exceed ONE HUNDRED EIGHTY-SIX THOUSAND ONE HUNDRED FORTY-EIGHT DOLLARS and 00/100 ($186,148.00) as compensation for furnishing all materials and doing all the Work contemplated and embraced in this Contract. Said compensation covers (1) all loss or damage arising out of the nature of the Work, from the acts of the elements; (2) any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the Work until its acceptance by City,

other than as provided below; (3) all risks of every description connected with the Work; (4) all expenses incurred by or in consequence of the suspension or discontinuance of the Work; and (5) well and faithfully completing the Work, and for the whole thereof, in the manner and according to the Plans and Specifications, and requirements of the Authorized City Representative under them. Retention amounts shall be withheld from progress payments as required by law unless Contractor provides securities in lieu of retention.

b. In addition to the scheduled Work to be performed by the Contractor, the parties recognize that additional, unforeseen work and services may be required by the Authorized City Representative. In anticipation of such contingencies, the sum of EIGHTEEN THOUSAND SIX HUNDRED FIFTEEN DOLLARS and 00/100 ($18,615.00) has been added to the total compensation of this Contract. The Authorized City Representative may approve the additional work and the actual costs incurred by the Contractor in performance of additional work or services in accordance with such amount as the Authorized City Representative and the Contractor may agree upon in advance. Said additional work or services and the amount of compensation therefor, up to the amount of the authorized contingency, shall be memorialized in the form of a Contract Amendment approved by the City Manager on a form acceptable to the City Attorney. The Contractor agrees to perform only that work or those services that are specifically requested by the Authorized City Representative. Any and all additional work and services performed under this Contract shall be completed in such sequence as to assure their completion as expeditiously as is consistent with professional skill and care in accordance with a cost estimate or proposal submitted to and approved by the Authorized City Representative prior to the commencement of such Work or services.

c. The total amount of compensation under this Contract, including contingencies, shall not exceed TWO HUNDRED FOUR THOUSAND SEVEN HUNDRED SIXTY-THREE DOLLARS and 00/100 ($204,763.00).

ARTICLE 4
Licenses

Contractor represents that it and any subcontractors it may engage, possess any and all licenses which are required under state or federal law to perform the Work contemplated by this Contract and that Contractor and subcontractors shall maintain all appropriate licenses, including a City of Orange business license, at its cost, during the performance of this Contract.

ARTICLE 5
Guarantees

a. Contractor guarantees the construction and installation of all Work included in the Plans and Specifications for which Contractor has been awarded this Contract.

b. Should any of the materials or equipment installed pursuant to this Contract prove defective or should the Work as a whole prove defective, due to faulty equipment, workmanship, materials furnished or methods of installations, or should said Work or any part thereof fail to function properly, as designed, due to any of the above causes within twelve (12) months after the

date on which said Work is accepted by City, Contractor shall make repairs and furnish such materials and equipment as are necessary to be furnished and installed within fifteen (15) calendar days after the receipt of a demand from City.

c. Said Work will be deemed defective within the meaning of this guarantee in the event that it fails to function as originally intended either by the Plans and Specifications of this Contract or by the manufacturer(s) of the equipment incorporated into the Work.

d. In the event repairs are not made within fifteen (15) calendar days after Contractor's receipt of a demand from City, City shall have the unqualified option to make any needed repairs or replacements itself or by any other contractor. Contractor shall reimburse City, upon demand, for all expenses incurred in restoring said Work to the condition contemplated in this Contract, including the cost of any equipment or materials replaced.

e. It is understood that emergency repairs may, by necessity, be made by City. Therefore, when defective equipment, materials or workmanship result in emergency repairs by City, Contractor shall reimburse City, upon demand, for all expenses incurred. Emergency repairs will be deemed as those repairs determined by City's Director of Public Works to be necessary due to an immediate detriment to the health, safety, welfare or convenience of the residents of City.

ARTICLE 6
Water Quality

a. The Santa Ana Regional Water Quality Control Board ("RWQCB") has issued National Pollutant Discharge Elimination System ("NPDES") Permit No. R8-2009-0030 (the "Permit"), which governs storm water and non-storm water discharges resulting from municipal activities performed by City or its contractors. In order to comply with the Permit requirements, the County of Orange has prepared a Drainage Area Management Plan ("DAMP"), containing Model Maintenance Procedures with Best Management Practices ("BMPs") that City and its contractors must adhere to. The Model Maintenance Procedures contain pollution prevention and source control techniques to minimize the impact of those activities upon dry-weather urban runoff, storm water runoff, and receiving water quality. Examples include: wash water from cleaning of sidewalks or parking lots must be collected and disposed of in the sewer or landscaped areas.

b. The Permit, the DAMP and the Model Maintenance Procedures are on file in the office of City's Director of Public Works. Contractor hereby acknowledges that it has read, reviewed and understands the Permit, the DAMP and the Model Maintenance Procedures, as they relate to the Work and hereby shall perform the Work in conformance therewith.

ARTICLE 7
Independent Contractor; Contractor not Agent

a. At all times during the term of this Contract, Contractor shall be an independent contractor and not an employee of City. City shall have the right to control Contractor only insofar

as the result of Contractor's services rendered pursuant to this Contract. City shall not have the right to control the means by which Contractor accomplishes services rendered pursuant to this Contract. Contractor shall, at its sole cost and expense, furnish all facilities, materials and equipment which may be required for furnishing services pursuant to this Contract. Contractor shall be solely responsible for, and shall indemnify, defend and save City harmless from all matters relating to the payment of its subcontractors, agents and employees, including compliance with social security, withholding and all other wages, salaries, benefits, taxes, exactions, and regulations of any nature whatsoever. Contractor acknowledges that Contractor and any subcontractors, agents or employees employed by Contractor shall not, under any circumstances, be considered employees of City, and that they shall not be entitled to any of the benefits or rights afforded employees of City, including, but not limited to, sick leave, vacation leave, holiday pay, Public Employees Retirement System benefits, or health, life, dental, long-term disability or workers' compensation insurance benefits.

b. Except as City may specify in writing, Contractor shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent. Contractor shall have no authority, express or implied, to bind City to any obligation whatsoever.

ARTICLE 8
Public Work; Prevailing Wage

a. The Work which is the subject of this Contract is a "public work," as that term is defined in Section 1720 of the California Labor Code, for which prevailing wages must be paid. To the extent Contractor's employees will perform any work that falls within any of the classifications for which the Department of Labor Relations of the State of California promulgates prevailing wage determinations, Contractor hereby agrees that Contractor, and any subcontractor under it, shall pay not less than the specified prevailing rates of wages to all such workers. The general prevailing wage determinations for crafts can be located on the website of the Department of Industrial Relations (www.dir.ca.gov/DLSR). Additionally, to perform work under this Contract, Contractor must meet all State registration requirements and criteria, including project compliance monitoring.

b. Attached hereto as Attachment No. 1 and incorporated herein by this reference is a copy of the provisions of Sections 1725.5, 1771, 1771.1, 1771.4, 1775, 1776, 1777.5, 1813 and 1815 of the California Labor Code. Contractor hereby acknowledges that it has read, reviewed and understands those provisions of the Labor Code and shall prosecute and complete the Work under this Contract in strict compliance with all of those terms and provisions.

c. Contractor shall secure the payment of compensation to its employees in accordance with the provisions of Section 3700 of the California Labor Code. Accordingly, and as required by Section 1861 of the California Labor Code, Contractor hereby certifies as follows:

> "I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

d. Contractor shall indemnify, protect, defend and hold harmless City and its officers, employees, contractors and agents, with counsel reasonably acceptable to City, from and against any and all loss, liability, damage, claim, cost, expense, and/or "increased costs" (including reasonable attorney's fees, court and litigation costs, and fees of expert witnesses) which result or arise in any way from the noncompliance by Contractor of any applicable local, state and/or federal law, including, without limitation, any applicable federal and/or state labor laws (including, without limitation, the requirement to pay state prevailing wages). It is agreed by the parties that, in connection with the construction of the Work which is the subject of this Contract, Contractor shall bear all risks of payment or non-payment of state prevailing wages. "Increased costs" as used in this paragraph shall have the meaning ascribed to it in Labor Code Section 1781, as the same may be enacted, adopted or amended from time to time. The foregoing indemnity shall survive termination of this Contract.

ARTICLE 9
Equal Employment Opportunity

During the performance of this Contract, Contractor agrees as follows:

a. Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Contractor shall ensure that applicants are employed and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Such actions shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. Contractor shall post in conspicuous places, available to employees and applicants for employment, a notice setting forth provisions of this non-discrimination clause.

b. Contractor shall, in all solicitations and advertisements for employees placed by, or on behalf of Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law.

c. Contractor shall cause the foregoing paragraphs (a) and (b) to be inserted in all subcontracts for any Work covered by this Contract, provided that the foregoing provisions shall not apply to subcontracts for standard commercial supplies or raw materials.

ARTICLE 10
Conflicts of Interest

Contractor agrees that it shall not make, participate in the making, or in any way attempt to use its position as a contractor to influence any decision of City in which Contractor knows or has reason to know that Contractor, its officers, partners, or employees have a financial interest as defined in Section 87103 of the Government Code. Contractor further agrees that it shall not be eligible to work as the builder for any project for which the design work is part of this Contract.

ARTICLE 11
Indemnity

Contractor shall defend, indemnify and hold harmless City and its officers, officials, agents, and employees from and against:

a. Any and all claims, liabilities, losses, damages, penalties, costs or expenses (including reasonable attorneys' fees and court costs) which City may directly or indirectly sustain or suffer arising from or as a result of the death of any person or any accident, injury, loss or damage whatsoever caused to any person or the property of any person which shall occur on or adjacent to the real property which is the subject of this Contract, or in connection with performance of this Contract which may be directly or indirectly caused by the acts or omissions of Contractor or its officers, employees, contractors or agents, or as a consequence of any use, generation, manufacture, storage, disposal, release or threatened release of a hazardous waste or substance. Contractor shall not be responsible for (and such indemnity shall not apply to) any willful misconduct, negligence or breach of this Contract by City or its officers, officials, agents, and employees. The foregoing indemnity shall survive termination of this Contract.

b. Any and all claims under workers' compensation acts and other employee benefit acts with respect to Contractor's employees or Contractor's subcontractor's employees arising out of Contractor's Work under this Contract, including any and all claims under any law pertaining to Contractor's status as an independent contractor.

ARTICLE 12
Insurance

a. Contractor shall procure and maintain for the duration of this Contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work hereunder and the results of that Work by Contractor, its agents, representatives, employees or subcontractors. Any umbrella liability insurance that is provided as part of the general or automobile liability minimums set forth below shall be maintained for the duration of the Contract.

b. Contractor shall maintain the following minimum amount of insurance: the greater of either the limits set forth in (1) through (4), below; or all of the insurance coverage and/or limits carried by or available to Contractor.

(1)	General Liability	$2,000,000	per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

(2)	Automobile Liability	$1,000,000	per accident for bodily injury and property damage.
(3)	Workers' Compensation		as required by the State of California.
(4)	Employer's Liability	$1,000,000	per accident for bodily injury or disease.

c. Any insurance proceeds in excess of or broader than the minimum required coverage and/or minimum required limits which are applicable to a given loss shall be available to City. No representation is made that the minimum insurance requirements of this Contract are sufficient to cover the obligations of Contractor under this Contract.

d. Any deductibles or self-insured retentions must be declared to and approved by City. At the option of City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions with respect to City, its officers, officials, agents and employees; or Contractor shall provide a financial guarantee satisfactory to City guaranteeing payment of losses and related investigations, claim administration, and defense expenses.

e. Each policy of general liability and automotive liability insurance shall contain, or be endorsed to contain, the following provisions:

(1) City, its officers, officials, agents, and employees are declared to be additional insureds under the terms of the policy, with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of Contractor (any auto), and with respect to liability arising out of Work or operations performed by or on behalf of Contractor, including materials, parts or equipment furnished in connection with such Work or operations. A policy endorsement to that effect shall be provided to City along with the certificate of insurance. In lieu of an endorsement, City will accept a copy of the policy(ies) which evidences that City is an additional insured as a contracting party. The minimum coverage required by Subsection 12.b, above, shall apply to City as an additional insured.

(2) For any claims related to this Contract, Contractor's insurance coverage shall be primary insurance with respect to City, its officers, officials, agents and employees. Any insurance or self-insurance maintained by City, its officers, officials, agents and employees shall be excess of Contractor's insurance and shall not contribute with it.

(3) Coverage shall not be canceled, except after thirty (30) days' prior written notice has been provided to City.

f. Contractor shall furnish City with original certificates of insurance and endorsements effecting coverage required by this Article 12. The endorsements shall be on forms acceptable to City. All certificates and endorsements are to be received and approved by City before the Work commences. However, failure to do so shall not operate as a waiver of these insurance requirements. City reserves the right to require complete, certified copies of all required insurance policies, including endorsements effecting the coverage required by these specifications at any time.

g. All insurance procured and maintained by Contractor shall be issued by insurers admitted to conduct the pertinent line of insurance business in California and having a rating of Grade A or better and Class VII or better by the latest edition of Best Key Rating Guide.

h. Contractor shall immediately notify City if any required insurance lapses or is otherwise modified and cease performance of this Contract unless otherwise directed by City. In such a case, City may procure insurance or self-insure the risk and charge Contractor for such costs and any and all damages resulting therefrom by way of set-off from any sums owed Contractor.

i. Contractor agrees that in the event of loss due to any of the perils for which it has agreed to provide insurance, Contractor shall look solely to its insurance for recovery. Contractor hereby grants to City, on behalf of any insurer providing insurance to either Contractor or City with respect to the services of Contractor herein, a waiver of any right to subrogation which any such insurer may acquire against City by virtue of the payment of any loss under such insurance. The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of City for all Work performed by Contractor, its employees, agents and subcontractors. Contractor shall obtain any other endorsement that may be necessary to effect this waiver of subrogation.

j. Contractor shall require and verify that all subcontractors maintain insurance meeting all of the requirements stated herein.

ARTICLE 13
Termination

City, acting through its City Manager or designee, reserves the right to terminate this Contract for any reason by giving five (5) days' written notice of intent to terminate to Contractor. Upon receipt of notice, Contractor shall immediately cease work, unless the notice provides otherwise. Should City terminate this Contract, City shall pay Contractor for services satisfactorily provided and all allowable reimbursements incurred to the date of termination in compliance with this Contract, unless such termination shall be for cause, in which event City may withhold any disputed compensation. City shall not be liable for any claim of lost profits.

ARTICLE 14
Maintenance and Inspection of Records

In accordance with generally accepted accounting principles, Contractor and its subcontractors shall maintain reasonably full and complete books, documents, papers, accounting records and other information (collectively, the "records") pertaining to the costs of and completion of services performed under this Contract. During the term of this Contract and for a period of three (3) years after termination or completion of this Contract, City shall have the right to inspect and/or audit Contractor's records pertaining to the performance of this Contract at Contractor's office. Contractor shall make available all such records for inspection or audit at its offices during normal business hours and upon three (3) days' notice from City, and copies thereof shall be furnished if requested.

ARTICLE 15
Compliance with Laws

a. Contractor shall be knowledgeable of and comply with all local, state and federal laws pertaining to the subject matter hereof or in any way regulating the activities undertaken by Contractor or any subcontractor hereunder.

b. Contractor represents and warrants that it:

(1) Has complied and shall at all times during the term of this Contract comply, in all respects, with all immigration laws, regulations, statutes, rules, codes, and orders, including, without limitation, the Immigration Reform and Control Act of 1986 (IRCA); and

(2) Has not and will not knowingly employ any individual to perform services under this Contract who is ineligible to work in the United States or under the terms of this Contract; and

(3) Has properly maintained, and shall at all times during the term of this Contract properly maintain, all related employment documentation records including, without limitation, the completion and maintenance of the Form I-9 for each of Contractor's employees; and

(4) Has responded, and shall at all times during the term of this Contract respond, in a timely fashion to any government inspection requests relating to immigration law compliance and/or Form I-9 compliance and/or worksite enforcement by the Department of Homeland Security, the Department of Labor, or the Social Security Administration.

c. Contractor shall require all subcontractors and/or subconsultants to make the same representations and warranties required by this Article 15 when hired to perform services under this Contract.

d. Contractor shall, upon request of City, provide a list of all employees working under this Contract and shall provide, to the reasonable satisfaction of City, verification that all such employees are eligible to work in the United States. All costs associated with such verification shall be borne by Contractor. Once such request has been made, Contractor may not change employees working under this Contract without written notice to City, accompanied by the verification required herein for such employees. Contractor shall require all subcontractors and/or sub-consultants to make the same verification when hired to perform services under this Contract.

e. If Contractor, or a subcontractor or subconsultant, knowingly employs an employee providing Work under this Contract who is not authorized to work in the United States, and/or fails to follow federal laws to determine the status of such employee, such shall constitute a material breach of this Contract and may be cause for immediate termination of this Contract by City.

f. Contractor shall indemnify and hold City, its officials and employees harmless for, of and from any loss, including but not limited to fines, penalties and corrective measures, City may sustain by reason of Contractor's failure to comply with said laws, rules and regulations in connection with the performance of this Contract.

ARTICLE 16
Governing Law and Venue

This Contract shall be construed in accordance with and governed by the laws of the State of California and Contractor shall submit to the jurisdiction of California courts. Venue for any dispute arising under this Contract shall be in Orange County, California.

ARTICLE 17
Integration and Amendment

a. This Contract constitutes the entire agreement of the parties. No other agreement, oral or written, pertaining to the Work to be performed under this Contract shall be of any force or effect unless it is in writing and signed by both parties. Any Work performed which is inconsistent with or in violation of the provisions of this Contract shall not be compensated.

b. Amendments to this Contract must be in writing and signed by both parties. City Manager is authorized to execute amendments to this Contract up to the amounts specified in Chapter 3.08 of the Orange Municipal Code.

ARTICLE 18
Notice

Except as otherwise provided herein, all notices required under this Contract shall be in writing and delivered personally, by e-mail, or by first class mail, postage prepaid, to each party at the address listed below. Either party may change the notice address by notifying the other party in writing. Notices shall be deemed received upon receipt of same or within three (3) days of deposit in the U.S. Mail, whichever is earlier. Notices sent by e-mail shall be deemed received on the date of the e-mail transmission.

"CONTRACTOR"	"CITY"
Interior Resources, Inc. dba Commercial Interior Resources 1761 Reynolds Avenue Irvine, CA 92614	City of Orange 300 E. Chapman Avenue Orange, CA 92866-1591
Attn: Danielle Lisotto	Attn: Rachael Gomez
Telephone: 760-985-9124 E-Mail: dlisotto@cir-resource.com	Telephone: 714-744-5588 E-Mail: rgomez@cityoforange.org

ARTICLE 19
Claim Resolution

City and Contractor agree that the claim resolution process applicable to any claim by Contractor in connection with the Work provided herein shall be subject to the procedures set forth in California Public Contract Code Section 9204, attached hereto as Attachment No. 2, and incorporated herein by this reference.

ARTICLE 20
Counterparts

This Contract may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Signatures transmitted electronically shall have the same effect as original signatures.

[Remainder of page intentionally left blank; signatures on next page]

"CITY"

CITY OF ORANGE, a municipal corporation

By:_____
Daniel R. Slater
Mayor of the City of Orange

CONTRACT, BONDS AND INSURANCE APPROVED BY:

_____
Nathalie Adourian, City Attorney

ATTEST:

_____
Pamela Coleman, City Clerk

"CONTRACTOR"

INTERIOR RESOURCES, INC., a California corporation, dba COMMERCIAL INTERIOR RESOURCES

[Note: Signature of Chairman of the Board, President or Vice President is required]

By:_____
Printed Name:_____
Title:_____

[Note: Signature of Secretary, Assistant Secretary, Chief Financial Officer or Assistant Treasurer is also required]

By:_____
Printed Name:_____
Title:_____

√

"CITY"

CITY OF ORANGE, a municipal corporation

By:_____
Daniel R. Slater
Mayor of the City of Orange

CONTRACT, BONDS AND INSURANCE APPROVED BY:

_____
Nathalie Adourian, City Attorney

ATTEST:

_____
Pamela Coleman, City Clerk

"CONTRACTOR"

INTERIOR RESOURCES, INC., a California corporation, dba COMMERCIAL INTERIOR RESOURCES

By:_____
Printed Name: Kenneth Hurd
Title: President

[Note: Signature of Chairman of the Board, President or Vice President is required]

By:_____
Printed Name: Kenneth Hurd
Title: Secretary

[Note: Signature of Secretary, Assistant Secretary, Chief Financial Officer or Assistant Treasurer is also required]

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ATTACHMENT NO. 1

CALIFORNIA LABOR CODE
SECTIONS 1725.5, 1771, 1771.1, 1771.4, 1775, 1776, 1777.5, 1813 and 1815

Section 1725.5. Registration of contractors; mandatory registration; qualifications and application; fees; exempt contractors

A contractor shall be registered pursuant to this section to be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any public work contract that is subject to the requirements of this chapter. For the purposes of this section, "contractor" includes a subcontractor as defined by Section 1722.1.

(a) To qualify for registration under this section, a contractor shall do all of the following:

(1)(A) Register with the Department of Industrial Relations in the manner prescribed by the department and pay an initial nonrefundable application fee of four hundred dollars ($400) to qualify for registration under this section and an annual renewal fee on or before July 1 of each year thereafter. The annual renewal fee shall be in a uniform amount set by the Director of Industrial Relations, and the initial registration and renewal fees may be adjusted no more than annually by the director to support the costs specified in Section 1771.3.

(B) Beginning June 1, 2019, a contractor may register or renew according to this subdivision in annual increments up to three years from the date of registration. Contractors who wish to do so will be required to prepay the applicable nonrefundable application or renewal fees to qualify for the number of years for which they wish to preregister.

(2) Provide evidence, disclosures, or releases as are necessary to establish all of the following:

(A) Workers' compensation coverage that meets the requirements of Division 4 (commencing with Section 3200) and includes sufficient coverage for any worker whom the contractor employs to perform work that is subject to prevailing wage requirements other than a contractor who is separately registered under this section. Coverage may be evidenced by a current and valid certificate of workers' compensation insurance or certification of self-insurance required under Section 7125 of the Business and Professions Code.

(B) If applicable, the contractor is licensed in accordance with Chapter 9 (commencing with Section 7000) of the Business and Professions Code.

(C) The contractor does not have any delinquent liability to an employee or the state for any assessment of back wages or related damages, interest, fines, or penalties pursuant to any final judgment, order, or determination by a court or any federal, state, or local administrative agency, including a confirmed arbitration award. However, for purposes of this paragraph, the contractor shall not be disqualified for any judgment, order, or determination that is under appeal, provided that the contractor has secured the payment of any amount eventually found due through a bond or other appropriate means.

(D) The contractor is not currently debarred under Section 1777.1 or under any other federal or state law providing for the debarment of contractors from public works.

(E) The contractor has not bid on a public works contract, been listed in a bid proposal, or engaged in the performance of a contract for public works without being lawfully registered in accordance with this section, within the preceding 12 months or since the effective date of the requirements set forth in subdivision (e), whichever is earlier. If a contractor is found to be in violation of the requirements of this paragraph, the period of disqualification shall be waived if both of the following are true:

(i) The contractor has not previously been found to be in violation of the requirements of this paragraph within the preceding 12 months.

(ii) The contractor pays an additional nonrefundable penalty registration fee of two thousand dollars ($2,000).

(b) Fees received pursuant to this section shall be deposited in the State Public Works Enforcement Fund established by Section 1771.3 and shall be used only for the purposes specified in that section.

(c) A contractor who fails to pay the renewal fee required under paragraph (1) of subdivision (a) on or before the expiration of any prior period of registration shall be prohibited from bidding on or engaging in the performance of any contract for public work until once again registered pursuant to this section. If the failure to pay the renewal fee was inadvertent, the contractor may renew its registration retroactively by paying an additional nonrefundable penalty renewal fee equal to the amount of the renewal fee within 90 days of the due date of the renewal fee.

(d) If, after a body awarding a contract accepts the contractor's bid or awards the contract, the work covered by the bid or contract is determined to be a public work to which Section 1771 applies, either as the result of a determination by the director pursuant to Section 1773.5 or a court decision, the requirements of this section shall not apply, subject to the following requirements:

(1) The body that awarded the contract failed, in the bid specification or in the contract documents, to identify as a public work that portion of the work that the determination or decision subsequently classifies as a public work.

(2) Within 20 days following service of notice on the awarding body of a determination by the Director of Industrial Relations pursuant to Section 1773.5 or a decision by a court that the contract was for public work as defined in this chapter, the contractor and any subcontractors are registered under this section or are replaced by a contractor or subcontractors who are registered under this section.

(3) The requirements of this section shall apply prospectively only to any subsequent bid, bid proposal, contract, or work performed after the awarding body is served with notice of the determination or decision referred to in paragraph (2).

(e) The requirements of this section shall apply to any bid proposal submitted on or after March 1, 2015, to any contract for public work, as defined in this chapter, executed on or after April 1, 2015, and to any work performed under a contract for public work on or after January 1, 2018, regardless of when the contract for public work was executed.

(f) This section does not apply to work performed on a public works project of twenty-five thousand dollars ($25,000) or less when the project is for construction, alteration, demolition, installation, or repair work or to work performed on a public works project of fifteen thousand dollars ($15,000) or less when the project is for maintenance work.

Section 1771. Payment of general prevailing rate

Except for public works projects of one thousand dollars ($1,000) or less, not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the public work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in this chapter, shall be paid to all workers employed on public works.

This section is applicable only to work performed under contract, and is not applicable to work carried out by a public agency with its own forces. This section is applicable to contracts let for maintenance work.

Section 1771.1. Registration as a contractor or subcontractor required prior to bid submission; exceptions; violations; penalties

(a) A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

(b) Notice of the requirement described in subdivision (a) shall be included in all bid invitations and public works contracts, and a bid shall not be accepted nor any contract or subcontract entered into without proof of the contractor or subcontractor's current registration to perform public work pursuant to Section 1725.5.

(c) An inadvertent error in listing a subcontractor who is not registered pursuant to Section 1725.5 in a bid proposal shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive, provided that any of the following apply:

(1) The subcontractor is registered prior to the bid opening.

(2) Within 24 hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in subparagraph (E) of paragraph (2) of subdivision (a) of Section 1725.5.

(3) The subcontractor is replaced by another registered subcontractor pursuant to Section 4107 of the Public Contract Code.

(d) Failure by a subcontractor to be registered to perform public work as required by subdivision (a) shall be grounds under Section 4107 of the Public Contract Code for the contractor, with the consent of the awarding authority, to substitute a subcontractor who is registered to perform public work pursuant to Section 1725.5 in place of the unregistered subcontractor.

(e) The department shall maintain on its Internet Web site a list of contractors who are currently registered to perform public work pursuant to Section 1725.5.

(f) A contract entered into with any contractor or subcontractor in violation of subdivision (a) shall be subject to cancellation, provided that a contract for public work shall not be unlawful, void, or voidable solely due to the failure of the awarding body, contractor, or any subcontractor to comply with the requirements of Section 1725.5 or this section.

(g) If the Labor Commissioner or his or her designee determines that a contractor or subcontractor engaged in the performance of any public work contract without having been registered in accordance with this section, the contractor or subcontractor shall forfeit, as a civil penalty to the state, one hundred dollars ($100) for each day of work performed in violation of the registration requirement, not to exceed an aggregate penalty of eight thousand dollars ($8,000) in addition to any penalty registration fee assessed pursuant to clause (ii) of subparagraph (E) of paragraph (2) of subdivision (a) of Section 1725.5.

(h)(1) In addition to, or in lieu of, any other penalty or sanction authorized pursuant to this chapter, a higher tiered public works contractor or subcontractor who is found to have entered into a subcontract with an unregistered lower tier subcontractor to perform any public work in violation of the requirements of Section 1725.5 or this section shall be subject to forfeiture, as a civil penalty to the state, of one hundred dollars ($100)

for each day the unregistered lower tier subcontractor performs work in violation of the registration requirement, not to exceed an aggregate penalty of ten thousand dollars ($10,000).

(2) The Labor Commissioner shall use the same standards specified in subparagraph (A) of paragraph (2) of subdivision (a) of Section 1775 when determining the severity of the violation and what penalty to assess, and may waive the penalty for a first time violation that was unintentional and did not hinder the Labor Commissioner's ability to monitor and enforce compliance with the requirements of this chapter.

(3) A higher tiered public works contractor or subcontractor shall not be liable for penalties assessed pursuant to paragraph (1) if the lower tier subcontractor's performance is in violation of the requirements of Section 1725.5 due to the revocation of a previously approved registration.

(4) A subcontractor shall not be liable for any penalties assessed against a higher tiered public works contractor or subcontractor pursuant to paragraph (1). A higher tiered public works contractor or subcontractor may not require a lower tiered subcontractor to indemnify or otherwise be liable for any penalties pursuant to paragraph (1).

(i) The Labor Commissioner or his or her designee shall issue a civil wage and penalty assessment, in accordance with the provisions of Section 1741, upon determination of penalties pursuant to subdivision (g) and subparagraph (B) of paragraph (1) of subdivision (h). Review of a civil wage and penalty assessment issued under this subdivision may be requested in accordance with the provisions of Section 1742. The regulations of the Director of Industrial Relations, which govern proceedings for review of civil wage and penalty assessments and the withholding of contract payments under Article 1 (commencing with Section 1720) and Article 2 (commencing with Section 1770), shall apply.

(j)(1) Where a contractor or subcontractor engages in the performance of any public work contract without having been registered in violation of the requirements of Section 1725.5 or this section, the Labor Commissioner shall issue and serve a stop order prohibiting the use of the unregistered contractor or the unregistered subcontractor on all public works until the unregistered contractor or unregistered subcontractor is registered. The stop order shall not apply to work by registered contractors or subcontractors on the public work.

(2) A stop order may be personally served upon the contractor or subcontractor by either of the following methods:

(A) Manual delivery of the order to the contractor or subcontractor personally.

(B) Leaving signed copies of the order with the person who is apparently in charge at the site of the public work and by thereafter mailing copies of the order by first class mail, postage prepaid to the contractor or subcontractor at one of the following:

(i) The address of the contractor or subcontractor on file with either the Secretary of State or the Contractors' State License Board.

(ii) If the contractor or subcontractor has no address on file with the Secretary of State or the Contractors' State License Board, the address of the site of the public work.

(3) The stop order shall be effective immediately upon service and shall be subject to appeal by the party contracting with the unregistered contractor or subcontractor, by the unregistered contractor or subcontractor, or both. The appeal, hearing, and any further review of the hearing decision shall be governed by the procedures, time limits, and other requirements specified in subdivision (a) of Section 238.1.

(4) Any employee of an unregistered contractor or subcontractor who is affected by a work stoppage ordered by the commissioner pursuant to this subdivision shall be paid at his or her regular hourly prevailing wage rate by that employer for any hours the employee would have worked but for the work stoppage, not to exceed 10 days.

(k) Failure of a contractor or subcontractor, owner, director, officer, or managing agent of the contractor or subcontractor to observe a stop order issued and served upon him or her pursuant to subdivision (j) is guilty of a misdemeanor punishable by imprisonment in county jail not exceeding 60 days or by a fine not exceeding ten thousand dollars ($10,000), or both.

(l) This section shall apply to any bid proposal submitted on or after March 1, 2015, and any contract for public work entered into on or after April 1, 2015. This section shall also apply to the performance of any public work, as defined in this chapter, on or after January 1, 2018, regardless of when the contract for public work was entered.

(m) Penalties received pursuant to this section shall be deposited in the State Public Works Enforcement Fund established by Section 1771.3 and shall be used only for the purposes specified in that section.

(n) This section shall not apply to work performed on a public works project of twenty-five thousand dollars ($25,000) or less when the project is for construction, alteration, demolition, installation, or repair work or to work performed on a public works project of fifteen thousand dollars ($15,000) or less when the project is for maintenance work.

Section 1771.4. Additional requirements when bidding and awarding public works contracts

(a) All of the following are applicable to all public works projects that are otherwise subject to the requirements of this chapter:

(1) The call for bids and contract documents shall specify that the project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

(2) The awarding body shall post or require the prime contractor to post job site notices, as prescribed by regulation.

(3) Each contractor and subcontractor shall furnish the records specified in Section 1776 directly to the Labor Commissioner, in the following manner:

(A) At least monthly or more frequently if specified in the contract with the awarding body.

(B) In a format prescribed by the Labor Commissioner.

(4) If the contractor or subcontractor is not registered pursuant to Section 1725.5 and is performing work on a project for which registration is not required because of subdivision (f) of Section 1725.5, the unregistered contractor or subcontractor is not required to furnish the records specified in Section 1776 directly to the Labor Commissioner but shall retain the records specified in Section 1776for at least three years after completion of the work.

(5) The department shall undertake those activities it deems necessary to monitor and enforce compliance with prevailing wage requirements.

(b) The Labor Commissioner may exempt a public works project from compliance with all or part of the requirements of subdivision (a) if either of the following occurs:

(1) The awarding body has enforced an approved labor compliance program, as defined in Section 1771.5, on all public works projects under its authority, except those deemed exempt pursuant to subdivision (a) of Section 1771.5, continuously since December 31, 2011.

(2) The awarding body has entered into a collective bargaining agreement that binds all contractors performing work on the project and that includes a mechanism for resolving disputes about the payment of wages.

(c) The requirements of paragraph (1) of subdivision (a) shall only apply to contracts for public works projects awarded on or after January 1, 2015.

(d) The requirements of paragraph (3) of subdivision (a) shall apply to all contracts for public work, whether new or ongoing, on or after January 1, 2016.

Section 1775. Penalties for violations

(a)(1) The contractor and any subcontractor under the contractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit not more than two hundred dollars ($200) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rates as determined by the director for the work or craft in which the worker is employed for any public work done under the contract by the contractor or, except as provided in subdivision (b), by any subcontractor under the contractor.

(2)(A) The amount of the penalty shall be determined by the Labor Commissioner based on consideration of both of the following:

(i) Whether the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the contractor or subcontractor.

(ii) Whether the contractor or subcontractor has a prior record of failing to meet its prevailing wage obligations.

(B)(i) The penalty may not be less than forty dollars ($40) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, unless the failure of the contractor or subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the contractor or subcontractor.

(ii) The penalty may not be less than eighty dollars ($80) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the contractor or subcontractor has been assessed penalties within the previous three years for failing to meet its prevailing wage obligations on a separate contract, unless those penalties were subsequently withdrawn or overturned.

(iii) The penalty may not be less than one hundred twenty dollars ($120) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the Labor Commissioner determines that the violation was willful, as defined in subdivision (c) of Section 1777.1.

(C) If the amount due under this section is collected from the contractor or subcontractor, any outstanding wage claim under Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 against that contractor

or subcontractor shall be satisfied before applying that amount to the penalty imposed on that contractor or subcontractor pursuant to this section.

(D) The determination of the Labor Commissioner as to the amount of the penalty shall be reviewable only for abuse of discretion.

(E) The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the contractor or subcontractor, and the body awarding the contract shall cause to be inserted in the contract a stipulation that this section will be complied with.

(b) If a worker employed by a subcontractor on a public works project is not paid the general prevailing rate of per diem wages by the subcontractor, the prime contractor of the project is not liable for any penalties under subdivision (a) unless the prime contractor had knowledge of that failure of the subcontractor to pay the specified prevailing rate of wages to those workers or unless the prime contractor fails to comply with all of the following requirements:

(1) The contract executed between the contractor and the subcontractor for the performance of work on the public works project shall include a copy of the provisions of this section and Sections 1771, 1776, 1777.5, 1813, and 1815.

(2) The contractor shall monitor the payment of the specified general prevailing rate of per diem wages by the subcontractor to the employees, by periodic review of the certified payroll records of the subcontractor.

(3) Upon becoming aware of the failure of the subcontractor to pay his or her workers the specified prevailing rate of wages, the contractor shall diligently take corrective action to halt or rectify the failure, including, but not limited to, retaining sufficient funds due the subcontractor for work performed on the public works project.

(4) Prior to making final payment to the subcontractor for work performed on the public works project, the contractor shall obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages to his or her employees on the public works project and any amounts due pursuant to Section 1813.

(c) The Division of Labor Standards Enforcement shall notify the contractor on a public works project within 15 days of the receipt by the Division of Labor Standards Enforcement of a complaint of the failure of a subcontractor on that public works project to pay workers the general prevailing rate of per diem wages.

Section 1776. Payroll records; retention; inspection; redacted information; agencies entitled to receive nonredacted copies of certified records; noncompliance penalties; rules

(a) Each contractor and subcontractor shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct.

(2) The employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by his or her employees on the public works project.

(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the contractor on the following basis:

(1) A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

(2) A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract and the Division of Labor Standards Enforcement of the Department of Industrial Relations.

(3) A certified copy of all payroll records enumerated in subdivision (a) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the body awarding the contract or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the contractor, subcontractors, and the entity through which the request was made. The public may not be given access to the records at the principal office of the contractor.

(c) Unless required to be furnished directly to the Labor Commissioner in accordance with paragraph (3) of subdivision (a) of Section 1771.4, the certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the division. The payroll records may consist of printouts of payroll data that are maintained as computer records, if the printouts contain the same information as the forms provided by the division and the printouts are verified in the manner specified in subdivision (a).

(d) A contractor or subcontractor shall file a certified copy of the records enumerated in subdivision (a) with the entity that requested the records within 10 days after receipt of a written request.

(e) Except as provided in subdivision (f), any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address, and social security number. The name and address of the contractor awarded the contract or the subcontractor performing the contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a multiemployer Taft-Hartley trust fund (29 U.S.C. Sec. 186(c)(5)) that requests the records for the purposes of allocating contributions to participants shall be marked or obliterated only to prevent disclosure of an individual's full social security number, but shall provide the last four digits of the social security number. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (29 U.S.C. Sec. 175a) shall be marked or obliterated only to prevent disclosure of an individual's social security number.

(f)(1) Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided nonredacted copies of certified payroll records. Any copies of records or certified payroll made available for inspection and furnished upon request to the public by an agency included in the Joint Enforcement Strike Force on the Underground Economy or to a law enforcement agency investigating a violation of law shall be marked or redacted to prevent disclosure of an individual's name, address, and social security number.

(2) An employer shall not be liable for damages in a civil action for any reasonable act or omission taken in good faith in compliance with this subdivision.

(g) The contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (a), including the street address, city, and county, and shall, within five working days, provide a notice of a change of location and address.

(h) The contractor or subcontractor has 10 days in which to comply subsequent to receipt of a written notice requesting the records enumerated in subdivision (a). In the event that the contractor or subcontractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit one hundred dollars ($100) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due. A contractor is not subject to a penalty assessment pursuant to this section due to the failure of a subcontractor to comply with this section.

(i) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section.

(j) The director shall adopt rules consistent with the California Public Records Act (Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code) and the Information Practices Act of 1977 (Title 1.8 (commencing with Section 1798) of Part 4 of Division 3 of the Civil Code) governing the release of these records, including the establishment of reasonable fees to be charged for reproducing copies of records required by this section.

Section 1777.5. Employment of registered apprentices; wages; standards; number; apprenticeable craft or trade; exemptions; contributions; compliance program

(a)(1) This chapter does not prevent the employment upon public works of properly registered apprentices who are active participants in an approved apprenticeship program.

(2) For purposes of this chapter, "apprenticeship program" means a program under the jurisdiction of the California Apprenticeship Council established pursuant to Section 3070.

(b)(1) Every apprentice employed upon public works shall be paid the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered and shall be employed only at the work of the craft or trade to which he or she is registered.

(2) Unless otherwise provided by a collective bargaining agreement, when a contractor requests the dispatch of an apprentice pursuant to this section to perform work on a public works project and requires the apprentice to fill out an application or undergo testing, training, an examination, or other preemployment process as a condition of employment, the apprentice shall be paid for the time spent on the required preemployment activity, including travel time to and from the required activity, if any, at the prevailing rate of per diem wages for apprentices in the trade to which he or she is registered. Unless otherwise provided by a collective bargaining agreement, a contractor is not required to compensate an apprentice for the time spent on preemployment activities if the apprentice is required to take a preemployment drug or alcohol test and he or she fails to pass that test.

(c) Only apprentices, as defined in Section 3077, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written

apprentice agreements under Chapter 4 (commencing with Section 3070) of Division 3 are eligible to be employed at the apprentice wage rate on public works. The employment and training of each apprentice shall be in accordance with either of the following:

(1) The apprenticeship standards and apprentice agreements under which he or she is training.

(2) The rules and regulations of the California Apprenticeship Council.

(d) If the contractor to whom the contract is awarded by the state or any political subdivision, in performing any of the work under the contract, employs workers in any apprenticeable craft or trade, the contractor shall employ apprentices in at least the ratio set forth in this section and may apply to any apprenticeship program in the craft or trade that can provide apprentices to the site of the public work for a certificate approving the contractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the contractor, shall arrange for the dispatch of apprentices to the contractor. A contractor covered by an apprenticeship program's standards shall not be required to submit any additional application in order to include additional public works contracts under that program. "Apprenticeable craft or trade," as used in this section, means a craft or trade determined as an apprenticeable occupation in accordance with rules and regulations prescribed by the California Apprenticeship Council. As used in this section, "contractor" includes any subcontractor under a contractor who performs any public works not excluded by subdivision (o).

(e) Before commencing work on a contract for public works, every contractor shall submit contract award information to an applicable apprenticeship program that can supply apprentices to the site of the public work. The information submitted shall include an estimate of journeyman hours to be performed under the contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the awarding body, if requested by the awarding body. Within 60 days after concluding work on the contract, each contractor and subcontractor shall submit to the awarding body, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the contract. The information under this subdivision shall be public. The apprenticeship programs shall retain this information for 12 months.

(f) The apprenticeship program supplying apprentices to the area of the site of the public work shall ensure equal employment and affirmative action in apprenticeship for women and minorities.

(g) The ratio of work performed by apprentices to journeymen employed in a particular craft or trade on the public work may be no higher than the ratio stipulated in the apprenticeship standards under which the apprenticeship program operates if the contractor agrees to be bound by those standards. However, except as otherwise provided in this section, in no case shall the ratio be less than one hour of apprentice work for every five hours of journeyman work.

(h) This ratio of apprentice work to journeyman work shall apply during any day or portion of a day when any journeyman is employed at the jobsite and shall be computed on the basis of the hours worked during the day by journeymen so employed. Any work performed by a journeyman in excess of eight hours per day or 40 hours per week shall not be used to calculate the ratio. The contractor shall employ apprentices for the number of hours computed as above before the end of the contract or, in the case of a subcontractor, before the end of the subcontract. However, the contractor shall endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the jobsite. When an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Administrator

of Apprenticeship, upon application of an apprenticeship program, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification.

(i) A contractor covered by this section who has agreed to be covered by an apprenticeship program's standards upon the issuance of the approval certificate, or who has been previously approved for an apprenticeship program in the craft or trade, shall employ the number of apprentices or the ratio of apprentices to journeymen stipulated in the applicable apprenticeship standards, but in no event less than the 1-to-5 ratio required by subdivision (g).

(j) Upon proper showing by a contractor that he or she employs apprentices in a particular craft or trade in the state on all of his or her contracts on an annual average of not less than one hour of apprentice work for every five hours of labor performed by journeymen, the Administrator of Apprenticeship may grant a certificate exempting the contractor from the 1-to-5 hourly ratio, as set forth in this section for that craft or trade.

(k) An apprenticeship program has the discretion to grant to a participating contractor or contractor association a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting the contractor from the 1-to-5 ratio set forth in this section when it finds that any one of the following conditions is met:

(1) Unemployment for the previous three-month period in the area exceeds an average of 15 percent.

(2) The number of apprentices in training in the area exceeds a ratio of 1 to 5.

(3) There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either on a statewide basis or on a local basis.

(4) Assignment of an apprentice to any work performed under a public works contract would create a condition that would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large, or the specific task to which the apprentice is to be assigned is of a nature that training cannot be provided by a journeyman.

(l) If an exemption is granted pursuant to subdivision (k) to an organization that represents contractors in a specific trade from the 1-to-5 ratio on a local or statewide basis, the member contractors shall not be required to submit individual applications for approval to local joint apprenticeship committees, if they are already covered by the local apprenticeship standards.

(m)(1) A contractor to whom a contract is awarded, who, in performing any of the work under the contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the director determines is the prevailing amount of apprenticeship training contributions in the area of the public works site. A contractor may take as a credit for payments to the council any amounts paid by the contractor to an approved apprenticeship program that can supply apprentices to the site of the public works project. The contractor may add the amount of the contributions in computing his or her bid for the contract.

(2)(A) At the conclusion of the 2002-03 fiscal year and each fiscal year thereafter, the California Apprenticeship Council shall distribute training contributions received by the council under this subdivision, less the expenses of the Department of Industrial Relations for administering this subdivision, by making grants to approved apprenticeship programs for the purpose of training apprentices. The grant funds shall be distributed as follows:

(i) If there is an approved multiemployer apprenticeship program serving the same craft or trade and geographic area for which the training contributions were made to the council, a grant to that program shall be made.

(ii) If there are two or more approved multiemployer apprenticeship programs serving the same craft or trade and county for which the training contributions were made to the council, the grant shall be divided among those programs based on the number of apprentices from that county registered in each program.

(iii) All training contributions not distributed under clauses (i) and (ii) shall be used to defray the future expenses of the Department of Industrial Relations for the administration and enforcement of apprenticeship and preapprenticeship standards and requirements under this code.

(B) An apprenticeship program shall only be eligible to receive grant funds pursuant to this subdivision if the apprenticeship program agrees, prior to the receipt of any grant funds, to keep adequate records that document the expenditure of grant funds and to make all records available to the Department of Industrial Relations so that the Department of Industrial Relations is able to verify that grant funds were used solely for training apprentices. For purposes of this subparagraph, adequate records include, but are not limited to, invoices, receipts, and canceled checks that account for the expenditure of grant funds. This subparagraph shall not be deemed to require an apprenticeship program to provide the Department of Industrial Relations with more documentation than is necessary to verify the appropriate expenditure of grant funds made pursuant to this subdivision.

(C) The Department of Industrial Relations shall verify that grants made pursuant to this subdivision are used solely to fund training apprentices. If an apprenticeship program is unable to demonstrate how grant funds are expended or if an apprenticeship program is found to be using grant funds for purposes other than training apprentices, then the apprenticeship program shall not be eligible to receive any future grant pursuant to this subdivision and the Department of Industrial Relations may initiate the process to rescind the registration of the apprenticeship program.

(3) All training contributions received pursuant to this subdivision shall be deposited in the Apprenticeship Training Contribution Fund, which is hereby created in the State Treasury. Upon appropriation by the Legislature, all moneys in the Apprenticeship Training Contribution Fund shall be used for the purpose of carrying out this subdivision and to pay the expenses of the Department of Industrial Relations.

(n) The body awarding the contract shall cause to be inserted in the contract stipulations to effectuate this section. The stipulations shall fix the responsibility of compliance with this section for all apprenticeable occupations with the prime contractor.

(o) This section does not apply to contracts of general contractors or to contracts of specialty contractors not bidding for work through a general or prime contractor when the contracts of general contractors or those specialty contractors involve less than thirty thousand dollars ($30,000).

(p) An awarding body that implements an approved labor compliance program in accordance with subdivision (b) of Section 1771.5 may, with the approval of the director, assist in the enforcement of this section under the terms and conditions prescribed by the director.

Section 1813. Forfeiture for violations; contract stipulation; report of violations

The contractor or subcontractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty- five dollars ($25) for each worker employed in the execution of

the contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of this article. In awarding any contract for public work, the awarding body shall cause to be inserted in the contract a stipulation to this effect. The awarding body shall take cognizance of all violations of this article committed in the course of the execution of the contract, and shall report them to the Division of Labor Standards Enforcement.

Section 1815. Overtime

Notwithstanding the provisions of Sections 1810 to 1814, inclusive, of this code, and notwithstanding any stipulation inserted in any contract pursuant to the requirements of said sections, work performed by employees of contractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon public work upon compensation for all hours worked in excess of 8 hours per day at not less than 1 ½ times the basic rate of pay.

ATTACHMENT NO. 2

CALIFORNIA PUBLIC CONTRACT CODE SECTION 9204

Section 9204. Legislative findings and declarations regarding timely and complete payment of contractors for public works projects; claims process (Eff: January 1, 2017)

(a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3)(A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d)(1)(A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2)(A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party

shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on their own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2027, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2027, deletes or extends that date.

EXHIBIT “A”

COMPENSATION AND SCOPE OF SERVICES

[Beneath this sheet.]

INTERIOR RESOURCES INC.
dba COMMERCIAL INTERIOR RESOURCES
1761 Reynolds Avenue / Irvine, CA 92614
phone 949.752.1470 fax 949.752.6103

Attention: Kirk Wudzke
Salesperson: Sam Haase
Estimator:
Project Manager: Danielle Lisotto
Addendums Read:

Proposal

Install Date:

Plan Date: 5/15/1989
Bid Due Date: 11/21/2025
Date: 12/5/2025
Time: 4:33 PM
Revision #:
Bid #: 52469

Bill To	Project
City of Orange 637 W. Struck Ave. Orange, CA 92687	City of Orange Police Dept 1st Floor East Omnia Participation #1135634, Contract #2020002149 1107 N. Batavia Orange, CA 92867
Kirk Wudzke Phone: (714) 532-6480 Cell: (714) 313-8641	**Kirk Wudzke** Phone: (714) 532-6480 Cell: (714) 313-8641

SCOPE OF WORK:

Line	Description	UOM: Quantity:	Unit Price:	Extended:
1	**Removal of Carpet Tile & Broadloom -**			
	CIR	SY		
	Demo Labor	1,361.00	$5.450	$7,417.45
	N/A N/A			
2	**Removal of Resilient Flooring (VCT or LVT) -**			
	CIR	SF		
	Demo Labor	993.00	$2.000	$1,986.00
	N/A N/A			
3	**Palletize / Shrink Wrap Demo'd Carpet for Reclamation -**			
	CIR	SY		
	Labor	1,361.00	$2.150	$2,926.15
	N/A			
4	**Floor Prep at LVT - Includes two layers of skim coat to 1/8" thickness**			
	CIR	SF		
	Labor and Sundries	993.00	$2.840	$2,820.12
	As Required			
5	**Floor Prep at Carpet Tile - to hard-scrape / knock down high spots of adhesive residue to ensure an acceptable substrate for new carpet tile.**			
	CIR	SF		
	Labor and Sundries	12,241.00	$0.400	$4,896.40
	As Required			
6	**Furnish Broadloom Carpet - Includes waste, overage, receiving and handling. Custom product with 7-week lead time.**			
	Mohawk Industries	SY		
	Swipe Right Custom 6' Precoat Rolled Goods	135.00	$30.720	$4,147.20
	Brookwood 969			
7	**Furnish Broadloom Carpet Adhesive -**			
	Mohawk Industries	EA		
	Adhesive-Nu Broadlock Mulit-Purpose (4) gal	4.00	$52.770	$211.08
	N/A			
8	**Furnish Carpet Tile - Includes waste, attic stock, freight, receiving and handling.**			
	Mohawk Industries	SY		
	Swipe Right 24" EcoFlex One Carpet Tile	1,648.00	$30.720	$50,626.56
	Brookwood			

9 Furnish Carpet Tile Adhesive -

Mohawk Industries		EA		
EnPress PSA Carpet Tile Adhesive (4-Gallon Pail)		16.00	$148.200	$2,371.20
N/A				

10 Furnish LVT - Includes waste, attic stock, freight, receiving and handling.

Mohawk Industries		SF		
Hot and Heavy II Secoya 5mm x 9.84" x 59.06"		1,211.00	$4.960	$6,006.56
Rustic Oak	939			

11 Furnish LVT Adhesive -

Mohawk Industries		EA		
M95 Resilient Adhesive, 4-Gallon Pail		2.00	$159.420	$318.84
N/A				

12 (Open Market) Furnish 2.5" Wall Base and Adhesive -

Johnsonite®		LF		
Wall Base (DC)-Rubber Cove-2.5"X1/8" Chart 3 - Roll		240.00	$1.300	$312.00
Storm Cloud	71			

13 (Open Market) Furnish 4" Wall Base and Adhesive -

Johnsonite®		LF		
Wall Base (DC)-Rubber Cove-4"X1/8"		2,040.00	$1.520	$3,100.80
Storm Cloud	71			

14 (Open Market) Furnish 6" Wall Base and Adhesive -

Johnsonite®		LF		
Wall Base (DC)-Rubber Cove-6"X1/8" - Chart 2 - Roll		800.00	$2.850	$2,280.00
Storm Cloud	71			

15 (Open Market) Furnish Metal Transition and Adhesive - between Carpet and LVT

Kuberit		LF		
TBD		88.00	$7.050	$620.40
TBD				

16 Install Broadloom Carpet - over Locker Room benches.

CIR		SY		
Labor		135.00	$17.220	$2,324.70
TBD				

17 Install Carpet Tile - in a Quarter Turn Pattern

CIR		SY		
Labor		1,648.00	$11.850	$19,528.80
N/A				

18 Install LVT - in a Brick Ashlar Pattern

CIR		SF		
Labor		1,211.00	$4.170	$5,049.87
N/A				

19 (Open Market) Install 2.5" Wall Base - at window walls as specified on floor plan

CIR		LF		
Labor		240.00	$3.150	$756.00
As Required				

20 Install 4" Wall Base -

CIR		LF		
Labor		2,040.00	$3.550	$7,242.00
As Required				

21 Install 6" Wall Base - at Corridors and Sgt Office

CIR		LF		
Labor		800.00	$3.950	$3,160.00
As Described				

22 (Open Market) Install Metal Transition -

CIR		LF		
Labor		88.00	$5.850	$514.80
As Described				

23 Moisture Testing - to ASTM standards as required by manufacturer				
Accurate Concrete Moisture Testing	EA			
ASTM F2170 In-Situ RH Testing		16.00	$160.000	$2,560.00
As Required				
24 (Open Market) Floor Protection, Patch & Prime, Apply Decorative Coating -				
CIR	LS			
Miscellaneous		1.00	$48,723.200	$48,723.20
As required				
25 Bonding Rate - 2% -				
CIR	LS			
N/A		1.00	$3,650.000	$3,650.00
N/A				
			CA Crpt Stewardship Assessment	**$2,597.27**
			TOTAL (APPLICABLE TAX INCLUDED)	**$ 186,147.40**

This Proposal is not binding upon the parties until Customer executes and returns to Commercial Interior Resources (CIR) a copy hereof or until CIR delivers to the Project any of the materials herein described or commences the herein described services.

CIR shall furnish and install materials as specified herein. Pricing includes materials, freight, labor and sales tax. The materials shall be installed in one mobilization during regular working hours, unless otherwise expressly stated herein.

This Proposal excludes repair, excess floor preparation, floor leveling, vacuuming, damp mopping, buffing, waxing, sealing, asbestos abatement, protection of completed finishes, labor to remove and replace furnishings, attic stock materials and overtime labor, unless otherwise expressly stated herein. Customer will provide areas clean and clear of all debris.

This Proposal shall be modified only to the extent specifically provided for herein, when such modification is accepted in writing by CIR and in all other respects said Proposal and all the terms and conditions thereof shall remain in full force and effect.

This Proposal shall be construed and enforced in accordance with the laws of the State of California.

CIR shall not be liable for any delay in delivery of any part of the materials herein described due to accidents, strikes, fire, war, government regulations or any other conditions or causes beyond the control of CIR.

CIR makes no warranty for merchantability or of fitness of the materials for a specific purpose unless otherwise expressly stated herein.

This Proposal constitutes the entire agreement between the parties, and cannot be orally changed, modified or discharged in whole or in part. Any change, modification or discharge to be effective must be in writing and signed by the parties hereto.

Any increase in CIR's costs due to increase in cost of labor or raw materials or due to government legislation regulation, or order providing for a tax on any materials, goods, sales, use or process or providing for any regulation or control of CIR's purchases, materials, labor, costs, sales or business or due to any delay caused by any such governmental legislation, regulation, or order, may be added to the price specified herein as to any undelivered portion of the Proposal.

In the event either party shall commence litigation to enforce any term or condition of this Proposal, the prevailing party shall be entitled to reimbursement of the actual attorney's fees and costs incurred, in addition to any other damages determined by the court.

This Proposal is valid for thirty (30) days.

A Material DEPOSIT is required for ordered material. Full payment is due ten (10) days from receipt of invoice unless otherwise specified. In the event payment is not paid as required, the unpaid amount shall incur interest or at the rate of eighteen percent (18%) per annum or the maximum allowable by law, whichever is less.

This Proposal was prepared from plans and a site visit.

State Contractors License No. 511928
DIR Public Works Contractor's Registration No.1000007670

Commercial Interior Resources

Signed:

Sam Haase

Proposal Total: $186,147.40

City of Orange

Accepted By:

Anticipated Installation Start Date:

Agenda Item

Orange City Council

Item #: 3.9. 3/10/2026 **File #:** 26-0107

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Notice of Completion and Acceptance for Annual Pavement Maintenance at Various Locations, Fiscal Year 2024-2025; Bid No. 24-25.09 (SP-4291)

2. SUMMARY

The City of Orange entered into a contract with Onyx Paving Company to rehabilitate streets at various locations throughout the City. The work was completed to the satisfaction of the Public Works Department.

The project included the rehabilitation of three arterial streets and 35 residential streets throughout the City of Orange. The rehabilitation consisted of removing and reconstruction of severely damaged pavement sections, grinding, and overlaying the rest of the roadway. Other aspects of the project included replacement of damaged curb and gutter, sidewalks, and the reconstruction of Americans with Disabilities Act sidewalk access ramps.

3. RECOMMENDED ACTION

1. Accept the Annual Pavement Maintenance at Various Locations Fiscal Year 2024-25 project as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

4. ATTACHMENTS

- Notice of Completion and Acceptance

Agenda Item

Orange City Council

Item #: 3.9. 3/10/2026 **File #:** 26-0107

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

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3. RECOMMENDED ACTION

1. Accept the Annual Pavement Maintenance at Various Locations Fiscal Year 2024-25 project as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

4. ATTACHMENTS

- Notice of Completion and Acceptance

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Orange
300 East Chapman Avenue
Orange, California 92866
Attention: City Clerk

[Space above this line for Recorder's use only.]

THIS DOCUMENT IS RECORDED AT THE REQUEST AND FOR THE BENEFIT OF THE CITY OF ORANGE AND IS EXEMPT FROM THE PAYMENT OF A RECORDING FEE PURSUANT TO GOVERNMENT CODE SECTIONS 6103 AND 27383.

NOTICE OF COMPLETION AND ACCEPTANCE

NOTICE IS HEREBY GIVEN that work on that certain public work and improvements known as "Annual Pavement Maintenance at Various Locations (Bid No. 24-25.09; SP-4291)" (herein referred to as the "Project"), for the owner, the City of Orange, a municipal corporation (herein referred to as the "City"), whose address is 300 E. Chapman Avenue, Orange, CA 92866, was completed and accepted by the City Council of the City of Orange on March 10, 2026 at a regular meeting of its members, at which a quorum was present and acting throughout. The Project is at various locations throughout the City of Orange, State of California. The contractor who performed (or caused to be performed) said public work and improvements were Onyx Paving Company, a California corporation, with its principal office at 22707 La Palma Ave, Yorba Linda, State of California.

The name of the surety on the Labor and Material Bond for the Project is Swiss Re Corporate Solutions America Insurance Corporation & Sirius Point America Insurance Company, Missouri & New York (Bond No. 2360395 / SPA150329085) in the amount of $4,757,000.00.

DATED as of the 10th day of March 2026.

CITY OF ORANGE, a municipal corporation

By: _____
Daniel R. Slater, Mayor, City of Orange

STATE OF CALIFORNIA
COUNTY OF ORANGE

I, Daniel R. Slater, Mayor of the City of Orange, state that I have read the foregoing document know the contents thereof, and that the facts therein stated are true of my own knowledge. I hereby declare under penalty of perjury that the foregoing is true and correct.

DATED as of the 10th day of March 2026 at Orange, California.

_____
Daniel R. Slater, Mayor, City of Orange

I, Pamela Coleman, City Clerk for the City of Orange, hereby attest that Daniel R. Slater is known to me to be the Mayor of the City of Orange and known to me to be the person who executed the within instrument on behalf of said municipal corporation and acknowledged to me that the City of Orange executed the same.

_____
Pamela Coleman, City Clerk, City of Orange

Agenda Item

Orange City Council

Item #: 3.10. 3/10/2026 **File #:** 26-0109

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Notice of Completion and Acceptance for the Multi-Library Improvements at Main, Taft, and El Modena Library branches (SP-4318)

2. SUMMARY

This project delivered significant facility upgrades across three City of Orange library branches. At the Main Library, major repairs and replacements included the dumbwaiter, exterior tower, flooring, and automatic doors. The El Modena branch received a new roof underlayment, updated automatic doors, and a monument sign. At the Taft branch, improvements included window repairs, automatic doors, and a new lighting control panel. All work, completed by Horizons Construction Co. Intl, Inc., was completed to the satisfaction of the Public Works and Community Services and Library Departments.

3. RECOMMENDED ACTION

1. Accept the Multi-Library Improvements at Main, Taft, and El Modena Library branches as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

4. ATTACHMENTS

- Notice of Completion and Acceptance

Agenda Item

Orange City Council

Item #: 3.10. 3/10/2026 **File #:** 26-0109

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Notice of Completion and Acceptance for the Multi-Library Improvements at Main, Taft, and El Modena Library branches (SP-4318)

2. SUMMARY

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3. RECOMMENDED ACTION

1. Accept the Multi-Library Improvements at Main, Taft, and El Modena Library branches as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

4. ATTACHMENTS

- Notice of Completion and Acceptance

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Orange
300 East Chapman Avenue
Orange, California 92866
Attention: City Clerk

[Space above this line for Recorder's use only.]

THIS DOCUMENT IS RECORDED AT THE REQUEST AND FOR THE BENEFIT OF THE CITY OF ORANGE AND IS EXEMPT FROM THE PAYMENT OF A RECORDING FEE PURSUANT TO GOVERNMENT CODE SECTIONS 6103 AND 27383.

NOTICE OF COMPLETION AND ACCEPTANCE

NOTICE IS HEREBY GIVEN that work on certain public work and improvements known as "Multi-Library Improvements; Sourcewell EZIQC Contract No CA-R8-GB-101723-HRZ" (SP-4318) (herein referred to as the "Project"), for the owner, the City of Orange, a municipal corporation (herein referred to as the "City"), whose address is 300 E. Chapman Avenue, Orange, CA 92866, was completed and accepted by the City Council of the City of Orange on March, 10, 2026, at a regular meeting of its members, at which a quorum was present and acting throughout. The Project is at 300 E. Chapman Ave in the City of Orange, State of California. The contractor who performed (or caused to be performed) said public work and improvements was Horizons Construction Company International, Inc., a California corporation, with its principal office at 432 W. Meats Ave., Orange, CA 92865, State of California.

The surety on the Labor and Material Bond for the Project is Merchants Bonding Company (Bond No. 101383012) in the amount of $707,432.04.

DATED as of the 10th day of March 2026. CITY OF ORANGE, a municipal corporation

By:_____
Daniel R. Slater, Mayor, City of Orange

STATE OF CALIFORNIA
COUNTY OF ORANGE

I, Daniel R. Slater, Mayor of the City of Orange, state that I have read the foregoing document know the contents thereof, and that the facts therein stated are true of my own knowledge. I hereby declare under penalty of perjury that the foregoing is true and correct.

DATED as of the 10th day of March 2026 at Orange, California.

_____
Daniel R. Slater, Mayor, City of Orange

I, Pamela Coleman, City Clerk for the City of Orange, hereby attest that Daniel R. Slater is known to me to be the Mayor of the City of Orange and known to me to be the person who executed the within instrument on behalf of said municipal corporation and acknowledged to me that the City of Orange executed the same.

_____
Pamela Coleman, City Clerk, City of Orange

Agenda Item

Orange City Council

Item #: 3.11. 3/10/2026 **File #:** 26-0123

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Notice of Completion and Acceptance for Well No. 28 Equipping Project; Bid No. 22-23.33

2. SUMMARY

The City of Orange entered into a contract with Environmental Construction, Inc. for Well No. 28 Equipping Project. The scope of work consisted of completion of minor well rehabilitation, construction of electrical and chemical buildings, installation of new well pump, motor, electrical transformer, panels, sound enclosure, per- and polyfluoroalkyl treatment system, piping, and construction of a pocket public park with screen walls, metal trellis, monument sign, shade structure, landscaping and lighting. The project was completed in February 2026 to the satisfaction of the Public Works Department.

3. RECOMMENDED ACTION

1. Accept the Well No. 28 Equipping Project as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

4. ATTACHMENTS

- Notice of Completion and Acceptance

Agenda Item

Orange City Council

Item #: 3.11. 3/10/2026 **File #:** 26-0123

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Notice of Completion and Acceptance for Well No. 28 Equipping Project; Bid No. 22-23.33

2. SUMMARY

The City of Orange entered into a contract with Environmental Construction, Inc. for Well No. 28 Equipping Project. The scope of work consisted of completion of minor well rehabilitation, construction of electrical and chemical buildings, installation of new well pump, motor, electrical transformer, panels, sound enclosure, per- and polyfluoroalkyl treatment system, piping, and construction of a pocket public park with screen walls, metal trellis, monument sign, shade structure, landscaping and lighting. The project was completed in February 2026 to the satisfaction of the Public Works Department.

3. RECOMMENDED ACTION

1. Accept the Well No. 28 Equipping Project as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

4. ATTACHMENTS

- Notice of Completion and Acceptance

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Orange
300 East Chapman Avenue
Orange, California 92866
Attention: City Clerk

[*Space above this line for Recorder's use only.]*

THIS DOCUMENT IS RECORDED AT THE REQUEST AND FOR THE BENEFIT OF THE CITY OF ORANGE AND IS EXEMPT FROM THE PAYMENT OF A RECORDING FEE PURSUANT TO GOVERNMENT CODE SECTIONS 6103 AND 27383.

NOTICE OF COMPLETION AND ACCEPTANCE

NOTICE IS HEREBY GIVEN that work on that certain public work and improvements known as "Well No. 28 Equpping Project (Bid No. 22-23.33; W-698)" (herein referred to as the "Project"), for the owner, the City of Orange, a municipal corporation (herein referred to as the "City"), whose address is 300 E. Chapman Avenue, Orange, CA 92866, was completed and accepted by the City Council of the City of Orange on March 10, 2026 at a regular meeting of its members, at which a quorum was present and acting throughout. The Contractor who performed (or caused to be performed) said public work and improvements was Environmental Construction, Inc., a California corporation, with its principal office at 21550 Oxnard Street, Suite 1060, in the City of Woodland Hills, State of California.

The name of the surety on the Labor and Material Bond for the Project is Vigilant Insurance Company (Bond# K40260742) in the amount of $7,812,161.50.

DATED as of the 10th day of March 2026. CITY OF ORANGE, a municipal corporation

By:_____
Daniel R. Slater
Mayor of the City of Orange

STATE OF CALIFORNIA
COUNTY OF ORANGE

I, Daniel R. Slater, Mayor of the City of Orange, state that I have read the foregoing document, know the contents thereof, and that the facts therein stated are true of my own knowledge. I hereby declare under penalty of perjury that the foregoing is true and correct.

DATED as of the 10th day of March 2026 at Orange, California.

_____
Daniel R. Slater, Mayor of the City of Orange

I, Pamela Coleman, City Clerk for the City of Orange, hereby attest that Daniel R. Slater is known to me to be the Mayor of the City of Orange and known to me to be the person who executed the within instrument on behalf of said municipal corporation, and acknowledged to me that the City of Orange executed the same.

_____
Pamela Coleman, City Clerk of the City of Orange

Agenda Item

Orange City Council

Item #: 3.12. 3/10/2026 **File #:** 26-0124

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Notice of Completion and Acceptance for Purchase and Installation of Mixers for Reservoirs 2 and 10A

2. SUMMARY

The City of Orange entered into a contract with Doane and Hartwig Water Systems, Inc. to purchase and install new mixers for Reservoirs 2 and 10A. The scope of work consisted of furnishing and installing new mixers, control units, wires and conduits, and training. The project was completed in February 2026 to the satisfaction of the Public Works Department.

3. RECOMMENDED ACTION

1. Accept the Purchase and Installation of Mixers for Reservoirs 2 and 10A as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

4. ATTACHMENTS

- Notice of Completion and Acceptance

Agenda Item

Orange City Council

Item #: 3.12. 3/10/2026 **File #:** 26-0124

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Notice of Completion and Acceptance for Purchase and Installation of Mixers for Reservoirs 2 and 10A

2. SUMMARY

The City of Orange entered into a contract with Doane and Hartwig Water Systems, Inc. to purchase and install new mixers for Reservoirs 2 and 10A. The scope of work consisted of furnishing and installing new mixers, control units, wires and conduits, and training. The project was completed in February 2026 to the satisfaction of the Public Works Department.

3. RECOMMENDED ACTION

1. Accept the Purchase and Installation of Mixers for Reservoirs 2 and 10A as complete.
2. Authorize City Clerk to file Notice of Completion with the Orange County Clerk-Recorder's Office.

4. ATTACHMENTS

- Notice of Completion and Acceptance

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

City of Orange
300 East Chapman Avenue
Orange, California 92866
Attention: City Clerk

[*Space above this line for Recorder's use only.]*

THIS DOCUMENT IS RECORDED AT THE REQUEST AND FOR THE BENEFIT OF THE CITY OF ORANGE AND IS EXEMPT FROM THE PAYMENT OF A RECORDING FEE PURSUANT TO GOVERNMENT CODE SECTIONS 6103 AND 27383.

NOTICE OF COMPLETION AND ACCEPTANCE

NOTICE IS HEREBY GIVEN that work on that certain public work and improvements known as "Purchase and Installation of Mixers for Reservoirs 2 and 10A" (herein referred to as the "Project"), for the owner, the City of Orange, a municipal corporation (herein referred to as the "City"), whose address is 300 E. Chapman Avenue, Orange, CA 92866, was completed and accepted by the City Council of the City of Orange on March 10, 2026 at a regular meeting of its members, at which a quorum was present and acting throughout. The Contractor who performed (or caused to be performed) said public work and improvements was Doane and Hartwig Water Systers, Inc., a California corporation, with its principal office at 603 Seagaze Drive, #241, in the City of Oceanside, State of California.

The name of the surety on the Labor and Material Bond for the Project is Arch Insurance Company (Bond# 1208846) in the amount of $55,428.32.

DATED as of the 10th day of March 2026. CITY OF ORANGE, a municipal corporation

By:_____
Daniel R. Slater
Mayor of the City of Orange

STATE OF CALIFORNIA
COUNTY OF ORANGE

I, Daniel R. Slater, Mayor of the City of Orange, state that I have read the foregoing document, know the contents thereof, and that the facts therein stated are true of my own knowledge. I hereby declare under penalty of perjury that the foregoing is true and correct.

DATED as of the 10th day of March 2026 at Orange, California.

_____
Daniel R. Slater, Mayor of the City of Orange

I, Pamela Coleman, City Clerk for the City of Orange, hereby attest that Daniel R. Slater is known to me to be the Mayor of the City of Orange and known to me to be the person who executed the within instrument on behalf of said municipal corporation, and acknowledged to me that the City of Orange executed the same.

_____
Pamela Coleman, City Clerk of the City of Orange

Agenda Item

Orange City Council

Item #: 3.13. 3/10/2026 **File #:** 26-0100

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Authorize purchase of mobile vehicle barriers and deployment components, and annual certified operator training from Meridian Rapid Defense Group Sales, LLC through General Services Administration Contract No. 47QSWA19D001F

2. SUMMARY

Purchase 50 mobile vehicle barriers and deployment components to enhance public safety at special events and emergency response incidents. The equipment will allow rapid deployment of traffic control and protective perimeter security, offsetting the need for rentals by 50%.

3. RECOMMENDED ACTION

1. Approve the purchase of 50 mobile vehicle barriers and components from Meridian Rapid Defense Group Sales, LLC in the amount of $398,599.

2. Authorize the appropriation of $400,000 from Traffic Safety (450) unreserved fund balance to:

   450-5001-80101- Furniture, Fixture, Equipment

4. FISCAL IMPACT

The expense for this purchase is $398,599 and will be funded through Traffic Safety (450):
450-5001-80101 Furniture, Fixture, Equipment

Upon approval of this appropriation, the estimated Traffic Safety Fund (450) undesignated fund balance as of June 30, 2026, will be $583,701.

5. STRATEGIC PLAN GOALS

Goal 1: Maintain Strong Emergency and Safety Services
Objective1.8: Improve Emergency Response Infrastructure

6. DISCUSSION AND BACKGROUND

The City regularly hosts community events, parades, and civic gatherings that require temporary street closures and crowd protection. Most large gatherings take place in the Plaza, where pedestrian density is highest. Recent incidents involving vehicles entering pedestrian areas have increased the need for protective barriers that can be quickly deployed and removed while maintaining emergency

access.

Historically, the City has used traffic control devices, including cones, delineators, and temporary barricades. While effective for guiding traffic, these devices do not protect against vehicle intrusion. For major Plaza events, the City has rented Meridian barriers for several years due to their engineered effectiveness to stop vehicles, their certification for crowd protection from the Department of Homeland Security, and the ease by which these barriers are deployed.

The proposed purchase includes 50 barriers, four hauling units, 45 connecting cables, and annual certified operator training. These barriers will protect the public from vehicle intrusion during Plaza events. Due to the size of each event footprint, the City will continue to rent approximately 50 additional Meridian barriers for each major event. However, owning City-operated units will allow staff to deploy barriers internally for other events and incidents, as well as reduce the cost of holding events in the Plaza.

Funds are available from the Orange Police Department through fines and forfeitures collected and deposited into the Traffic Safety Fund. These funds are used exclusively for official equipment and supplies for traffic law enforcement and traffic accident prevention. The equipment will be purchased through the General Services Administration (GSA) cooperative purchasing program (Contract No. 47QSWA19D001F) <https://www.gsaadvantage.gov/ref_text/47QSWA19D001F/47QSWA19D001F_MERIDIANRAPIDDEFENSEGROUP47QSWA19D001F.pdf>. This contract meets competitive procurement requirements and enables the City to obtain nationally bid pricing, ensuring cost-effectiveness and expedited acquisition. The cost of this purchase is $398,599 and will be funded by the Traffic Safety Fund. Future training certification renewals will be requested through the annual operating budget. Owning a deployable barrier inventory will significantly reduce reliance on vendor services. Currently, the City rents barriers and pays contractors for installation and removal. With trained staff, the City will be able to deploy barriers in-house. The City currently spends about $75,000 annually to rent and deploy 96 vehicle mitigation barriers for Plaza events. Owning the equipment is expected to reduce these costs by approximately 50%, or $37,500 per year.

7. ATTACHMENTS

- None

Agenda Item

Orange City Council

Item #: 3.13. 3/10/2026 **File #:** 26-0100

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Authorize purchase of mobile vehicle barriers and deployment components, and annual certified operator training from Meridian Rapid Defense Group Sales, LLC through General Services Administration Contract No. 47QSWA19D001F

2. SUMMARY

Purchase 50 mobile vehicle barriers and deployment components to enhance public safety at special events and emergency response incidents. The equipment will allow rapid deployment of traffic control and protective perimeter security, offsetting the need for rentals by 50%.

3. RECOMMENDED ACTION

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5. STRATEGIC PLAN GOALS

Goal 1: Maintain Strong Emergency and Safety Services
Objective1.8: Improve Emergency Response Infrastructure

6. DISCUSSION AND BACKGROUND

The City regularly hosts community events, parades, and civic gatherings that require temporary street closures and crowd protection. Most large gatherings take place in the Plaza, where pedestrian density is highest. Recent incidents involving vehicles entering pedestrian areas have increased the need for protective barriers that can be quickly deployed and removed while maintaining emergency

access.

Historically, the City has used traffic control devices, including cones, delineators, and temporary barricades. While effective for guiding traffic, these devices do not protect against vehicle intrusion. For major Plaza events, the City has rented Meridian barriers for several years due to their engineered effectiveness to stop vehicles, their certification for crowd protection from the Department of Homeland Security, and the ease by which these barriers are deployed.

The proposed purchase includes 50 barriers, four hauling units, 45 connecting cables, and annual certified operator training. These barriers will protect the public from vehicle intrusion during Plaza events. Due to the size of each event footprint, the City will continue to rent approximately 50 additional Meridian barriers for each major event. However, owning City-operated units will allow staff to deploy barriers internally for other events and incidents, as well as reduce the cost of holding events in the Plaza.

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7. ATTACHMENTS

- None

Agenda Item

Orange City Council

Item #: 3.14. 3/10/2026 **File #:** 26-0120

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Adam Jevec, Chief of Police**

1. SUBJECT

Authorize purchase of four message trailers from Applied Concepts, Inc. through the Houston-Galveston Area Council HGACBuy Cooperative Purchasing Program, Contract No. EF04-21

2. SUMMARY

Purchase of four portable message trailers to significantly enhance the City's traffic safety operations in the amount of $77,580. The City Council has previously approved the Cooperative Purchasing Agreement as the standard for vehicle and equipment procurement.

3. RECOMMENDED ACTION

1. Approve the purchase of four message trailers from Applied Concepts, Inc. for $77,580.
2. Authorize the appropriation of $77,580 from Traffic Safety (450) undesignated fund balance to expenditure account number 450-4011-80101, Traffic Safety - Furniture, Fixture, Equipment.

4. FISCAL IMPACT

The expense for this purchase is $77,580 and will be funded through Traffic Safety Fund (450):

450-4011-80101 Traffic Safety - Furniture, Fixture, Equipment

Upon approval of this appropriation, the estimated Traffic Safety Fund (450) undesignated fund balance as of June 30, 2026, will be $982,300.

5. STRATEGIC PLAN GOALS

Goal 1: Maintain Strong Emergency and Safety Services

6. DISCUSSION AND BACKGROUND

Portable message trailers are mobile electronic signs used to communicate real-time information to motorists. These trailers are critical tools for traffic control, public safety messaging, work zone management, emergency response, and community notifications.

The Public Works Department currently relies on three functional message trailers, which are frequently deployed for construction projects, increased roadway activity, emergency roadway repairs, and infrastructure improvements. Increased public safety campaigns, school zone enforcement, and special events have created a greater demand for portable message boards, resulting in scheduling conflicts and reduced availability during peak periods.

Historically, the Fire and Police Departments have had to rely on renting message trailers for an

extended period of time to provide awareness leading up to special events. Purchasing the equipment converts recurring rental costs into long-term investments that will serve multiple events and emergency scenarios.

The proposed purchase includes four solar powered portable message trailers equipped with the following:

- High-visibility full matrix LED displays
- Radar speed feedback functionality
- Solar charging systems with battery backup
- Trailer-mounted mobility for rapid deployment

These units will enhance the city's ability to improve work zone safety for motorists and city staff, provide advance warning for road closures and detours, support speed awareness initiatives, deliver timely emergency alerts, and increase public awareness during community events.

The total cost for four message trailers is $77,580, including equipment delivery, and applicable taxes. Funding is available in the Traffic Safety Fund (450) which are restricted for use on traffic-related safety improvements and equipment, making this purchase an eligible and appropriate expenditure. Applied Concepts, Inc., doing business as Stalker Radar (Stalker), is located in Richardson, TX and currently maintains a Houston-Galveston Area Council (HGACBuy) Cooperative Purchasing Program, Contract No. EF04-21. This purchase meets competitive procurement requirements and enables the City to obtain nationally bid pricing, ensuring cost-effectiveness and expedited acquisition.

The Police Department recommends the purchase of four message trailers from Stalker in the amount of $77,580.

7. ATTACHMENTS

- HGACBuy Contract No. EF04-21
- Stalker Quote

Agenda Item

Orange City Council

Item #: 3.14. 3/10/2026 **File #:** 26-0120

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Adam Jevec, Chief of Police**

1. SUBJECT

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2. SUMMARY

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5. STRATEGIC PLAN GOALS

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6. DISCUSSION AND BACKGROUND

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extended period of time to provide awareness leading up to special events. Purchasing the equipment converts recurring rental costs into long-term investments that will serve multiple events and emergency scenarios.

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The Police Department recommends the purchase of four message trailers from Stalker in the amount of $77,580.

7. ATTACHMENTS

- HGACBuy Contract No. EF04-21
- Stalker Quote

HGACBuy	CONTRACT PRICING WORKSHEET For Catalog & Price Sheet Type Purchases	Contract No.:	EF04-21	Date Prepared:	2/5/2026

This Worksheet is prepared by Contractor and given to End User. If a PO is issued, both documents MUST be faxed to H-GAC @ 713-993-4548. Therefore please type or print legibly.

Buying Agency:	City of Orange	Contractor:	Applied Concepts / Stalker Radar
Contact Person:	Sergeant Jordan Uemura	Prepared By:	Pam Schneidewind
Phone:	714-744-7351	Phone:	972-802-4890
Fax:		Fax:	
Email:	juemura@orangepd.org	Email:	pams@stalkerradar.com

Catalog / Price Sheet Name:	HGAC EF04-21
General Description of Product:	MC360 Message Trailer

A. Catalog / Price Sheet Items being purchased - Itemize Below - Attach Additional Sheet If Necessary

Quan	Description	Unit Pr	Total
4	821-1101-00	18,000.00	72000
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
		Total From Other Sheets, If Any:	
		Subtotal A:	72000

HGACBuy THE SMART PURCHASING SOLUTION

B. Unpublished Options, Accessory or Service items - Itemize Below - Attach Additional Sheet If Necessary
(Note: Unpublished Items are any which were not submitted and priced in contractor's bid.)

Quan	Description	Unit Pr	Total
			0
			0
			0
			0
		Total From Other Sheets, If Any:	
		Subtotal B:	0

Check: Total cost of Unpublished Options (B) cannot exceed 25% of the total of the Base Unit Price plus Published Options (A+B).	For this transaction the percentage is:	0%

C. Trade-Ins / Special Discounts / Other Allowances / Freight / Installation / Miscellaneous Charges

Freight	0
Discount	
Sales Tax	5580
Subtotal C:	5580

Delivery Date:	10 Weeks ARO	D. Total Purchase Price (A+B+C):	77580

STALKERradar
applied concepts, inc.

Quote
2116481

855 E. Collins Blvd.
Richardson, TX75081
Phone: 972-398-3780
Fax: 972-398-3781

National Toll Free: 1-800- STALKER

Date: 01/23/2026

Inside Sales Partner: Pam Schneidewind
+1-972-801-4890
pams@stalkerradar.com

Reg Sales Mgr: Brian Wong
+1-310-429-0519
brianw@a-concepts.com

Effective From: 12/30/2025 **Valid Through:** 02/27/2026 **Lead Time:** 60 working days

Bill To:	**Customer ID: 038999**	**Ship To:**	*Deliver*
City of Orange Police Dept 1107 N Batavia St Orange, CA 92867-4615	Accounts Payable	Orange Police Dept 1107 N Batavia St Orange, CA 92867-4615	Sergeant Jordan Uemara

Grp	Qty	Package	Description	Wrnty/Mo	Price	Ext Price
1	4	821-1101-00	Stalker MC360 Message Trailer (3'x6') w/Strobes	60	$18,000.00	$72,000.00

Ln	Qty	Part Number	Description	Price	Ext Price
1	4	015-2684-59	[268459] MC360 Message Trailer (3'x6') w/Solar		$0.00
2	4	200-1661-00*	MC-360 TRAILER SENSOR KIT, USB-C (SAF)		$0.00
3	4	200-0773-00	40 MPH K-Band Tuning Fork		$0.00
4	4	006-0569-00	Certificate of Accuracy, Speed Sensor II		$0.00
5	4	015-4120-94	Red/Blue Strobes-2 Strobe Assys, 6 LEDs ea-MC360		$0.00
6	4	015-1819-00	[275569] SAM 3/SAM/VMS Trailer Wheel Jack		$0.00
7	4	015-5603-00	[275565] Trailer Wheel Lock		$0.00
8	4	200-1670-00	{415864} INSTALL MEDIA, STREET DYNAMICS DEVICE MANAGER W/EASY ANALYST		$0.00
9	4	200-1448-08	KIT, MC360 TRAILER OPERATOR MANUAL KIT WITH USB-C		$0.00
10	4	063-0024-60	Message Center Trailer 5-Year Warranty		$0.00
				Group Total	$72,000.00

Product	$72,000.00	Sub-Total:	$72,000.00
Discount	$0.00	Sales Tax 7.75%	$5,580.00
		Shipping & Handling:	$0.00
Payment Terms: Net 30 days		**Total: USD**	**$77,580.00**

This Quote or Purchase Order is subject in all respects to the Terms and Conditions detailed at the back of this document. These Terms and Conditions contain limitations of liability, waivers of liability even for our own negligence, and indemnification provisions, all of which may affect your rights. Please review these terms and Conditions carefully before proceeding.

Agenda Item

Orange City Council

Item #: 3.15. 3/10/2026 **File #:** 26-0062

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT
Quitclaim of fire access easement at 500 West Collins Avenue

2. SUMMARY
Quitclaim of fire access easement at 500 West Collins Avenue. The proposed project has been canceled, and the easement is no longer required as the existing building will remain.

3. RECOMMENDED ACTION
Authorize the Mayor to execute a Quitclaim Deed of the fire access easement to 500 Collins, Inc.

4. FISCAL IMPACT
None

5. STRGATEGIC PLAN GOALS
Goal 5: Improve infrastructure, Mobility, and Technology.

6. DISCUSSION AND BACKGROUND
The property owner at 500 West Collins Avenue has canceled the project and requested the recorded fire access easement to be quitclaimed.

Staff recommends approval of the Quitclaim Deed of the fire access easement to 500 Collins, Inc. at 500 West Collins Avenue.

7. ATTACHMENTS
- Quitclaim Deed

Agenda Item

Orange City Council

Item #: 3.15. 3/10/2026 **File #:** 26-0062

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT
Quitclaim of Fire Access Easement at 500 West Collins Avenue

2. SUMMARY
Quitclaim of fire access easement at 500 West Collins Avenue. The proposed project has been canceled, and the easement is no longer required as the existing building will remain.

3. RECOMMENDED ACTION
Authorize the Mayor to execute a Quitclaim Deed of the fire access easement to 500 Collins, Inc.

4. FISCAL IMPACT
None

5. STRGATEGIC PLAN GOALS
Goal 5: Improve infrastructure, Mobility, and Technology.

6. DISCUSSION AND BACKGROUND
The property owner at 500 West Collins Avenue has canceled the project and requested the recorded fire access easement to be quitclaimed.

Staff recommends approval of the Quitclaim Deed of the fire access easement to 500 Collins, Inc. at 500 West Collins Avenue.

7. ATTACHMENTS
- Quitclaim Deed

RECORDING REQUESTED BY AND
WHEN RECORDED, MAIL TO:

CITY OF ORANGE
c/o City Clerk
300 East Chapman Avenue
Orange, California 92666

MAIL TAX STATEMENTS TO:
SAME AS ABOVE

SPACE ABOVE THIS LINE FOR RECORDER'S USE
DOCUMENTARY TRANSFER TAX $ EXEMPT-
REVENUE AND TAXATION CODE SECTION 11922

LOCATION:
500 W Collins Avenue, Orange, CA 92867
A.P.N. 386-581-18; 386-561-02

_____
Signature of Declarant or Agent
Determining Tax

City of Orange
Firm Name

Exempt - Recording Requested Under Government Code 6103 & 27383

QUITCLAIM DEED

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, the City of Orange, a municipal corporation, does hereby REMISE, RELEASE, AND FOREVER QUITCLAIM to 500 Collins, Inc, a perpetual non-exclusive easement and right of way for Fire Access purposes in, on, under, across, and through all that real property situated in the City of Orange, County of Orange, State of California, described as follows:

SEE LEGAL DESCRIPTION ATTACHED HERETO AND MADE A PART HEREOF AS EXHIBIT "A",

SEE PLAT MAP ATTACHED HERETO AND MADE A PART HEREOF AS EXHIBIT "B".

DATED_____
STATE OF CALIFORNIA }
COUNTY OF ORANGE }

CITY OF ORANGE,
a Municipal Corporation

BY:

_____
Daniel R. Slater, Mayor

ATTEST:

_____
Pamela Coleman, City Clerk

APPROVED AS TO FORM:

_____
Nathalie Adourian, City Attorney

R/W Deed # _____

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
)
COUNTY OF ORANGE)

On _____, before me, _____, a Notary Public, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____

Notary Public (SEAL)

RECORDING REQUESTED BY AND
WHEN RECORDED, MAIL TO:

CITY OF ORANGE
c/o City Clerk
300 East Chapman Avenue
Orange, California 92666

#34 GE 0259

Recorded in Official Records, Orange County
Hugh Nguyen, Clerk-Recorder
NO FEE
* $ R 0 0 1 5 0 8 5 6 9 5 $ *
202400201689 3:35 pm 08/06/24
440 CR-SC05 E01 6
0.00 0.00 0.00 0.00 15.00 0.00 0.000.000.00 0.00

MAIL TAX STATEMENTS TO: SAME AS ABOVE

SPACE ABOVE THIS LINE FOR RECORDER'S USE
DOCUMENTARY TRANSFER TAX $ EXEMPT-
REVENUE AND TAXATION CODE SECTION 11922

Signature of Declarant or Agent Determining Tax

City of Orange
Firm Name

LOCATION:
500 W Collins Avenue, Orange, CA 92867
A.P.N. 386-581-18; 386-561-02

Exempt - Recording Requested Under Government Code 6103 & 27383

EASEMENT DEED

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, Pisces 500 W Collins Ave LLC, a Delaware limited liability company, hereby grant(s) and convey(s) to the CITY OF ORANGE, a Municipal Corporation, a perpetual non-exclusive easement and right of way for Fire Access purposes in, on, under, across, and through all that real property situated in the City of Orange, County of Orange, State of California, described as follows:

SEE LEGAL DESCRIPTION ATTACHED HERETO AND MADE A PART HEREOF AS EXHIBIT "A",

SEE PLAT MAP ATTACHED HERETO AND MADE A PART HEREOF AS EXHIBIT "B".

DATED 8/1/2024

PISCES 500 W COLLINS AVE LLC,
a Delaware limited liability company

By: _____
Name: Gautam Huded
Title: Senior Vice President

STATE OF GEORGIA }
COUNTY OF FULTON }

On the 1st day of August, 2024, before me, personally appeared Gautam Huded, the Senior Vice President of PISCES 500 W COLLINS AVE LLC, a Delaware limited liability company, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he/she has executed the same in his/her capacity and that by his/her signature on the instrument, the individual, or person on behalf of which the individual acted, executed the instrument.

Notary and Notary Seal

VANESSA ANGULO
Notary Public, Georgia
Dekalb County
My Commission Expires
February 13, 2027

R/W Deed # _____

EXHIBIT "A"
LEGAL DESCRIPTION
EMERGENCY VEHICLE ACCESS EASEMENT

ALL THAT CERTAIN REALL PROPERTY SITUATE IN THE CITY OF ORANGE, COUNTY OF ORANGE, STATE OF CALIFORNIA BEING A PORTION OF PARCELS 1 AND 2 OF THE PARCEL MAP 2007-130 RECORDED IN BOOK 363, PAGES 6 AND 7, RECORDS OF ORANGE COUNTY, CALIFORNIA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID PARCEL 1, SAID POINT BEING ON THE SOUTHERLY RIGHT OF WAY OF COLLINS AVENUE (80.00 FEET WIDE);

THENCE ALONG THE NORTH LINE OF SAID PARCEL 1, SOUTH 88° 55' 27" EAST, 30.00 FEET TO THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG SAID NORTH LINE, SOUTH 88° 55' 27" EAST, 26.00 FEET;

THENCE LEAVING SAID LINE, SOUTH 00° 52' 10" WEST, 18.80 FEET;

THENCE ALONG THE ARC OF A 20.00 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 90° 00' 00", AN ARC DISTANCE OF 31.42 FEET TO **POINT "A"**;

THENCE SOUTH 89° 07' 50" EAST, 168.81 FEET;

THENCE ALONG THE ARC OF A 20.00 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 89° 47' 37", AN ARC DISTANCE OF 31.34 FEET;

THENCE NORTH 01° 04' 33" EAST, 18.12 FEET TO SAID NORTH LINE OF PARCEL 1;

THENCE ALONG THE NORTH LINE OF SAID PARCEL 1, SOUTH 88° 55' 27" EAST, 26.00 FEET;

THENCE LEAVING SAID LINE, SOUTH 01° 04' 33" WEST, 16.04 FEET;

THENCE ALONG THE ARC OF A 20.00 FOOT CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 42° 45' 36", AN ARC DISTANCE OF 14.93 FEET;

THENCE SOUTH 41° 41' 03" EAST, 38.70 FEET;

THENCE ALONG THE ARC OF A 56.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 42° 33' 13", AN ARC DISTANCE OF 41.59 FEET;

THENCE SOUTH 00° 52' 10" WEST, 608.94 FEET;

THENCE ALONG THE ARC OF A 36.00 FOOT CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 90° 00' 00", AN ARC DISTANCE OF 56.55 FEET;

THENCE NORTH 89° 07' 50" WEST, 225.00 FEET;

THENCE ALONG THE ARC OF A 20.00 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 90° 00' 00", AN ARC DISTANCE OF 31.42 FEET;

THENCE SOUTH 00° 52' 10" WEST, 8.67 FEET TO THE SOUTH LINE OF SAID PARCEL 2;

THENCE ALONG THE SOUTH LINE OF SAID PARCEL 2, NORTH 88° 55' 14" WEST, 26.00 FEET;

THENCE LEAVING SAID LINE NORTH 00° 52' 10" EAST, 770.47 FEET TO THE **POINT OF BEGINNING.**

EXCEPTING THEREFROM THAT PORTION LYING WITHIN THE FOLLOWING DESCRIBED LINE;

COMMENCING AT THE AFOREMENTIONED **POINT "A"**;

THENCE SOUTH 00° 52' 10" WEST, 26.00 FEET TO THE **POINT OF BEGINNING;**

THENCE SOUTH 89° 07' 50" EAST, 207.50 FEET;

THENCE ALONG THE ARC OF A 20.00 FOOT CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 47° 26' 47", AN ARC DISTANCE OF 16.56 FEET;

THENCE SOUTH 41° 41' 03" EAST, 7.20 FEET;

THENCE ALONG THE ARC OF A 30.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 42° 33' 13", AN ARC DISTANCE OF 22.28 FEET;

THENCE SOUTH 00° 52' 10" WEST, 598.94 FEET;

THENCE ALONG THE ARC OF A 20.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 90° 00' 00", AN ARC DISTANCE OF 31.42 FEET;

THENCE NORTH 89° 07' 50" WEST, 215.00 FEET;

THENCE ALONG THE ARC OF A 20.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 90° 00' 00", AN ARC DISTANCE OF 31.42 FEET;

THENCE NORTH 00° 52' 10" EAST, 611.00 FEET;

THENCE ALONG THE ARC OF A 20.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 90° 00' 00", AN ARC DISTANCE OF 31.42 FEET TO THE **POINT OF BEGINNING.**

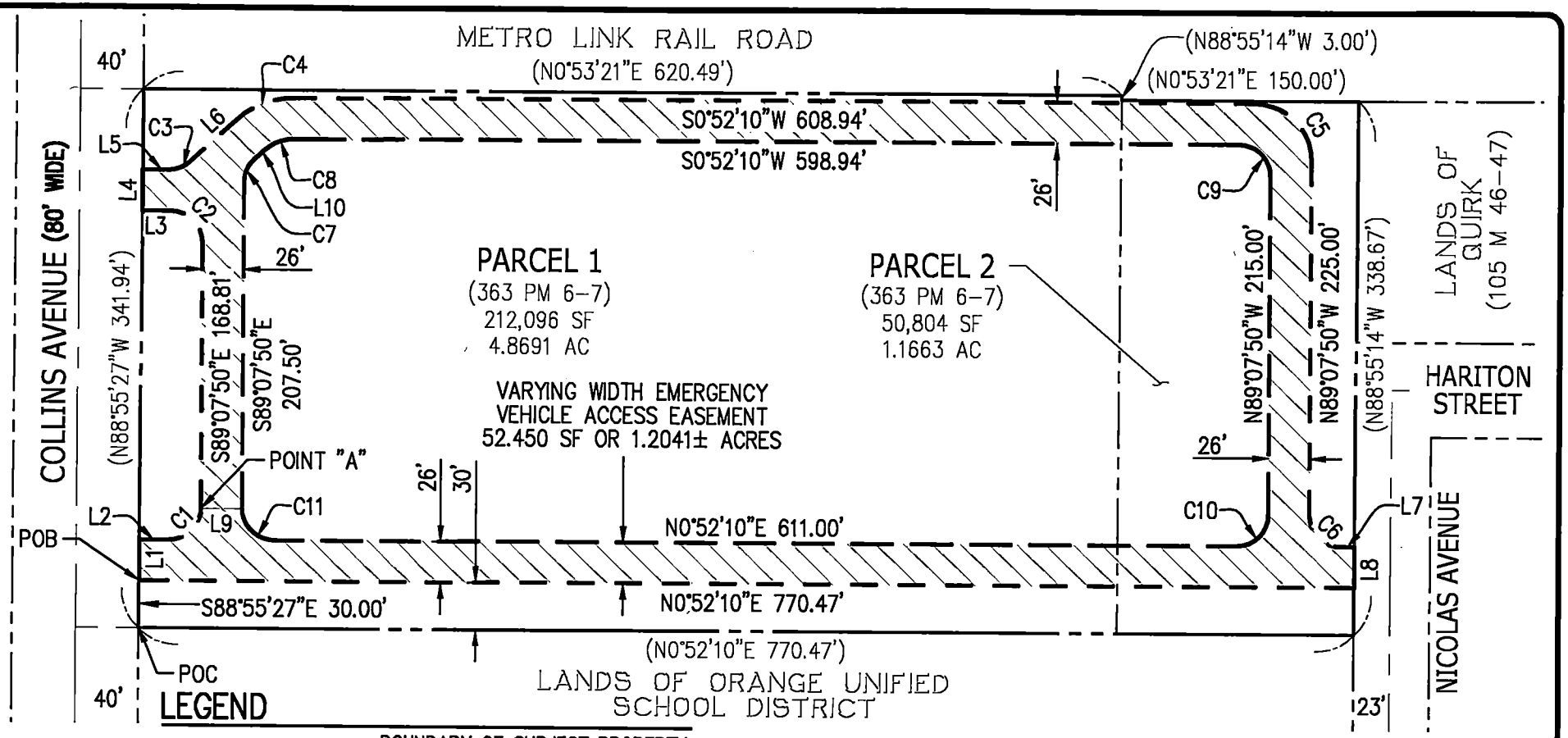
CONTAINING 52,450 SQUARE FEET, OR 1.2041 ACRES, MORE OR LESS.

KIER & WRIGHT CIVIL ENGINEERS & SURVEYORS, INC.

RODNEY A. STEWART II, P.L.S. 9225



07/30/24
DATED



LEGEND

———	BOUNDARY OF SUBJECT PROPERTY
———	CENTER LINES
———	EASEMENT LINES
———	LOT LINES
M	MAP
OR	OFFICIAL RECORDS
PM	PARCEL MAP
POB	POINT OF BEGINNING
POC	POINT OF COMMENCEMENT
( )	363 PM 6-7

LICENSED LAND SURVEYOR
RODNEY A. STEWART II
No. 9225
STATE OF CALIFORNIA

07/30/24

NORTH

0 50' 100' 200'

Scale 1" = 100 ft

KIER+WRIGHT
10395 Old Placerville Rd., Ste. 100
Sacramento, CA 95827
Phone: (916) 538-1905
www.kierwright.com

EXHIBIT "B"
EMERGENCY VEHICLE ACCESS EASEMENT

CITY OF ORANGE ORANGE COUNTY CALIFORNIA

DATE	JULY, 2024
SCALE	1" = 100'
BY	SFS
JOB NO.	A22199
SHEET	1 OF 2

Z:\2022\A22199\DWG\SURVEY\PLAT\A22199-PD.dwg 7-24-24 12:05:41 PM sspiro

LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	S88°55'27"E	26.00'
L2	S0°52'10"W	18.80'
L3	N1°04'33"E	18.12'
L4	S88°55'27"E	26.00'
L5	S1°04'33"W	16.04'
L6	S41°41'03"E	38.70'
L7	S0°52'10"W	8.67'
L8	N88°55'14"W	26.00'
L9	S0°52'10"W	26.00'
L10	S41°41'03"E	7.20'

CURVE TABLE			
CURVE #	RADIUS	DELTA	LENGTH
C1	20.00'	90°00'00"	31.42'
C2	20.00'	89°47'37"	31.34'
C3	20.00'	42°45'36"	14.93'
C4	56.00'	42°33'13"	41.59'
C5	36.00'	90°00'00"	56.55'
C6	20.00'	90°00'00"	31.42'
C7	20.00'	47°26'47"	16.56'
C8	30.00'	42°33'13"	22.28'
C9	20.00'	90°00'00"	31.42'
C10	20.00'	90°00'00"	31.42'
C11	20.00'	90°00'00"	31.42'

KIER+WRIGHT
10395 Old Placerville Rd., Ste. 100
Sacramento, CA 95827
Phone: (916) 538-1905
www.kierwright.com

EXHIBIT "B"
EMERGENCY VEHICLE ACCESS EASEMENT

CITY OF ORANGE ORANGE COUNTY CALIFORNIA

DATE	JULY, 2024
SCALE	1" = 100'
BY	SFS
JOB NO.	A22199
SHEET	2 OF 2

Z:\2022\A22199\DWG\SURVEY\PLAT\A22199-PD.dwg 7-24-24 12:06:24 PM sspiro

CERTIFICATE OF ACCEPTANCE

This is to certify that the interest in real property conveyed by deed or grant dated August 1, 2024 from Pisces 500 W Collins Ave, LLC, a Delaware limited liability company, to the City of Orange, a municipal corporation, is hereby accepted by the Director of Public Works of the City of Orange on behalf of the City Council of the City of Orange pursuant to authority conferred by Resolution No. 8388 of the City Council of the City of Orange adopted on the 11th day of October 1994, and the grantee consents to recordation thereof by its duly authorized officer, namely the Director of Public Works of the City of Orange.

Dated: Aug 6, 2024

Director of Public Works
City of Orange

Agenda Item

Orange City Council

Item #: 3.16. 3/10/2026 **File #:** 26-0098

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT
Designation of April 25, 2026, as Arbor Day in the City of Orange

2. SUMMARY
Adoption of Resolution No. 11659 will designate April 25, 2026, as a day to commemorate Arbor Day in the City of Orange.

3. RECOMMENDED ACTION
Adopt Resolution No. 11659. A Resolution of the City Council of the City of Orange designating April 25, 2026, as Arbor Day.

4. FISCAL IMPACT
None.

5. STRATEGIC PLAN GOALS
Goal 3: Enhance Public Communication Strategy and Quality of Life.
Goal 5: Improve Infrastructure, Mobility, and Technology.

6. DISCUSSION AND BACKGROUND
The City of Orange has celebrated Arbor Day for more than 30 years and has been recognized as a Tree City USA by the Arbor Day Foundation for 37 consecutive years. To maintain this designation, the city must observe Arbor Day annually.

Arbor Day provides an opportunity for community-wide appreciation of trees. City-sponsored Arbor Day events engage the community in learning and neighborhood beautification through tree planting. These events foster a connection with nature and encourage a lasting sense of responsibility for the City's green infrastructure. Direct participation in Arbor Day strengthens community ties and instills a sense of ownership and care for trees, which may be especially important for younger volunteers who may not yet have developed an appreciation for trees.

The upcoming Arbor Day observance and community planting event will take place on Saturday, April 25, 2026. Volunteers will plant seven 15-gallon Brisbane box trees and seven 15-gallon Quercus Tomentella trees in the right-of-way at 1300 E Almond, on the east side of Palmyra Elementary School. Staff coordinated with and invited Palmyra Elementary School to participate in the event.

West Coast Arborists donated the trees for this event. Participation in Arbor Day is essential for the city's annual certification as a Tree City USA.

7. ATTACHMENTS

- Resolution No. 11659
- Arbor Day Planting Map

Agenda Item

Orange City Council

Item #: 3.16. 3/10/2026 **File #:** 26-0098

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT
Designation of April 25, 2026, as Arbor Day in the City of Orange

2. SUMMARY
Adoption of Resolution No. 11659 will designate April 25, 2026, as a day to commemorate Arbor Day in the City of Orange.

3. RECOMMENDED ACTION
Adopt Resolution No. 11659. A Resolution of the City Council of the City of Orange designating April 25, 2026, as Arbor Day.

4. FISCAL IMPACT
None.

5. STRATEGIC PLAN GOALS
Goal 3: Enhance Public Communication Strategy and Quality of Life.
Goal 5: Improve Infrastructure, Mobility, and Technology.

6. DISCUSSION AND BACKGROUND
The City of Orange has celebrated Arbor Day for more than 30 years and has been recognized as a Tree City USA by the Arbor Day Foundation for 37 consecutive years. To maintain this designation, the city must observe Arbor Day annually.

Arbor Day provides an opportunity for community-wide appreciation of trees. City-sponsored Arbor Day events engage the community in learning and neighborhood beautification through tree planting. These events foster a connection with nature and encourage a lasting sense of responsibility for the City's green infrastructure. Direct participation in Arbor Day strengthens community ties and instills a sense of ownership and care for trees, which may be especially important for younger volunteers who may not yet have developed an appreciation for trees.

The upcoming Arbor Day observance and community planting event will take place on Saturday, April 25, 2026. Volunteers will plant seven 15-gallon Brisbane box trees and seven 15-gallon Quercus Tomentella trees in the right-of-way at 1300 E Almond, on the east side of Palmyra Elementary School. Staff coordinated with and invited Palmyra Elementary School to participate in the event.

West Coast Arborists donated the trees for this event. Participation in Arbor Day is essential for the city's annual certification as a Tree City USA.

7. ATTACHMENTS

- Resolution No. 11659
- Arbor Day Planting Map

RESOLUTION NO. 11659

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ORANGE DESIGNATING APRIL 25, 2026 AS ARBOR DAY

WHEREAS, in 1872, J. Sterling Morton proposed to the Nebraska Board of Agriculture that a special day be set aside for the planting of trees; and this special day, called" Arbor Day" was first observed with the planting of more than one million trees in Nebraska. This day is now observed throughout the nation and the world; and

WHEREAS, participating in Arbor Day events promotes the development of civic pride, a sense of community, highlights the importance of planting and caring for trees; and

WHEREAS, trees are living green infrastructure, which produce oxygen, clean the air of pollutants, sequester carbon, help manage storm water; provide essential habitat for wildlife; and

WHEREAS, trees in our City increase property values, and enhance economic vitality of business areas.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Orange as follows:

1. That the foregoing recitals are incorporated in and made part of this resolution by reference;

2. That the City Council does hereby designate Saturday, April 25, 2026, as Arbor Day within the City of Orange.

ADOPTED this ____ day of _____, 2026

_____
Daniel R. Slater, Mayor, City of Orange

ATTEST:

_____
Pamela Coleman, City Clerk, City of Orange

APPROVED AS TO FORM:

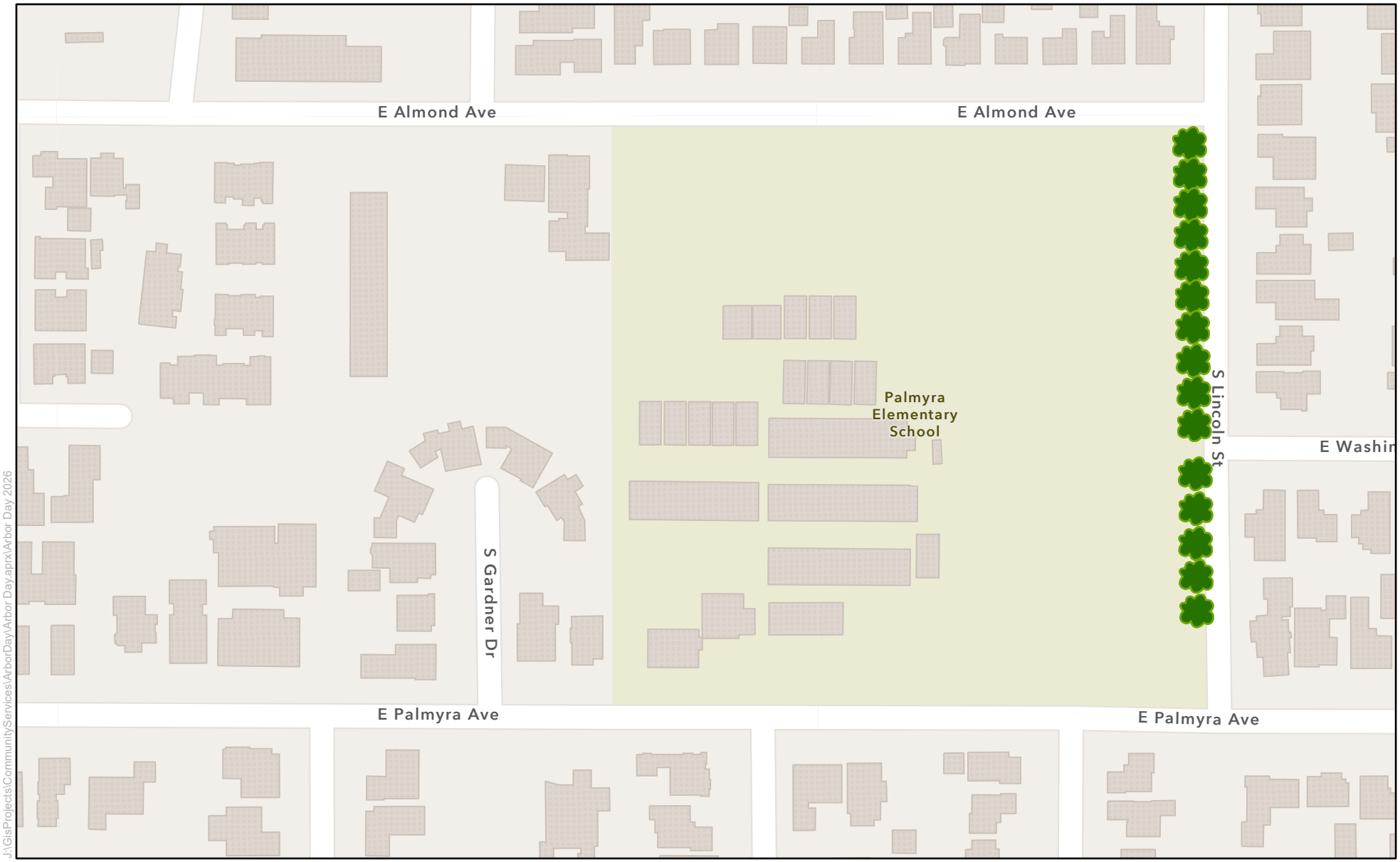
_____
Nathalie Adourian, City Attorney, City of Orange

STATE OF CALIFORNIA)
COUNTY OF ORANGE)
CITY OF ORANGE)

I, PAMELA COLEMAN, City Clerk of the City of Orange, California, do hereby certify that the foregoing Resolution was duly and regularly adopted by the City Council of the City of Orange at a regular meeting thereof held on the _____ day of _____, 2026 by the following vote:

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:

_____
Pamela Coleman, City Clerk, City of Orange



J:\GisProjects\CommunityServices\ArborDay\Arbor Day.aprx\Arbor Day 2026

City of Orange
Geographic Information System

Legend

Proposed Tree Locations

N
W E
S

0 75 150
Feet

2/11/2026

Source: City of Orange (2025)

CITY OF ORANGE

ARBOR DAY 2026

Agenda Item

Orange City Council

Item #: 7.1. 3/10/2026 **File #:** 26-0134

1. SUBJECT

Appointment to the City Traffic Commission

2. SUMMARY

Due to the resignation of Seimone Jurjis, an unscheduled vacancy exists on the City Traffic Commission. A Notice of Vacancy was posted on February 10, 2026, in accordance with Government Code Section 54974.

3. RECOMMENDED ACTION

Confirm Mayor Slater's recommendation to appoint Steven Freeman to the City Traffic Commission to fill an unexpired term ending June 30, 2027.

Agenda Item

Orange City Council

Item #: 7.1. 3/10/2026 **File #:** 26-0134

1. SUBJECT

Appointment to the City Traffic Commission

2. SUMMARY

Due to the resignation of Seimone Jurjis, an unscheduled vacancy exists on the City Traffic Commission. A Notice of Vacancy was posted on February 10, 2026, in accordance with Government Code Section 54974.

3. RECOMMENDED ACTION

Confirm Mayor Slater's recommendation to appoint Steven Freeman to the City Traffic Commission to fill an unexpired term ending June 30, 2027.

Agenda Item

Orange City Council

Item #: 9.1. 3/10/2026 **File #:** 26-0038

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Russell Bunim, Community Development Director**

1. SUBJECT

Public Hearing to consider an amendment to the Circulation and Mobility Element of the City of Orange General Plan and finding of CEQA exemption

2. SUMMARY

The City is proposing an amendment to the City of Orange General Plan Circulation and Mobility Element to reclassify the roadway designation for Santiago Canyon Road (Villa Park Road) between the shared Orange-Villa Park boundary and Cannon Street, and Fairhaven Avenue between the shared Orange-Santa Ana boundary and Tustin Street (Tustin Avenue) to reflect changing development and traffic patterns.

3. RECOMMENDED ACTION

1. Conduct and close the Public Hearing.
2. Adopt Resolution No. 11660. A Resolution of the City Council of the City of Orange approving General Plan Amendment No. 26-0001 amending the City of Orange General Plan Circulation and Mobility Element to conform to the Orange County Transportation Authority's Countywide Master Plan of Arterial Highways.
3. Find the proposal exempt from the California Environmental Quality Act (CEQA) per State CEQA Guidelines Section 15061(b)(3) (Common Sense Exemption).

4. FISCAL IMPACT

None.

5. STRATEGIC PLAN GOALS

Goal 5: Improve Infrastructure, Mobility, and Technology.

6. DISCUSSION AND BACKGROUND

The City of Orange was formally requested by adjacent agencies to update roadway classifications for two streets located along the City's jurisdictional boundaries:

- Santiago Canyon Road (Villa Park Road) between the shared Orange-Villa Park boundary and Cannon Street; and
- Fairhaven Avenue between the shared Orange-Santa Ana boundary and Tustin Street (Tustin Avenue).

These requests were initiated by the County of Orange and the City of Santa Ana, respectively, following updated traffic studies that evaluated long-term growth trends, traffic volumes, and roadway design objectives.

Both agencies have already adopted the revised roadway classifications within their own General Plans. The Orange County Transportation Authority (OCTA) has also reviewed and conditionally approved the changes as amendments to the Countywide Master Plan of Arterial Highways (MPAH).

To complete the regional planning process and maintain consistency with neighboring jurisdictions and OCTA, the City of Orange must amend its Circulation and Mobility Element to reflect the same roadway lane configuration.

The proposed General Plan amendment is limited in scope and involves the addition of two new roadway classification categories: Asymmetric Major Arterial (Five-Lane Divided) and Secondary Arterial (Two-Lane Divided). These new classifications would then be applied to the City's Master Plan of Streets and Highways for the specific roadway segments identified above. No other changes to the Circulation and Mobility Element are proposed.

7. ENVIRONMENTAL REVIEW

The proposed project is categorically exempt (Common Sense Exemption) from the provisions of the California Environmental Quality Act (CEQA) per State CEQA Guidelines Section 15061(b)(3) because there is no possibility that the revisions to the roadway designations may have a significant effect on the environment.

8. ATTACHMENTS

- Attachment 1 Resolution No. 11660 (including amended City of Orange General Plan Circulation and Mobility Element)
- Attachment 2 Planning Commission Staff Report of February 2, 2026
- Attachment 3 Proposed City Master Plan of Streets and Highways Amendment Reclassification
- Attachment 4 Amended City of Orange General Plan Circulation and Mobility Element (redline version)
- Attachment 5 Santiago Canyon Road (Villa Park Road) Master Plan of Arterial Highways Amendment Traffic Study
- Attachment 6 County of Orange Board of Supervisors Staff Report of May 6, 2025, for the Santiago Canyon Road (Villa Park Road) reclassification
- Attachment 7 Orange County Transportation Authority Staff Report of September 9, 2024, for the Santiago Canyon Road (Villa Park Road) reclassification Master Plan of Arterial Highways Amendment
- Attachment 8 City of Santa Ana General Plan Update Appendix K Transportation Impact Study for the Fairhaven Avenue reclassification
- Attachment 9 City of Santa Ana Staff Report of April 19, 2022, for the Fairhaven Avenue

reclassification

- Attachment 10 Adopted City of Santa Ana General Plan Mobility Element
- Attachment 11 Orange County Transportation Authority Staff Report of November 2, 2020, for the Conditional Amendment of the Fairhaven reclassification in the Countywide Master Plan of Arterial Highways

Agenda Item

Orange City Council

Item #: 9.1. 3/10/2026 **File #:** 26-0038

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Russell Bunim, Community Development Director**

1. SUBJECT

Public Hearing to consider an amendment to the Circulation and Mobility Element of the City of Orange General Plan and finding of CEQA exemption

2. SUMMARY

The City is proposing an amendment to the City of Orange General Plan Circulation and Mobility Element to reclassify the roadway designation for Santiago Canyon Road (Villa Park Road) between the shared Orange-Villa Park boundary and Cannon Street, and Fairhaven Avenue between the shared Orange-Santa Ana boundary and Tustin Street (Tustin Avenue) to reflect changing development and traffic patterns.

3. RECOMMENDED ACTION

1. Conduct and close the Public Hearing.
2. Adopt Resolution No. 11660. A Resolution of the City Council of the City of Orange approving General Plan Amendment No. 26-0001 amending the City of Orange General Plan Circulation and Mobility Element to conform to the Orange County Transportation Authority's Countywide Master Plan of Arterial Highways.
3. Find the proposal exempt from the California Environmental Quality Act (CEQA) per State CEQA Guidelines Section 15061(b)(3) (Common Sense Exemption).

4. FISCAL IMPACT

None.

5. STRATEGIC PLAN GOALS

Goal 5: Improve Infrastructure, Mobility, and Technology.

6. DISCUSSION AND BACKGROUND

The City of Orange was formally requested by adjacent agencies to update roadway classifications for two streets located along the City's jurisdictional boundaries:

- Santiago Canyon Road (Villa Park Road) between the shared Orange-Villa Park boundary and Cannon Street; and
- Fairhaven Avenue between the shared Orange-Santa Ana boundary and Tustin Street (Tustin Avenue).

These requests were initiated by the County of Orange and the City of Santa Ana, respectively, following updated traffic studies that evaluated long-term growth trends, traffic volumes, and roadway design objectives.

Both agencies have already adopted the revised roadway classifications within their own General Plans. The Orange County Transportation Authority (OCTA) has also reviewed and conditionally approved the changes as amendments to the Countywide Master Plan of Arterial Highways (MPAH).

To complete the regional planning process and maintain consistency with neighboring jurisdictions and OCTA, the City of Orange must amend its Circulation and Mobility Element to reflect the same roadway lane configuration.

The proposed General Plan amendment is limited in scope and involves the addition of two new roadway classification categories: Asymmetric Major Arterial (Five-Lane Divided) and Secondary Arterial (Two-Lane Divided). These new classifications would then be applied to the City's Master Plan of Streets and Highways for the specific roadway segments identified above. No other changes to the Circulation and Mobility Element are proposed.

7. ENVIRONMENTAL REVIEW

The proposed project is categorically exempt (Common Sense Exemption) from the provisions of the California Environmental Quality Act (CEQA) per State CEQA Guidelines Section 15061(b)(3) because there is no possibility that the revisions to the roadway designations may have a significant effect on the environment.

8. ATTACHMENTS

- Attachment 1 Resolution No. 11660 (including amended City of Orange General Plan Circulation and Mobility Element)
- Attachment 2 Planning Commission Staff Report of February 2, 2026
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RESOLUTION NO. 11660

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ORANGE APPROVING GENERAL PLAN AMENDMENT NO. 26-0001 AMENDING THE CITY OF ORANGE GENERAL PLAN CIRCULATION AND MOBILITY ELEMENT TO CONFORM TO THE ORANGE COUNTY TRANSPORTATION AUTHORITY'S COUNTYWIDE MASTER PLAN OF ARTERIAL HIGHWAYS.

APPLICANT: CITY OF ORANGE

WHEREAS, the City of Orange adopted a comprehensive update to the General Plan on March 9, 2010; and

WHEREAS, the City of Orange has prepared General Plan Amendment No. 26-0001 to amend the Circulation and Mobility Element of the City of Orange General Plan to reclassify roadway designations for certain segments of Santiago Canyon Road (Villa Park Road) and Fairhaven Avenue to reflect updated traffic conditions, roadway constraints, and regional planning efforts; and

WHEREAS, the proposed roadway reclassifications are based on updated traffic analyses that evaluated long-term growth trends, traffic volumes, safety conditions, roadway design feasibility, and multimodal considerations, and determined that the existing classifications do not align with projected demand or right-of-way constraints; and

WHEREAS, the County of Orange and the City of Santa Ana have already adopted the proposed roadway reclassifications within their respective General Plans, and the Orange County Transportation Authority (OCTA) has reviewed and conditionally approved the changes as amendments to the Countywide Master Plan of Arterial Highways; and

WHEREAS, the Planning Commission, having considered the proposed changes to the General Plan Circulation and Mobility Element contained in Exhibit "A" at a public hearing held on February 19, 2026, including review of the staff report and receiving public testimony on the item, has determined that General Plan Amendment No. 26-0001 is appropriate and recommended City Council approval thereof.

NOW, THEREFORE, BE IT RESOLVED that the City Council approves General Plan Amendment No. 26-0001, amending the City of Orange General Plan Circulation and Mobility Element as depicted in Exhibit "A" attached hereto and incorporated by this reference based on the following findings:

SECTION 1 – FINDINGS

The subject General Plan Amendment updates roadway classifications within the Circulation and Mobility Element to reflect current and projected traffic conditions, roadway constraints, and multimodal considerations, while maintaining the City's required level of service standards. The amendment supports orderly growth, promotes a balanced and efficient transportation system, and ensures consistency between the City's Master Plan of Streets and Highways and regional transportation planning efforts adopted by neighboring jurisdictions and the Orange County Transportation Authority. As such, the proposed amendment furthers the intent of the General Plan by advancing coordinated regional mobility and responsible long-range transportation planning.

SECTION 2 - ENVIRONMENTAL REVIEW

The proposed project is categorically exempt (Common Sense Exemption) from the provisions of the California Environmental Quality Act (CEQA) per State CEQA Guidelines Section 15061(b)(3) because there is no possibility that the revisions to the roadway designations may have a significant effect on the environment.

ADOPTED this 10th day of March 2026.

_____

Daniel R. Slater, Mayor, City of Orange

ATTEST:

_____

Pamela Coleman, City Clerk, City of Orange

APPROVED AS TO FORM:

_____

Nathalie Adourian, City Attorney, City of Orange

STATE OF CALIFORNIA)
COUNTY OF ORANGE)
CITY OF ORANGE)

I, PAMELA COLEMAN, City Clerk of the City of Orange, California, do hereby certify that the foregoing Resolution was duly and regularly adopted by the City Council of the City of Orange at a regular meeting thereof held on the _____ day of _____, 2026 by the following vote:

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:

_____
Pamela Coleman, City Clerk, City of Orange

EXHIBIT "A"

Amended General Plan Circulation and Mobility Element

CIRCULATION & MOBILITY

INTRODUCTION AND VISION FOR THE FUTURE

Orange's circulation system has been influenced by a variety of historical factors, including the presence of the Santa Fe Railroad, the vision of Alfred B. Chapman and William T. Glassell, the agricultural history of the area, and alternative transportation modes including a historic streetcar system.

In 1887, the Santa Fe Railroad came to Orange and built a station four blocks west of the Plaza. The coming of the railroad set off a real estate boom that brought hundreds of settlers to the area. The railroad also influenced the City's early economic success by providing a means to transport goods, especially citrus, to the entire country. Today, the railroad tracks continue to serve freight trains and provide a critical link to the region via the Metrolink heavy rail transit system.

In the 1870s, Alfred B. Chapman and William T. Glassell subdivided their land into residential and small farm lots centered on a roundabout known today as Plaza Park. Plaza Park was dedicated in 1886 and established the City's two main streets – Chapman Avenue and Glassell Street – as well as the compact street grid of Old Towne Orange. The street grid and railroad system were supported historically by a streetcar system that connected the small towns and settlements that make up the City today.

Over time, the small farms on the outer edges of Orange's core district began to disappear. Two factors influenced this change: the demand for housing after World War II and the appearance of "Quick Decline" disease that destroyed the local citrus industry. As each farm was developed independently, the grid system expanded outward and commercial corridors were established. Orange's roadways began to take on a more suburban pattern of collectors, connectors, and arterials. As development reached the eastern portion of the City, the grid gave way to curvilinear street patterns.

The historic roadways and railways that form the basis for the current circulation network have been complemented over the years by the development of a streetcar system, a transit service, an emerging and continually expanding bicycle trail and route network, and routes for equestrian use in the eastern portion of the City. The City will continue to be served by these multiple modes of transportation and other emerging mobility technologies.

Orange's ***Vision for the Future***, described in the General Plan Introduction, recognizes that the circulation system is a key component of the quality of life in the City. Accordingly, the vision includes the following objectives:

- Residential areas will be connected to commercial, recreational, and open space areas, as well as educational and cultural facilities via a balanced, multi-modal circulation network that accommodates vehicles, pedestrians, cyclists, hikers, and equestrians. This network will create additional opportunities for walking and biking, enhancing safety and well-being for neighborhoods and businesses.
- The City will work to define neighborhoods through the use of open space areas and a trail system that provides a source of aesthetic beauty and recreational opportunities. These open space areas support a healthy and active community.
- We will develop a connected multi-modal network for traveling from one end of town to the other that provides the option for residents from different neighborhoods to access parks, open spaces, and scenic areas by vehicle, transit, foot, bicycle or, where appropriate, horse.

Purpose of the Circulation & Mobility Element

California's General Plan Guidelines mandate that the Circulation & Mobility Element fulfill the following objectives:

- Show a direct relationship to the Land Use Element to ensure that any changes to land use as stated by the Land Use Element and growth occur with adequate circulation and transportation facilities in mind.
- Address relevant issues including the adequacy of "major thoroughfares, transportation routes, terminals, other local public utilities and facilities." The goal of the Circulation & Mobility Element is to identify circulation problems related to these facilities in the early stages and resolve them in local goals and policies without costly delays.

Other relevant issues discussed in the Circulation & Mobility Element include those that address streets, highways, public transit routes, railroads, bicycle and pedestrian routes, recreational trails, paratransit, parking, transportation system management, and air pollution. The hierarchy of streets within the residential areas helps to frame the urban form. Connections between neighborhoods can be achieved by a comprehensive network of sidewalks and trails. Also, the commercial corridors can be enhanced with adequate street capacity, public transit, and pedestrian-friendly environments.

The state also recommends that the Circulation & Mobility Element address coordination efforts among the local, regional, and state transportation plans to better resolve circulation issues. Since many transportation concerns are regional, addressing them requires intergovernmental and regional transportation management plans and policy implementation. These partnerships ensure the most efficient use of funding, infrastructure, and other resources. The state also recommends the "preservation of transportation corridors for future system improvements."

The Circulation & Mobility Element prioritizes the issues and opportunities that exist within Orange's transit network. It is directly responsive to proposed changes in land use and anticipates the impacts of those changes. This Element also seeks to reassure residents and businesses that the City recognizes the link between transportation and land uses, and provides a means to mitigate the impacts of growth.

Another goal of the Circulation & Mobility Element is to increase transportation options and provide increased access to the circulation system for all residents of Orange. This goal includes improved rail and bus transit connections and frequency, implementation of a *Bikeway Master Plan,* and completion of a trails system. Transforming many of Orange's historically auto-oriented commercial corridors, such as Katella Avenue, Main Street, and portions of La Veta Avenue, Chapman Avenue, and Glassell Street into more pedestrian-friendly mixed-use environments is an overarching goal. Where possible, the development of equestrian trails is also encouraged.

One of the main functions of the Circulation & Mobility Element is to guide and direct enhancement of the current circulation system for existing and future developments. Thus, circulation provisions correlate with the Land Use Element to avoid unchecked growth and unnecessary congestion.

Another key objective of the Element is to work toward a future circulation network that provides meaningful alternatives for getting around the community by less auto-dependent means. The City's topography, street and sidewalk system, transit and trail framework, and land use relationships provide an excellent foundation for pursuit of this objective.

The Circulation & Mobility Element does not simply determine automobile routes. It also guides the movement of people and goods, directly affecting Orange's physical, social, and economic environment. Since circulation permits accessibility to places and social amenities, it can either improve or cause deterioration in quality of life. Circulation efficiency also plays a major role in progress and development of the City's economy.

Scope and Content of the Circulation & Mobility Element

The Circulation & Mobility Element comprises three sections:

(1) Introduction;
(2) Issues, Goals, and Policies; and
(3) The Circulation & Mobility Plan.

The first section introduces the contents of the Circulation & Mobility Element. The second section presents issues, goals, and policies for improving circulation. The third section includes the Circulation & Mobility Plan, which designates locations and standards for roadways and non-motorized circulation facilities, and states the community's desired level of transportation service.

Implementation measures designed to promote achievement of the goals and policies are provided in an Appendix to the General Plan.

Relationship to other General Plan Elements

California planning law requires that the Circulation & Mobility Element correlate and maintain consistency with the other General Plan elements. The Circulation & Mobility Element relates most closely to the Land Use, Natural Resources, Noise, Economic Development, Housing, and Urban Design Elements.

The Circulation & Mobility Element is linked to the Land Use Element because the General Plan land use designations identified in the Land Use Element serve as a basis for the allocation of vehicle trips and establishment of capacity levels for circulation planning. The Land Use Element also provides land use designations that accommodate mixed commercial and residential development, which encourage shorter trips and improve the efficiency of the transportation network. The Circulation & Mobility Plan is established to define and provide for adequate levels of service and facilities to support future land uses. This Element recommends roadway and intersection improvements that may require land acquisition. Location of public transportation facilities will also influence pedestrian activity and transit-oriented development, and the physical size of streets will affect urban land uses and the physical appearance of the City.

The Natural Resources Element identifies regional air quality objectives and provides appropriate mitigation efforts that affect the Circulation & Mobility Element. Improving access, encouraging alternative modes of travel, and maintaining air quality and conservation standards are common objectives of the Natural Resources and the Circulation & Mobility Elements.

The Noise Element addresses future noise levels associated with roadways, rail, and other transportation facilities. Future volumes of traffic on the circulation system are directly related to future noise levels and mitigation strategies.

The Economic Development Element identifies desirable economic conditions and land uses that enhance and promote business activity, employment growth, and economic stability. The goals and policies of the Circulation & Mobility Element will determine road capacity in Orange, which will impact the type and location of uses, and parking and access considerations associated with future uses. Both elements share a common objective of planning for future transportation infrastructure needs. Maintaining roadways, bikeways and bus and rail transit facilities is critical to the success of both current and future businesses in Orange.

The Urban Design Element is a framework for shaping the future form and character of Orange. The quality of Orange's physical environment contributes to its identity, attracts new residents, and sets the stage for economic activity. The Urban Design Element builds on the foundation of Orange's already strong sense of place to preserve and strengthen the streetscape environment of commercial corridors and landmarks within the city. The Urban Design Element and Circulation & Mobility Element share a common objective to reinvent City streets as more functional and walkable public places.

ISSUES, GOALS, AND POLICIES

The goals, policies, and implementation programs of the Circulation & Mobility Element seek to achieve a better balance between vehicular, pedestrian, and bicycle travel, and to provide a wide range of viable transportation options to Orange residents. The following six issues are addressed: (1) enhancing the local circulation system; (2) maintaining the regional circulation system; (3) maintaining a viable public transportation network; (4) creating a comprehensive system of sidewalks, trails, and bikeways; (5) providing adequate parking facilities; and (6) improving circulation system aesthetics and safety.

Local Circulation System

The local roadway system serves the community's primary needs for mobility and access, and consists of a hierarchy of City streets to meet those needs. The City's original street system was established as a grid pattern long before a Master Plan of Arterial Highways (MPAH) was adopted. The Old Towne area and many postwar neighborhoods were designed in a classic grid configuration, while in newer parts of the City, physical features such as the Santa Ana River, Santiago Creek, hilly terrain, freeways and the presence of the City of Villa Park have resulted in a system without a definitive pattern. Some major roads do not connect the eastern and western portions of the City and consequently do not provide effective through circulation. A well-designed roadway system will provide convenient access to activities in Orange.

GOAL 1.0: **Provide a safe, efficient, and comprehensive circulation system that serves local needs, meets forecasted demands, and sustains quality of life in neighborhoods.**

Policy 1.1: Plan, build, and maintain an integrated, hierarchical, and multi-modal system of roadways, pedestrian walkways, and bicycle paths throughout the City.

Policy 1.2: Identify key intersections and streets with historical or projected traffic congestion problems and apply creative traffic management measures to improve overall circulation.

Policy 1.3: Consider various methods to increase safety on City arterials and neighborhood streets, including landscaping, provision of bike/transit lanes, and consideration of traffic calming on neighborhood streets in accordance with the City's Neighborhood Residential Traffic Management Program.

Policy 1.4: Prohibit on-street parking where possible to reduce bicycle/automobile conflicts in appropriate target areas as recommended by the *Bikeways Master Plan*.

Policy 1.5: Address possible safety and noise effects of increased rail activity on grade crossings throughout the City.

Policy 1.6: Maintain and repair roadways and sidewalks as necessary to improve circulation and safety.

Policy 1.7: Consolidate driveways along roadways that provide access to commercial uses to minimize side street interruption and promote smooth traffic flows. On-street parking is prohibited on commercial access streets to provide adequate curb-to-curb width for travel lanes.

Regional Circulation System

Mobility in Orange is directly related to the regional transportation network, as the City lies at the confluence of several regional freeways: the Santa Ana Freeway (Interstate 5), Orange Freeway (State Route [SR] 57), Garden Grove Freeway (SR-22), Costa Mesa Freeway (SR-55), Riverside Freeway (SR-91) and Eastern Transportation Corridor (SR-241). In addition to the freeways, other connections to the region include the commuter rail system known as Metrolink, a freight and goods rail transport system, and a regional bikeways system with connections to the Santa Ana River and other locations. Orange is also connected to the region via the Orange County Transportation Authority (OCTA) bus system. City infrastructure must accommodate regional through traffic originating in other communities in addition to providing local residents access to the regional network.

GOAL 2.0: Provide an effective regional transportation network.

Policy 2.1: Ensure consistency with the County MPAH in order to qualify for funding programs.

Policy 2.2: Coordinate with adjacent cities to plan and develop major east/west and north/south arterials and rapid transit to connect the City with the cities of Anaheim, Tustin, Santa Ana, Garden Grove, and Villa Park, as well as developing areas within the City's sphere of influence.

Policy 2.3: Cooperate with and support local and regional agencies' efforts to improve regional arterials and transit in order to address increasing traffic congestion.

Policy 2.4: Coordinate land use planning with anticipated future development of roadways and other transportation facility improvements as well as the expansion of commuter rail and bus service.

Policy 2.5: Ensure that transportation facilities and improvements do not degrade the quality of Orange's commercial and residential areas.

Policy 2.6: Encourage the use of regional rail, transit, bicycling, carpools, and vanpools for work trips to relieve traffic congestion.

Policy 2.7: Continue to support the use of rail corridors within the City for the movement of freight and goods, and work with rail operators to minimize associated traffic delays.

Public Transportation

Public transportation is a crucial component of a comprehensive circulation system. In addition to reducing air pollution and traffic congestion, a successful public transit system provides an alternative mode of travel for those with limited mobility, residents who may not have access to a car, and persons who choose not to drive.

GOAL 3.0: **Connect centers within the City to each other and to the region through efficient and accessible public transportation.**

Policy 3.1: Work with OCTA and other agencies to assess City public transportation needs and to ensure delivery of services when and where they are needed.

Policy 3.2: Enhance and encourage provision of convenient and attractive transit amenities and streetscapes to encourage use of public transportation (e.g., benches, trash cans, shelters, and lighting).

Policy 3.3: Require incorporation of transit-oriented design features within major commercial and employment areas as well as in medium density residential and mixed-use development areas.

Sidewalks, Trails, and Bikeways

In addition to offering recreational and public health benefits, non-vehicular modes of transportation offer commuting options. Also, the mixed-use environments advocated by Land Use Element policies will encourage increased pedestrian activity on City sidewalks for both business and pleasure. An effective pedestrian, bicycle, and equestrian network must be safe and accessible, and must connect key activity centers within the City with each other and with the regional trail system. A comprehensive network of on-street bicycle lanes, off-street bicycle paths, sidewalks, and trails should be developed and maintained to increase the safety and utility of the system, with a particular focus on the City's sidewalk deficient industrial areas

GOAL 4.0: **Provide efficient and accessible modes of pedestrian, bicycle, and equestrian transportation and improved facilities and amenities.**

Policy 4.1: Create a comprehensive bicycle network that is integrated with other transportation systems by establishing complementary on-street and off-street facilities as identified in the City of Orange *Bikeways Master Plan* and OCTA *Commuter Bikeways Strategic Plan*, including Santiago Creek, the Santa Ana River, and the Tustin Branch Trail.

Policy 4.2: Install racks and safe storage facilities at parking areas for City facilities, as appropriate, and encourage incorporation of such facilities within privately-developed projects.

Policy 4.3: Improve citywide awareness of automobile and bicycle safety.

Policy 4.4: Encourage use of the bikeway system by providing adequate signage, trail markings, and other amenities.

Policy 4.5: Ensure that pedestrian sidewalks, trails, and bikeways are safe environments through the use of crime prevention-oriented trail design features, lighting where appropriate, pedestrian and bicycle safety improvements at at-grade rail crossings, access for emergency vehicles, and links to the roadway signal system.

Policy 4.6: Explore opportunities to convert abandoned rail corridors into segments of the City's bikeway and pedestrian trail system.

Policy 4.7: Provide ADA accessible sidewalks and pedestrian amenities throughout the City.

Policy 4.8: Expand and maintain an equestrian trail network and provide for appropriate staging areas and infrastructure.

Parking Facilities

A shortage of parking can cause circulation problems and could lead to a reduction or loss of business activity. Old Towne Orange has been identified as an area of particular concern. As the City develops, providing adequate parking adjacent to other activity centers is increasingly important.

GOAL 5.0: Provide adequate parking to meet the needs of activity centers throughout the City.

Policy 5.1: Provide adequate parking to protect and support the economic vitality and diversity of Old Towne.

Policy 5.2: Plan for and design parking facilities throughout the City that are adequate to meet demand, but also consider land use-parking efficiencies, and the surrounding natural and built environment.

Policy 5.3: Encourage adjacent businesses to consolidate parking facilities and access points.

Policy 5.4: Encourage well-designed structured parking in commercial areas where such features would be economically feasible, safe, and visually integrated with existing development.

Circulation System Aesthetics

Streets that have been made or modified to include visual and pedestrian amenities can improve the overall look and feel of City streets, as well as enhancing functionality for all users. As major commercial corridors are beautified and changed to include a pleasant pedestrian environment, this will have positive effects on the feelings of safety and security for pedestrians, bicyclists, and motorists.

GOAL 6.0: Provide roadway corridors that are aesthetically pleasing and contribute to a feeling of safety, security, and comfort for motorists, bicyclists, and pedestrians.

Policy 6.1: Supply adequate, clear, and correctly placed signage to direct both motorists and non-motorists toward destinations and away from hazards.

Policy 6.2: Provide clear indicators in the right-of-way for where pedestrians and bicyclists are encouraged to walk, bike, or cross safely. These may include special paving, line stripes, and crosswalks.

Policy 6.3: Provide lighting, landscaping, street trees, and other appropriately scaled streetscape features that accommodate all users on commercial corridors. Where appropriate, lighting should be scaled for autos as well as pedestrians.

CIRCULATION & MOBILITY PLAN

The objective of the Circulation & Mobility Plan is to document existing transportation facilities in the planning area used for the movement of people and goods. The Element addresses the desired future condition of these facilities, and their relationship to future land uses identified in the Land Use Element. The Plan describes the circulation system, including the arterial network and intersections, the public transit system, bicycle paths, recreation facilities, parking, and railroad operations. The City's circulation network includes an extensive system of roadways, bus transit service, commuter rail, and freight rail.

Local Circulation System

A well-designed local arterial roadway system that connects to a well-developed regional circulation system provides safe and convenient access to employment, housing, recreation, and commercial areas in Orange. City arterial roadways located on the western side of SR-55 generally follow north-south and east-west orientations. On the eastern side of the freeway, arterials are characterized by curvilinear streets due to undulating geographical surroundings. Key north-south arterials include Tustin Street, Glassell Street, Main Street, and The City Drive. Key east-west arterials include Chapman Avenue, Katella Avenue, Taft Avenue, and parts of La Veta Avenue. These arterial roadways are in turn supported by a network of collector and local streets that provide access to homes and businesses throughout the City.

Roadway Classification System

The City's roadway network is distinguished by a hierarchical classification system that differentiates roads by size, function, and approximate daily capacity based upon Level of Service D (LOS D). LOS is a qualitative measure that characterizes traffic congestion on a scale of A to F with LOS A representing a free-flow condition and LOS F representing extreme congestion. LOS standards can apply to either intersections or links (a section of street between two intersections). Generally speaking, LOS represents the ability of a roadway or an intersection to accommodate traffic.

In the City, intersections are used as actual control points. City roadways consist of both divided and undivided roadways. Divided roadways generally contain a physical barrier or buffer, such as a raised median or a continuous two-way left turn lane, between each direction of travel. Divided roadways remove vehicles making a left turn from the travel lanes so as not to impede through traffic and constrict roadway capacity. Undivided roadways do not contain a buffer between each direction of travel, and therefore left-turning traffic can impede through traffic. Undivided roadways may provide turn movement pockets at intersections. The eight categories of roadways in Orange are summarized in Table CM-1. Proposed cross-sections for each type of roadway are shown in Figure CM-1.

The City's policy is to use a link capacity standard of LOS D. The following paragraphs represent link capacities of each roadway type at LOS D.

Table CM-1 Roadway Classifications		
Classification	**Facility Type**	**Characteristics**
Smart Street	Smart Street	4-8 lane divided, with possible signal coordination, intersection capacity improvements and/or grade separations
Principal Arterial	8 Lane Divided	Primarily serves through traffic with limited local access
Major Arterial	6 Lane Divided	Serves mostly through traffic with some local access allowed
Asymmetric Major Arterial	5 Lane Divided	Serves mostly through traffic with some local access allowed
Primary Arterial	4 Lane Divided	Serves through and local traffic
Secondary Arterial	4 Lane Undivided	Serves through and local traffic
Two-Lane Secondary Arterial	2 Lane Divided	Serves through and local traffic
Collector Street	2 Lane	Serves mostly local traffic

Smart Streets are typically four- to eight-lane roadways with enhanced capacity and smoother traffic flow than standard arterial streets. These streets have enhanced features such as traffic signal synchronization, bus bays, intersection improvements, and the addition of travel lanes by removing on-street parking and consolidating driveways. The traffic carrying capacities of Smart Streets can range from 60,000 to 79,000 vehicles per day, depending on the number of lanes, degree of access control, peak period loading, and the configurations of major intersections.

Principal Arterials are typically eight-lane divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 67,500 vehicles on an average weekday at LOS D conditions, depending on the degree of access control, peak period traffic loadings, and lane configurations at major intersections. Principal arterials prohibit on-street, curbside parking, and connect directly to freeways.

Major Arterials are six-lane divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 50,700 vehicles on an average weekday at LOS D conditions, depending on the degree of access control, peak period traffic loadings, and lane configurations at major intersections. Major arterials facilitate traffic circulation within Orange, and may prohibit on-street, curbside parking.

Asymmetric Major Arterial are five-lane asymmetrical divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 42,250 vehicles on an average weekday at LOS D conditions, depending on the degree of access control, peak period traffic loadings, and lane configurations at major intersections. Asymmetric major arterials facilitate traffic circulation within Orange, and may prohibit on-street, curbside parking. Occasionally, based on projected volumes, it is necessary to have a cross section with more lanes in one direction than the other (asymmetric lanes) along some Major arterials. The most typical application would be for arterial segments where adjacent area land uses result in higher demand in one of the peak periods. Where such demand creates

the need for an added lane to accommodate the peak surge of traffic, the addition of through lane(s) in one (asymmetric), rather than both directions of travel, is considered.

Primary Arterials are four-lane divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 33,750 vehicles on an average weekday at LOS D conditions, depending on the degree of access control and peak period loadings. Primary Arterials provide for easy circulation in the City, and allow for limited on-street, curbside parking.

Secondary Arterials are four-lane undivided roadways without medians. They can accommodate up to 21,600 vehicles on an average weekday at LOS D conditions, depending on the degree of access control and peak period loadings. Secondary arterials allow for on-street, curbside parking.

Two-Lane Secondary Arterials are two-lane divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 17,000 vehicles per average weekday at LOS D conditions, depending on the degree of access control and peak period loadings. Two-lane secondary arterials can allow for on-street, curbside parking.

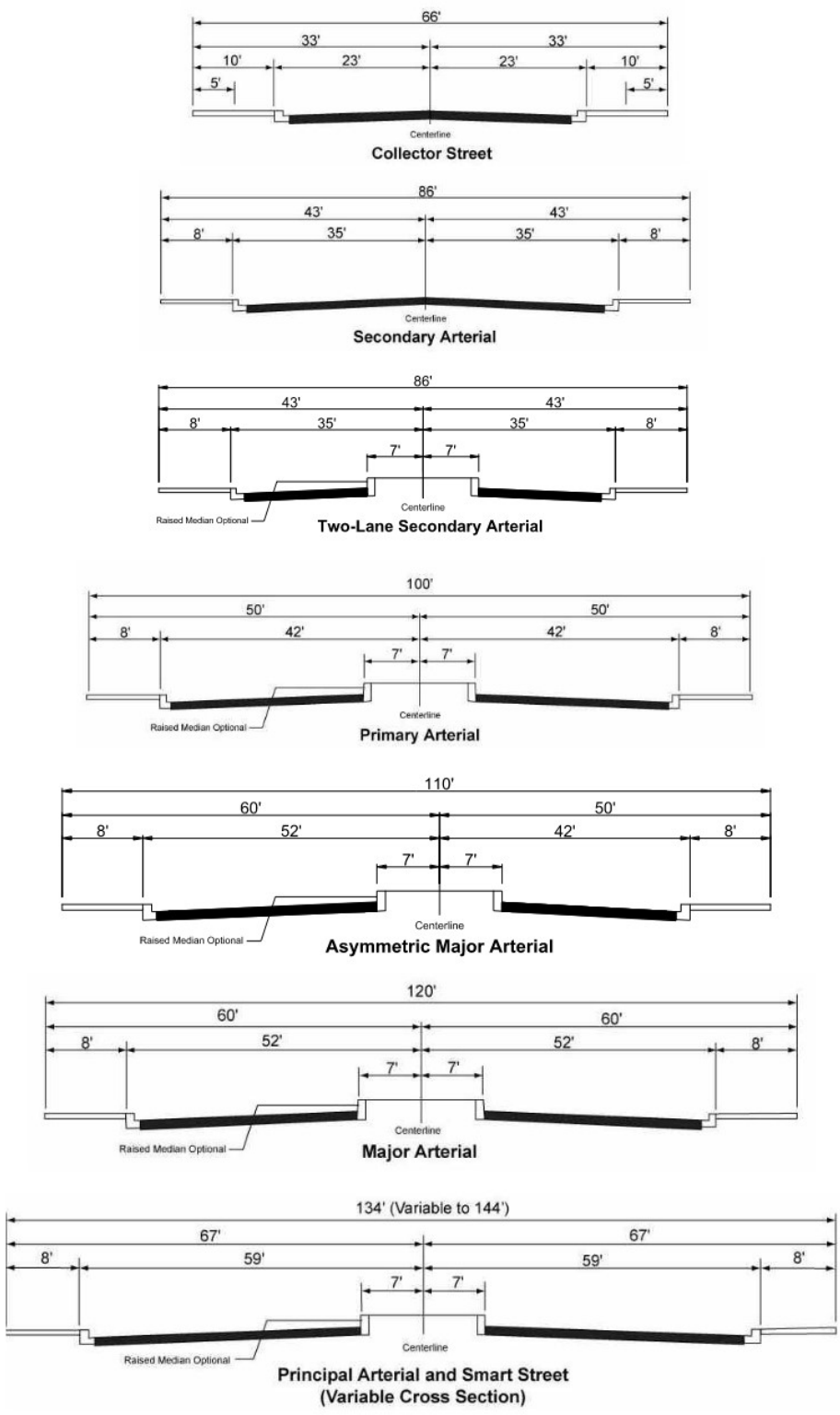


Figure CM-1
Roadway Cross Sections

Collector Streets are typically two-lane roadways without medians that gather and distribute traffic to higher-capacity arterials. They can accommodate up to 10,800 vehicles per average weekday at LOS D conditions, depending on the degree of access control and peak period traffic loadings. Centerline striping is typically not provided on collector streets, and on-street parking is allowed. There are several types of two-lane streets in the City, including divided, undivided, residential, and collector streets. Each type serves a slightly different purpose and may have different capacity thresholds based on various factors.

Performance Criteria

Evaluating the ability of the circulation system to serve residents and businesses in Orange requires establishing performance criteria. Performance criteria have a policy component that establishes a desired LOS, and a technical component that specifies how traffic forecast data can be used to measure criteria achievement.

The LOS definition for intersections is based on a volume-to-capacity (V/C) ratio and provides a more quantitative description of traffic conditions. Table CM-2 presents LOS based on traffic volumes and the design capacity of intersections.

Table CM-2
Level of Service Definitions for Intersections

Level of Service	Volume-to-Capacity Ratio	Description
A	0.00-0.60	Free Flow/Insignificant Delays: No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.
B	0.61-0.70	Stable Operation/Minimal Delays: An occasional approach phase is fully utilized. Many drivers feel somewhat restricted within platoons of vehicles.
C	0.71-0.80	Stable Operation/Acceptable Delays: Major approach phases fully utilized. Most drivers feel somewhat restricted.
D	0.81-0.90	Approaching Unstable/Tolerable Delays: Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delays.
E	0.91-1.00	Unstable Operation/Significant Delays: Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
F	N/A	Forced Flow/Excessive Delays: Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

Source: Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington DC, 2000.

Although roadway capacity is generally a function of peak hour intersection performance and the corresponding peak hour volumes, daily arterial segment capacities (link capacities) also provide a measure of the overall LOS of the arterial system. Generally, traffic impact mitigation focuses on peak hour intersection performance, since system performance is typically a function of intersection performance. The City's policy is to use a link capacity standard of LOS D. Table CM-3 presents arterial daily capacities at LOS D and LOS E.

Table CM-3
Arterial Daily Capacity Threshold Assumptions

Street Type	Daily Capacity	
	LOS D	LOS E
Smart Street – 6- to 8-lane divided	71,100	79,000
Principal – 8-lane divided	67,500	75,000
Major – 6-lane divided	50,700	56,300
Asymmetric Major – 5-lane divided	42,250	47,000
Primary – 4-lane divided	33,750	37,500
Secondary – 4- lane undivided	21,600	24,000
Two-Lane Secondary – 2-lane divided	17,000	18,750
Collector – 2-lane undivided	10,800	12,000

Source: City of Orange General Plan Update Traffic Report, 2008.

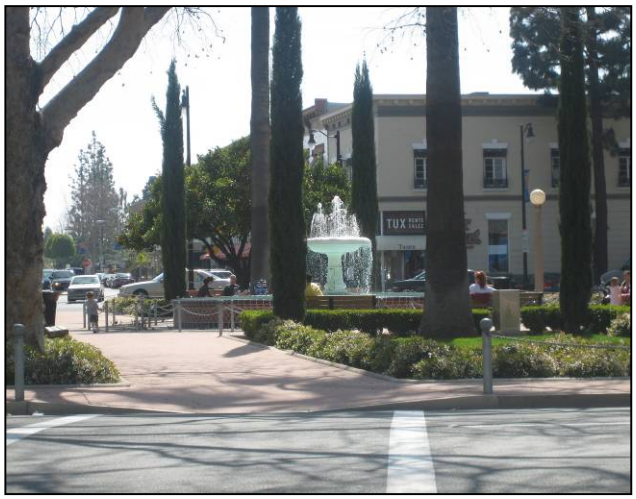
Various LOS policy standards have been established to evaluate observed traffic conditions, future development plans, and circulation system modifications. At the local level, the City of Orange has established LOS D as the lowest acceptable level of service for both roadway segments and peak-hour signalized intersection movements. At the regional planning level, Orange County's Congestion Management Plan (CMP) specifies LOS E as the operating standard for roadways and intersections on the CMP highway system. The CMP Highway System consists of the Orange County smart street network plus the state highway system. Thus, the SR-55 northbound and southbound ramps at Katella Avenue are CMP intersections within the City's jurisdiction. The City does not have an adopted LOS standard for unsignalized intersections. Performance of unsignalized intersections is evaluated on a case-by-case basis.

In addition to the LOS standards for roadways and intersections, the California Environmental Quality Act (CEQA) Guidelines (Section 15064.3), require "vehicle miles traveled" (VMT), to measure transportation impacts on the community. VMT refers to the amount and distance of automobile travel attributable to a project.

For purposes of compliance with CEQA, a significant impact would occur if the baseline and/or cumulative project-generated VMT per service population (population plus employment) exceeds the anticipated City of Orange General Plan Buildout VMT per service population. One vehicle traveling one mile would generate one VMT. Additionally, the project's effect on VMT would be considered significant if it resulted in the baseline and/or cumulative link-level boundary citywide VMT per service population increases under the plus project condition compared to the no project condition. Link-level boundary VMT is calculated by summing all weekday VMT on a roadway network within the City boundary and includes all trips including trips that pass through the City's roadway network but do not start and end with in City.

These thresholds are designed to reduce the number of miles traveled by automobiles, and are implemented within the City of Orange *Traffic Impact Analysis Guidelines*.

In order to maximize the efficiency of its circulation system, the City will look at where physical improvements to the circulation infrastructure can be made to expand capacity and increase traffic flow. To maximize efficiency of the road system, the City will support traffic signal coordination and spacing, and will also discourage on-street parking along arterials. In addition, the City will explore ways to reduce the demand for vehicular transportation, specifically through the provision and maintenance of bike lanes, bikeways, and trails, and will also encourage additional regional transit services and support facilities. The City's Transportation Demand Management (TDM) ordinance (Chapter 10.83 of the Municipal Code) further specifies a variety of techniques available to employers with 100 or more employees to advance the goals of efficiently utilizing the existing and planned transportation system and reducing vehicle emissions.



City Master Plan of Streets and Highways

Land Use Element policy will allow land use changes and intensification to occur in specific focus areas within the City. The City's Master Plan of Streets and Highways displayed in Figure CM-2 has been developed in close coordination with land use policy to ensure that traffic generated by new development will not compromise the City's goal to ensure that intersections and roadway segments operate efficiently. The map identifies components of the City's roadway circulation system. The map also indicates where augmented roads are needed, and pinpoints locations for enhanced intersections, including the future Meats Avenue interchange at SR-55. Although most of Orange is already built out, most remaining developable land is located in the eastern part of the City. New development in east Orange will require construction of new roads to provide circulation and traffic flow to residents and businesses. Land Use Element policies enabling reuse and redevelopment within established portions of the City, particularly within the focus areas, may also necessitate roadway widening and intersection enhancements. The City will continue to collect funds for necessary circulation system capital improvements through a program that sets up a fee structure for all new development and redevelopment projects. This program will require developers to pay their fair share for transportation system improvements required by new projects. The City will use the annual seven-year Capital Improvement Program (CIP) process to prioritize, fund, and complete improvements required to achieve build-out of the proposed roadway system identified in Figure CM-2.

Roadway Widening

Roadway widening in specific locations will be necessary to obtain new travel lanes. Additional travel lanes may be acquired either by obtaining additional rights-of-way as necessary or by constructing new lanes within existing rights-of-way. Parking restrictions may be applied to allow additional lanes to be provided within existing rights-of-way.

Old Towne Street Network

The Old Towne street network is a clear example of Orange's grid street pattern. Parallel roadways have been established in both the north-south and east-west direction to distribute traffic evenly. The Plaza area at Glassell Street and Chapman Avenue is a unique feature that creates discontinuous traffic flows along these two primary roadways. However, no plans have been made to modify the National Register-listed Historic Plaza to increase its traffic carrying capacity.

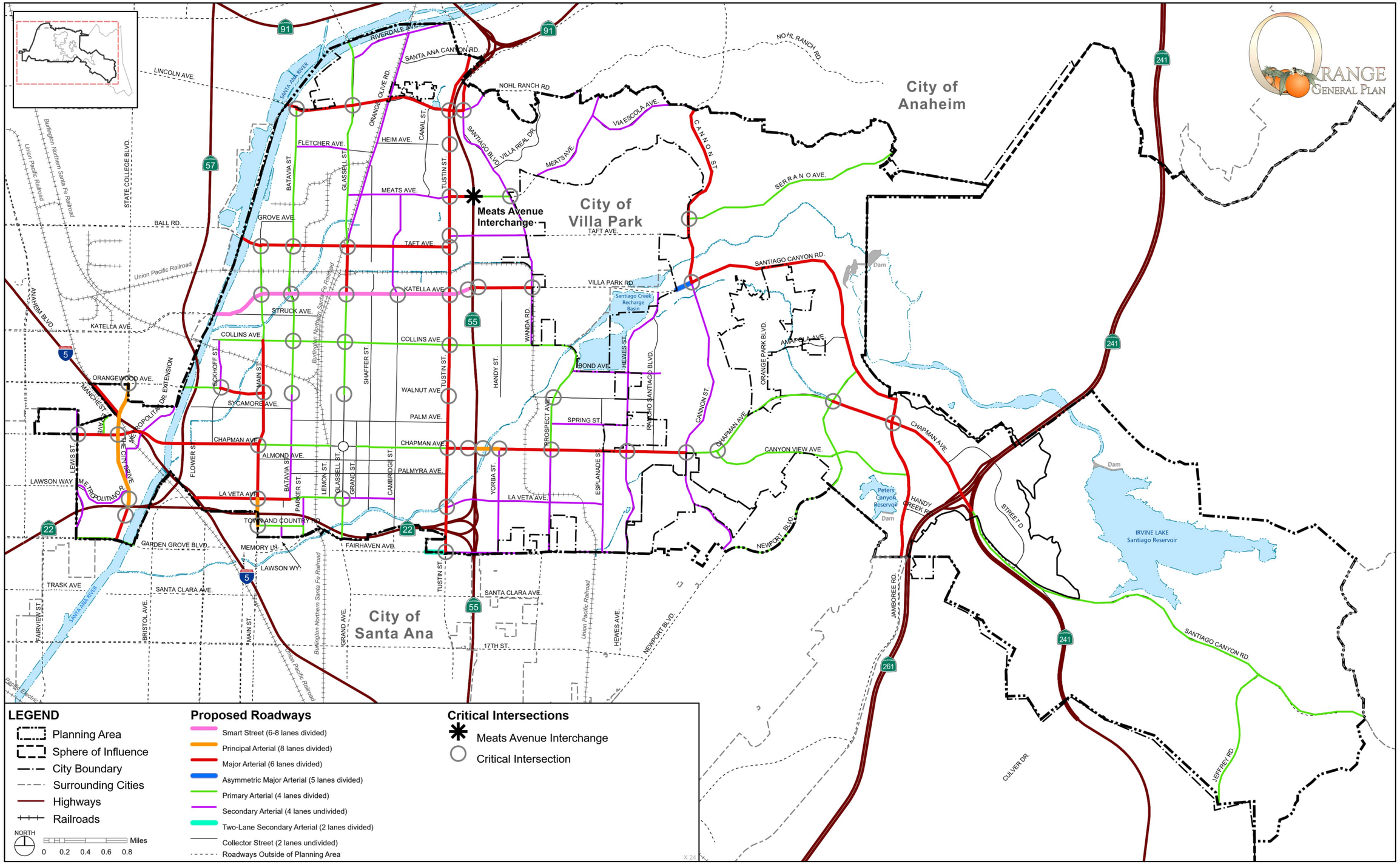


Figure CM-2 City Master Plan of Streets and Highways

GPA 2026-0001 (XX/XX/26)

GPA 2014-0001 (12/18/15)

GPA 2010-0001 (8/10/10)

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In light of these conditions, parallel roadways such as Almond Avenue, Palmyra Avenue, Lemon Street, Olive Street, Shaffer Street, Grand Street, Palm Avenue, and Maple Avenue will continue to serve as local collectors around The Plaza.

Metropolitan Drive Extension

Extending Metropolitan Drive behind the University of California, Irvine (UCI) Medical Center will help facilitate the movement of north-south traffic near The Outlets at Orange shopping area, improve access to Interstate 5 (I-5), and relieve congestion on The City Drive. Metropolitan Drive will be extended from The City Drive/State College Boulevard to the Metropolitan Drive/Rampart Street connection.

Critical Intersection Program

Intersections serve as traffic control points for the circulation system, regulating the flow of vehicles along City streets and sometimes limiting the capacity of the system. In the long term, system capacity and efficiency can both be increased if intersections are designed to handle future anticipated traffic volumes. Typically, the design of the roadways forming an intersection dictates the intersection configuration. Department of Public Works standards indicate that a left-turn pocket may or may not be provided, depending on traffic volumes through the intersection. However, one pocket may not be adequate to handle vehicles during peak hours. Traffic may back up into a through travel lane, resulting in congestion at the intersection and at other locations along the roadway.

One way of providing additional intersection capacity at critical locations is through the use of special intersection configurations known as "critical intersections." Critical intersections deviate from typical City design standards by increasing the number of lanes at an intersection beyond what typically would be required. By increasing capacity at the intersection, the circulation link increases overall system capacity.

The Master Plan of Streets and Highways (Figure CM-2) identifies the locations of critical intersections within Orange. A list of these intersections and diagrams depicting their geometries are on file in the Public Works Department.

Regional Roadway System

The City's local circulation network is connected to an efficient regional circulation system. Figure CM-2 shows the freeways that traverse the Orange planning area. The Santa Ana Freeway (I-5) provides interstate and regional access to the City. In addition, SR-57, SR-55, and SR-22 all provide connections to the City from northern Orange County and neighboring Los Angeles County, San Diego County, Riverside County, and San Bernardino County. SR-91 and SR-241 provide additional, more limited freeway access. SR-241 is a toll facility controlled by the Transportation Corridor Agency (TCA).

I-5 is a northwest-southeast freeway that passes through the southwest corner of the City, and provides direct access to Los Angeles County to the north and San Diego County to the south. I-5 has two interchanges within Orange—one located at its junction with SR-57 and SR-22 (commonly known as the Orange Crush) and the other at State College Boulevard/The City Drive. The junction at the Orange Crush currently has the most severe congestion, which directly affects the roadway system in the City. With projected future growth in Orange and in the region, traffic flow at this junction is expected to worsen. The City will continue to work with and support the efforts of local and regional agencies to mitigate the increased traffic congestion in this area.

SR-91 is an east-west freeway that provides access to key arterial facilities in Orange, including interchanges at Tustin Street and Glassell Street. SR-91 also provides regional access through interchanges with SR-55 and SR-57 and SR-241.

SR-22 is an east-west freeway that crosses through the southern portion of the City. Five SR-22 interchanges are located in the City, at Tustin Street, Glassell Street, Main Street/La Veta Avenue, Bristol Street, and The City Drive.

SR-55 is a north-south freeway that passes through the center of Orange, and provides access to the coastal communities of Orange County. SR-55 has four interchanges in Orange, located at Lincoln Avenue, Katella Avenue, Chapman Avenue, and SR-22. An additional future interchange at Meats Avenue is contemplated within this General Plan.

SR-57 is a north-south freeway that originates at the junction of I-5 and SR-22 and extends to San Dimas in Los Angeles County. It provides access for the eastern parts of Los Angeles County, and central and northern parts of Orange County. SR-57 has three interchanges in Orange, at Chapman Avenue, Orangewood Avenue, and the junctions of I-5 and SR-22.

The Eastern Transportation Corridor (SR-241) is a north-south toll facility located in the eastern portion of the planning area. This facility provides direct access to east Orange. SR-241 has three toll lanes in each direction and provides regional access through an interchange at Santiago Canyon Road.

Consistency with County Master Plan of Arterial Highways

Maintaining consistency with the County's Master Plan of Arterial Highways (MPAH) is required in order to ensure that the City's circulation system develops in a manner that promotes regional mobility. At a practical level, consistency is also required in order for the City to receive transportation funding under Measure M, also known as OC Go. Orange's Master Plan of Streets and Highways (Figure CM-2) is generally consistent with the MPAH.

While the City's Master Plan of Streets and Highways has been consistent with the County MPAH to maintain funding eligibility, both the City of Orange and OCTA have the goal of a realistic and implementable MPAH. A desire of the City is to work with OCTA to downgrade La Veta Avenue between Glassell Street and Cambridge Street from a Secondary Arterial to a

Collector Street to reflect physical constraints related to historic buildings and features in the Old Towne National Register Historic District.

To initiate the MPAH amendment process, a local agency must submit a written request to OCTA describing the amendment requested and provide documentation to support the basis for the request. A copy of the request must be submitted concurrently to the City Managers of adjoining cities. For the facilities under consideration, this would require a letter to be forwarded to the City of Santa Ana.

Once the initial request is forwarded to OCTA, a conference between the City of Orange, OCTA, and potential affected jurisdictions is held to determine whether mutual agreement exists for the MPAH amendment. If mutual agreement exists, then Orange is expected to proceed with adopting this revision to the Circulation & Mobility Element. Upon adoption, the City of Orange would submit the Circulation & Mobility Element to OCTA and request OCTA Board approval of the Orange County MPAH amendment.

Public Transportation

Effective regional transportation strategies are required to successfully implement City and County plans for accommodating future growth. Such strategies must link the City of Orange with other regional employment and commercial centers, as well as airports and other transportation hubs, and should fully integrate alternatives to the automobile. Alternative modes of transportation, including public transportation, bicycling, and walking, are important components of a comprehensive circulation system. These modes of transportation also help reduce air pollution and road congestion.

Public transportation plays a key role in future land use development and mobility. As the roadway system reaches capacity, alternative modes of transportation provide additional capacity as well as an enhanced degree of mobility for residents, workers, and visitors. Existing services are expected to continue while enhancements, many of them currently in the planning stages, will increase the viability of alternative modes of travel. The integration into the circulation system of alternative modes of transportation, such as bus, rail, bicycle, and pedestrian, is essential to maximizing mobility opportunities for residents, workers, and visitors.

Bus Service

OCTA provides public bus service for the City of Orange. In addition, the Riverside Transit Agency (RTA) provides long-distance service between The Village at Orange and the Downtown Terminal in Riverside. Table CM-4 identifies local bus routes that connect various activity centers in Orange to each other and to the region.

Table CM-5 shows the different community, station link, and inter- or intra-County routes that serve Orange. Community routes are express bus routes that provide faster connections to activity centers within and outside Orange County. Station link shuttles provide services between the Orange Transportation Center (OTC) and Orange. Both community and station link routes operate only at peak commuter times.

In addition to the fixed-route service, OCTA also offers several types of specialized community transportation services, such as standard service (curb-to-curb service), door-to-door service, subscription service, and same-day taxi service. Some of these services cater to senior citizens and people with disabilities residing in the City.

OCTA has forecast bus ridership to increase by approximately 75 percent by 2030. Some of this ridership increase will be the result of enhanced services, including express bus routes and introduction of bus rapid transit service. Much of the increase will be driven by increased arterial and freeway congestion levels in conjunction with improved local bus service.

Convenient, accessible, frequent, and easy-to-use public transit is a cornerstone element of the proposed land use plan. Planned mixed-use residential and commercial areas and intensified commercial and professional office corridors must be coupled with increases in transit service. Orange's land use plan features mixed-use districts that strategically concentrate population density near alternative transit facilities, such as the OTC in Old Towne, transit hubs at The Outlets at Orange and South Main Street, and the Anaheim Regional Transportation Intermodal Center (ARTIC) station in Anaheim near the City's western boundary at Katella Avenue.

Table CM-4
Local Bus Routes

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
24	Local	Fullerton–Orange	Malvern Ave. / Chapman Ave. / Tustin St..	The Village at Orange Lincoln Park and Ride
42	Local	Orange–Seal Beach	Lincoln Ave. / Los Alamitos Blvd. / Seal Beach Blvd.	The Village at Orange Lincoln Park and Ride
46	Local	Los Alamitos–Orange	Ball Rd. / Taft Ave.	The Village at Orange Lincoln Park and Ride
47	Local	Brea–Newport Beach	Brea Blvd. / Anaheim Blvd. / Fairview St.	Theo Lacy Jail Orangewood Children's Home UCI Medical Center The Block at Orange
50	Local	Long Beach–Orange	Katella Ave.	The Village at Orange Lincoln Park and Ride
53	Local	Brea–Irvine	Main St.	Batavia Industrial Parks Children's Hospital – CHOC St. Joseph's Hospital OCTA Offices
54	Local	Garden Grove–Orange	Chapman Ave.	Orange Civic Center Orange Transportation Center The Plaza UCI Medical Center The Block at Orange Rancho Santiago Community College

Table CM-4
Local Bus Routes

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
56	Local	Garden Grove–Orange	Garden Grove Blvd.	Orange Transportation Center OCTA Offices Children's Hospital–CHOC St. Joseph's Hospital
57	Local	Brea–Newport Beach	State College Blvd. / Bristol St.	The Block at Orange UCI Medical Center Theo Lacy Jail Orangewood Children's Home
59	Local	Brea–Irvine	Kraemer Blvd. / Glassell St. / Grand Ave. / Von Karman Ave.	Orange Transportation Center Chapman University Orange Plaza
71	Local	Yorba Linda–Balboa	Tustin St. / Red Hill Ave. / Newport Blvd.	The Village at Orange Lincoln Park and Ride

Source: Orange County Transportation Authority, 2006

Table CM-5
Community, Station Link, Intra- and Inter-County Bus Routes

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
131	Community	Yorba Linda–Orange	Lakeview Ave./ Riverdale Ave. / Tustin St.	The Village at Orange Lincoln Park and Ride
147	Community	Brea–Santa Ana	Raiit St. / Greenville St. / Fairview St.	UCI Medical Center The Block at Orange OCTA Offices St. Joseph's Hospital Children's Hospital – CHOC
167	Community	Anaheim–Irvine	Santiago Blvd. / Hewes St. / Bryan Ave.	The Village at Orange Lincoln Park and Ride
453	Station Link	Orange Transportation Center –St. Joseph's Hospital	Chapman Ave. / Main St. / La Veta Ave.	Orange Transportation Center Children's Hospital–CHOC St. Joseph's Hospital OCTA Offices

Table CM-5
Community, Station Link, Intra- and Inter-County Bus Routes

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
213	Intra County	Brea–Irvine Express	SR-55	Lincoln Park and Ride The Village at Orange
757	Inter County	Diamond Bar –Santa Ana Express	SR-57	UCI Medical Center The Block at Orange
RTA 149	Inter County	Riverside–Orange (Operated by RTA)	SR-91	The Village at Orange Downtown Riverside

Source: Orange County Transportation Authority and Riverside Transit Agency, 2006.

The City recognizes that ridership of both the bus and rail transit systems will increase, and has designed a land use plan that both enables and accommodates increased transit use. A large part of the City's role in accommodating additional transit use includes providing convenient and attractive transit amenities and streetscape features that improve user comfort and perception of safety, thus encouraging transit use. Transit-oriented Development (TOD) design features will be encouraged in major commercial and employment areas within the City, such as the Town and Country Road corridor, South Main Street, Katella Avenue, Uptown Orange, and Old Towne. Such TOD features may consist of streetscape measures such as bus turn-outs, benches, trash receptacles, shelters from wind and rain, and lighting. TOD features may also be more fundamental to the permitted uses and design within projects, such as incorporating child care centers, convenience stores, or personal services within the retail component of mixed-use projects, or near professional office concentrations. These and other measures help to make the transit system more accessible to a wide range of people.

The City will continue to work with OCTA to pursue expanded community circulators, such as the current Station Link service, that will connect people to rail transit, employment centers, residential areas, and commercial corridors. Additional options, such as jitney services that function as group taxis, will also be explored.

The City will also continue to support OCTA initiatives and services that promote the mobility of Orange's senior, disabled, and youth populations. To accommodate the needs of these groups, the City will continue to work with OCTA to offer para-transit services, and will seek ways to improve mobility for Orange youth through transit.

The City of Orange will continue to cooperate with OCTA and other regional providers to establish new bus routes and stops, and to provide transit amenities. New subdivision plans will be reviewed by OCTA to assess impacts on bus services, and to examine the need to provide bus stops or bays. Orange will also work with OCTA to maintain and, if needed, expand successful transfer stations in Old Towne, the Village at Orange, and The Outlets at Orange.

Rail Transit

Many current passenger and commuter fixed-rail transit options in the City will be expanded in the future, offering significant alternatives to automobile transit for many individuals who commute to or from the City for housing or employment. Rail transit now has a proven track record in Orange, and Metrolink seeks to expand rail services in support of land use transformations near current and future rail stations.

Metrolink

Metrolink operates seven commuter rail lines in Southern California, two of which pass through Orange. The Orange County Line offers direct connections to Union Station in Los Angeles to the north and to Oceanside to the south. The Inland Empire–Orange County Line provides direct connections to Riverside/San Bernardino to the east and San Juan Capistrano to the south. Roughly 30 Metrolink trains pass through the City on a daily basis. The Metrolink station in Orange is located three blocks from The Plaza at the OTC, close to a variety of stores and civic uses in Old Towne.

A much-anticipated rail service improvement is intra-county rail service along the County's core transit corridor. This service, which will be provided by Metrolink on behalf of OCTA, is an attempt to provide intra-county trips with a high degree of reliability. This 30-minute service is planned to operate between the Irvine Transportation Center (and possibly Laguna Niguel) and the Fullerton Transportation Center throughout the day to supplement Metrolink's peak period commuter service.

The City recognizes that plans to increase daily service on the current Metrolink lines, improvements to the OTC, and future expansion of Metrolink services to new destinations would be beneficial to Orange by providing multi-modal transportation options for people living and working in the community, thus reducing auto dependence for business and leisure purposes.

Anaheim Regional Transportation Intermodal Center



The Platinum Triangle, which borders Angel Stadium in the City of Anaheim, proposes a variety of high-density multiple-family high-rise housing, office space, and commercial uses. ARTIC is located adjacent to the proposed development, between Angel Stadium and the Honda Center. ARTIC is a major regional transportation center similar in scale to Union Station in Los Angeles and Ontario International Airport in Ontario. The intermodal center is be a stopping point for Amtrak, Metrolink, buses, and future high-speed rail systems that connect to Ontario

Airport, Las Vegas, and the Bay Area.

The City of Orange will coordinate with the City of Anaheim, OCTA, and others to ensure that the City is able to take full advantage of the regional mobility benefits offered by ARTIC. Potential benefits offered to the City by ARTIC include:

- a dynamic mixed-use commercial and residential center at the westernmost end of Katella Avenue; and
- bicycle and pedestrian connections to the Santa Ana River.

California High Speed Rail Corridor

The California High-Speed Rail Authority was established as a state agency in 1996 to direct the planning, design, construction, and operation of a future high-speed train system extending from Sacramento, San Francisco, and Oakland in the north to Los Angeles and San Diego in the south. This high-speed train is proposed to stop at ARTIC. OCTA estimates that by 2025, the California High Speed Rail Corridor will serve between 150,000 and 230,000 passengers each week.

Sidewalks, Trails and Bikeways

Walking and biking contribute to a healthy community, and play increasingly significant roles as alternatives to the automobile. The City recognizes this by providing and maintaining sidewalks, trails, and bikeways to support pedestrians and cyclists.

Pedestrian Facilities

In addition to providing basic transportation routes, sidewalks and pathways offer the opportunity to create appealing public spaces that reflect community pride and invite people to walk. Proposed mixed-use areas and reinvigorated commercial areas throughout the City will provide new and reinvented spaces for people to walk and shop. Walkability and access are essential components of a circulation system that easily and specifically accommodates pedestrians. Features that contribute to walkability include wide sidewalks, safe street crossings, design elements that encourage cautious driving, and a pleasant and safe walking environment. Sidewalks, walkways, well-designed pedestrian crossings, pathways, and pedestrian short-cuts allow people to get from one destination point to another with ease. Dedicated pedestrian paths can provide access between residential and activity areas, especially if streets do not connect. Access strategies for school children, seniors, and people with disabilities should also be incorporated into street and sidewalk plans. The City supports proactive integration of pedestrian improvements and amenities within the circulation system to improve walkability.

The City will create and implement a pedestrian-oriented streetscape master plan addressing key commercial corridors, including Tustin Street, Chapman Avenue, Main Street, Lincoln Avenue, and Katella Avenue. The master plan will address all functional aspects of the pedestrian environment. It will identify pedestrian links that need improvement and

strengthening, determine new pedestrian links to underserved areas, ensure adequate sidewalk widths to accommodate lighting and street trees, develop sidewalks in the industrial area that create links between bus stops, encourage safe routes to schools and recreation facilities, and minimize barriers to pedestrian and bicycle access.

Recreational Trails and Bikeways

A comprehensive network of recreational trails and bikeways greatly benefits Orange residents and visitors by providing popular modes of transportation for recreation. In addition to recreation activities, the City also supports walking and bicycling as viable commute alternatives to the automobile. The City's plan for recreational trails and bikeways is shown in Figure CM-3.

The plan includes trails maintained by the County and private homeowners associations, and is consistent with the OCTA *Commuter Bikeways Strategic Plan*. It is also consistent with the County's major riding and hiking trails and off-road paved bikeways. As described in the ***Vision for the Future,*** the plan will enable the City to connect parks to activity centers and residential areas using a combination of recreational trails and bikeways that truly allows people to travel from place to place within the City without needing an automobile.

Recreational Trails

As shown in Figure CM-3, over 70 miles of existing recreational trails are located within the City, connecting a large number of neighborhoods and community parks. In addition, 104 miles of proposed future trails are planned throughout Orange on land currently utilized for a variety of purposes, including flood control, railroad rights-of-way, and roadways.

The City will use the annual five-year Capital Improvement Program (CIP) process to prioritize, fund, and build proposed trail segments identified in Figure CM-3. These trails have been and will continue to be constructed and administered through cooperative efforts of the City, County, developers, and private homeowner associations.

Desired cross-sections for recreational trails are identified in Figure CM-4. The City may require construction of portions of proposed trails identified in Figure CM-3 as a condition of development approval for projects located adjacent to the proposed trail alignments. Funding for recreational trails and associated restoration projects comes from a variety of federal, state, and regional sources. Priority for funding of trail improvements will be given to projects that complete loops within the system, provide missing links for regional and local trail systems, or serve as destination links to schools, parks, retail businesses, or regional trails.

Priorities for the recreational trail system include:

- trail connections to the Santiago Oaks Regional Park extension west of Cannon Street, consisting of a connection between Calle Grande and Cannon Street, and the Jamestown trail from the Orange Park Acres equestrian arena to Cannon Street;

- trail connection from Serrano Avenue near Fred Barrera Park to Santiago Oaks Regional Park;
- Mabury Ranch Trail connection from the proposed Cerro Villa Park to the Santiago Oaks Regional Park;
- Serrano Avenue connection near Cannon Street; and
- Additional trail connection into Santiago Oaks Regional Park from Orange Park Acres.

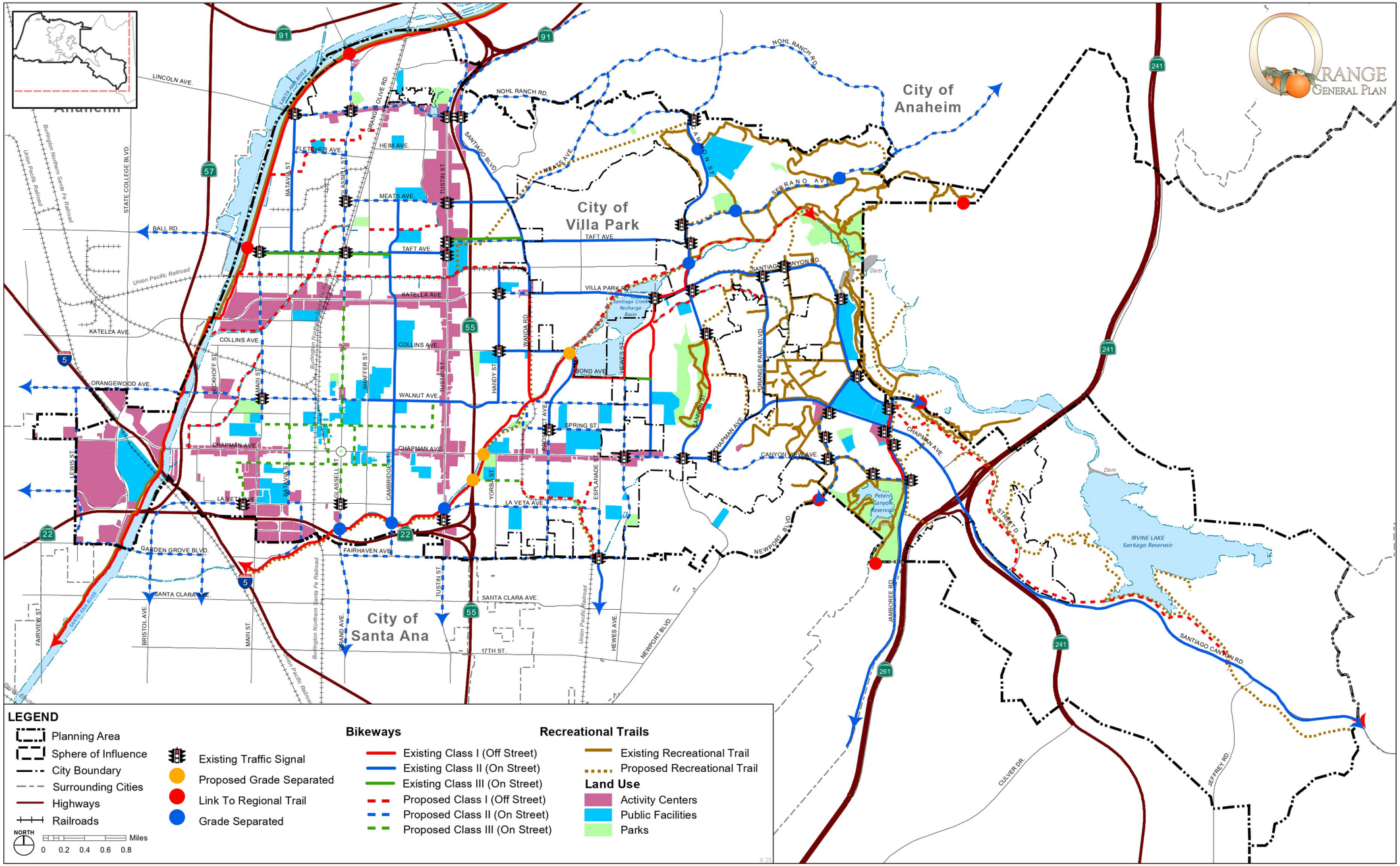
To increase the number of people using non-vehicular means of transportation, the City will encourage putting in place a safe network of crosswalks, grade separations, and walkways to ensure the safety of pedestrians, bicyclists, and equestrians. Where appropriate, traffic calming devices and methods such as median landscaping and provision of bike or transit lanes should be used to slow traffic, improve roadway capacity, and address potential safety issues. The City will continue to work towards improving the overall condition, appearance, and safety of both medians and sidewalks in Orange.

Bikeways

Orange's relatively mild climate permits bicycle riding year-round, and the growing popularity of bicycling has drawn enthusiasts onto the streets and bike trails throughout the City. The plan for recreational trails and bikeways (Figure CM-3) shows the planned system of bikeways within the City. The Orange *Bikeway Master Plan* has established three classes of bicycle routes that adhere to California Department of Transportation (Caltrans) standards:



- **Class I** Off-road bike paths are located on vacated rail lines, water corridors, or areas otherwise separated from streets.
- **Class II** On-road bike lanes are located along arterial roadways that are delineated by painted stripes and other features.
- **Class III** On-road bike routes share use with motor vehicle traffic. They provide a route that is signed but not striped.



Source: City of Orange Community Services Department, 2015.

Figure CM-3 Plan for Recreational Trails and Bikeways

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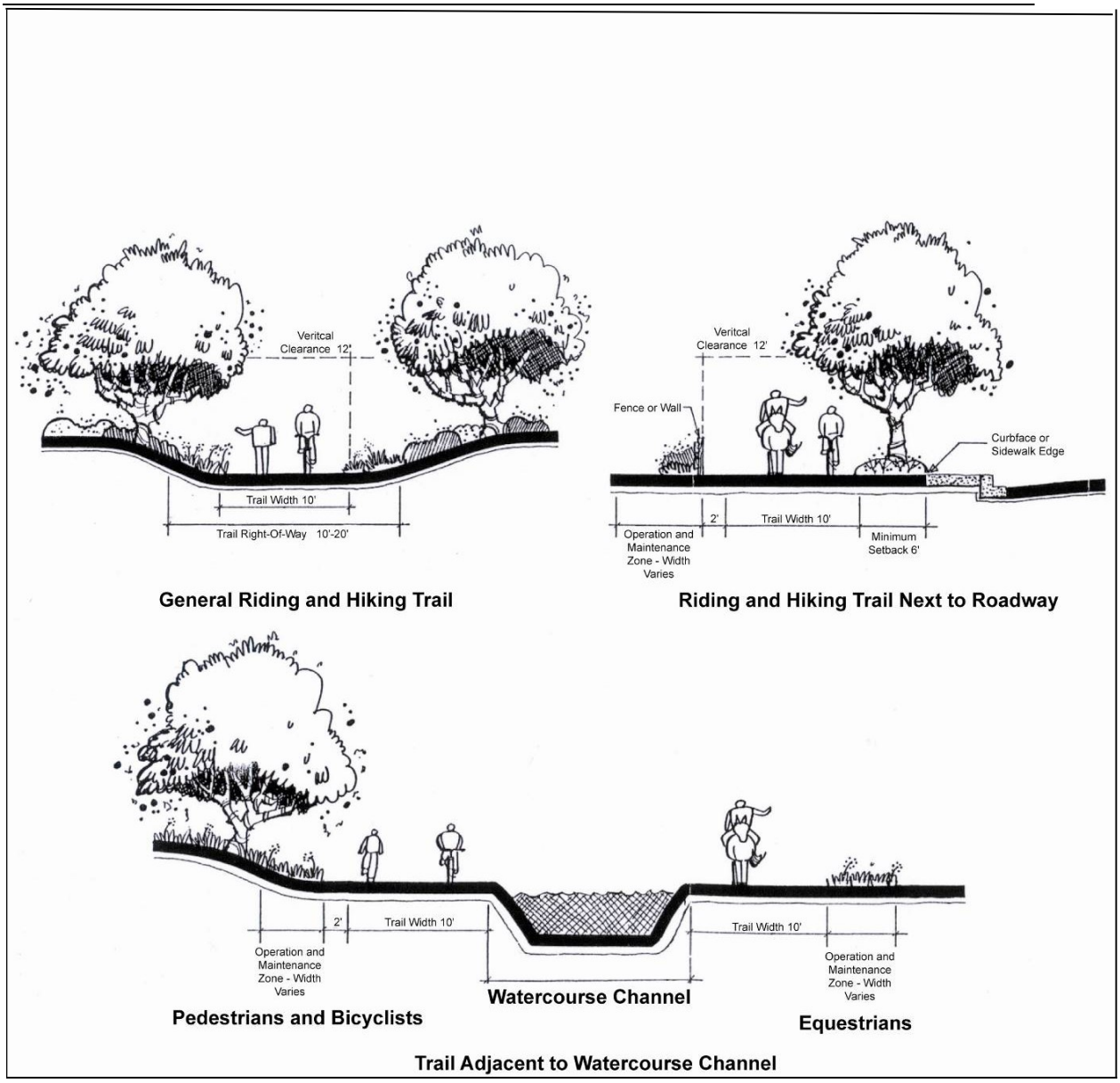


Figure CM-4
Trail Standards

Cross-sections for each type of route are shown in Figure CM-5.

As shown in Figure CM-3, several future bike routes are planned within Orange, including the following high-priority projects:

- Completing Class I bike routes along Santiago Creek and the Tustin Branch Trail
- Establishing Class II bike lanes, including:

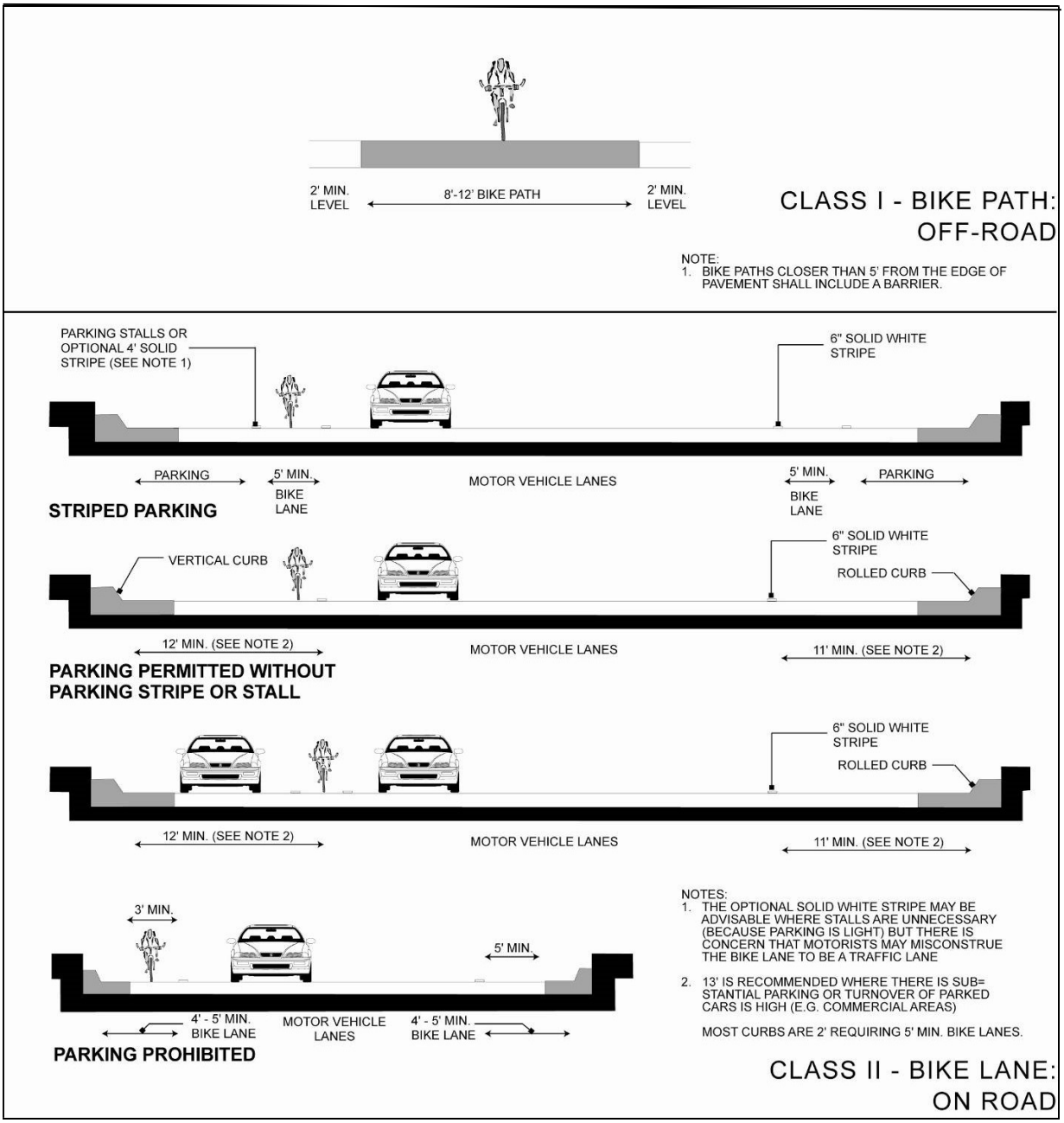


Figure CM-5
Bikeway Standards

  - An east/west corridor on Walnut Avenue from the western City limits to Santiago Boulevard
  - North/south corridors on Main Street from Taft Street to Palm Street, on Batavia Street from Chapman Avenue to La Veta Avenue, and on Parker Street from La Veta Avenue to the City limits
- Establishing Class III routes along Almond Avenue, Feldner Street, and Bedford Street

The City has completed a paved bike trail along Santiago Creek from Tustin Street to the western City limit that continues on to Main Place Mall and the Discovery Science Center as well as two additional segments to the bike trail, which extends the Santiago Creek Trail from Tustin Street to Grijalva Park, and also connect Grijalva Park at Santiago Creek to Collins Avenue along the City-owned portion of the Tustin Branch Trail right-of-way between Walnut and Collins Avenues. The Santiago Creek trail is planned to extend through and beyond the City, connecting the regional Santa Ana River Trail to Santiago Oaks Regional Park and wilderness areas east of Orange. The City will continue to work towards designing a comprehensive bike trail system that is highly accessible and safe for those who wish to use it.

The City has proposed Class II and III routes along many north-south and east-west arterials, all of which connect to pedestrian trails and Class I routes. The City responds to the need to provide safe and efficient bike travel by making every effort to provide bikeways separate from the roadway. When bicyclists must share the road with automobiles, the City will work to improve overall safety.

Currently, two bicycle parking facilities are located in Orange, at the OTC (Metrolink station) and the Old Towne West Metrolink Parking Structure. The City will work to provide greater bike amenities including delineated bike lanes and clear signage along bike trails. The City will also install bicycle racks and safe storage facilities at parking areas for City facilities, as appropriate, and will require privately developed projects to incorporate on-site bicycle facilities in accordance with the City's Zoning Code (Title 17 of the Orange Municipal Code).

Parking Facilities

Although parking is often considered a separate issue from vehicle circulation, it is important to address on-street parking because it has a direct effect on roadway capacity. In order to facilitate improved traffic flow along Orange's major arterials, the City generally plans to permit on-street parking only on streets classified as Primary or Secondary Arterials or Collector Streets.



Off-street parking deficiencies can reduce business activity, and can cause

vehicles to re-circulate on public streets, which increases traffic volumes and congestion by reducing capacity for through traffic. The City's Zoning Code includes parking requirements to ensure that an adequate number of spaces are provided on-site for most uses. The Code also establishes minimum stall dimensions consistent with current standards for other jurisdictions. These regulations apply to all new developments, and may be applied to current uses that are modified or expanded.

Particular concern has been expressed within the community regarding current and expected future parking shortages in Old Towne. Figure CM-6 identifies the location of existing public parking lots in Old Towne. Most Old Towne parking lots have a maximum time limit of three hours, with or without a permit. However, some parking lots, such as the OTC parking located off Chapman Avenue, have no time limit.

Orange will continue to provide sufficient parking to meet community demands. In Old Towne, the City will study the benefits of creating a parking district and the feasibility of developing underutilized parking lots surrounding The Plaza as public parking facilities. The City may encourage the use of shared parking, consolidated parking facilities, and underground parking or parking structures to provide additional off-street parking to meet future demands in areas throughout the City with higher concentrations of commercial uses.

Circulation System Aesthetics

The City has determined that it is necessary and desirable to improve certain roadways and their rights-of-way to enhance the experience for all users of these corridors. Major commercial corridors have been designated within the Urban Design Element to be improved with pedestrian-scale enhancements. Enhancements could include street trees, sidewalk improvements, lighting, bus shelters, and crosswalks. These improvements not only offer a more aesthetically-pleasing experience for all users in these corridors, they also may offer increased safety and security.

Streetscape improvements offer safety and security to both motorists and non-motorists through increased visual cues, better visibility, and increased activity. Many streetscape enhancements provide not only a comfortable environment for the pedestrian and bicyclist, but also offer drivers visual cues that a non-motorist could be expected in an area. Improvements such as striping, bus shelters, and pedestrian-scaled signage guide the non-motorist towards areas that are most appropriate for their use. These same cues help the motorist to see where the presence of pedestrians and bicyclists is most likely to occur. For example, a well-marked crosswalk guides the pedestrian towards the location in the right-of-way most appropriate for crossing, while also alerting the motorist to slow down and look out for pedestrian traffic.

Visibility offered by pedestrian-scaled lighting benefits non-motorists and motorists alike. Pedestrians and bicyclists are better able to see their way, which increases their feelings of security. Improvements that create a sense of security for pedestrians encourage increased use and activity. This increased activity, in turn, leads to a greater feeling of safety. The City has acknowledged the importance of improving the experience of users on many of its major commercial corridors.



*Note: Possession of City issued parking permit enables holder to exceed specified time limit

Figure CM-6
Public Parking Lots in Old Towne Orange

*Note: Possession of City issued parking permit enables holder to exceed specified time limit

GPA 2010-0001 (8/10/10)

CIRCULATION & MOBILITY IMPLEMENTATION

The goals, policies, and plans identified in this Element are implemented through a variety of City plans, ordinances, development requirements, capital improvements, and ongoing collaboration with regional agencies and neighboring jurisdictions. Specific implementation measures for this Element are contained in the General Plan Appendix.

Agenda Item

Planning Commission

Item #: 4.1. 2/2/2026 **File #:** 26-0055

TO: **Chair and Members of the Planning Commission**

THRU: **Hayden Beckman, Planning Manager**

FROM: **Arlen Beck, Associate Planner**

1. SUBJECT

Public Hearing to consider an amendment to the Circulation and Mobility Element of the City of Orange General Plan and finding of CEQA exemption.

2. SUMMARY

The City is proposing an amendment to the City of Orange General Plan Circulation and Mobility Element to reclassify the roadway designation for Santiago Canyon Road (Villa Park Road) between the shared Orange-Villa Park boundary and Cannon Street, and Fairhaven Avenue between the shared Orange-Santa-Ana boundary and Tustin Street (Tustin Avenue) to reflect changing development and traffic patterns.

3. RECOMMENDED ACTION

1. Conduct and close the Public Hearing.
2. Adopt Planning Commission Resolution No. 05-26 recommending the City Council approve General Plan Amendment No. 26-0001 amending the City of Orange General Plan Circulation and Mobility Element to conform to the Orange County Transportation Authority's Countywide Master Plan of Arterial Highways.
3. Find the proposal exempt from the California Environmental Quality Act (CEQA) per State CEQA Guidelines Section 15061(b)(3) (Common Sense Exemption).

4. PROJECT BACKGROUND

The City of Orange was formally requested by adjacent agencies to update roadway classifications for two streets located along the City's jurisdictional boundaries:

- Santiago Canyon Road (Villa Park Road) between the shared Orange-Villa Park boundary and Cannon Street; and
- Fairhaven Avenue between the shared Orange-Santa Ana boundary and Tustin Street (Tustin Avenue).

These requests were initiated by the County of Orange and the City of Santa Ana, respectively, following updated traffic studies that evaluated long-term growth trends, traffic volumes, and roadway design objectives.

Both agencies have already adopted the revised roadway classifications within their own General Plans. The Orange County Transportation Authority (OCTA) has also reviewed and conditionally approved the changes as amendments to the Countywide Master Plan of Arterial Highways (MPAH).

To complete the regional planning process and maintain consistency with neighboring jurisdictions and OCTA, the City of Orange must amend its Circulation and Mobility Element to reflect the same roadway lane configuration.

Although the City of Orange, the County of Orange, the City of Santa Ana, and the OCTA are coordinating to achieve the same roadway reclassification objectives, each agency uses slightly different roadway classification terminology. The intent is to achieve equivalency in terms of number of lanes and median type. Therefore, for clarity and consistency, this staff report uses the roadway classification naming conventions established in the Circulation and Mobility Element of the City of Orange General Plan.

5. PROJECT DESCRIPTION

Santiago Canyon Road (Villa Park Road)

A transportation assessment prepared by Fehr & Peers evaluated Santiago Canyon Road (Villa Park Road) from Wanda Street to Cannon Street, spanning multiple jurisdictions. The study analyzed:

- Traffic operations and level of service;
- Vehicle queueing;
- Safety conditions; and
- User comfort for pedestrians and bicyclists.

The analysis determined that the roadway's existing Major Arterial (6-Lane Divided) designation does not align with current traffic forecasts or the available 100-foot right-of-way. Instead, an Asymmetric Major Arterial (5-Lane Divided) configuration, three westbound lanes and two eastbound lanes, would adequately serve future demand while fitting within existing constraints and meeting General Plan level of service requirements for roadway performance.

This revised designation also allows space for buffered Class II bicycle lanes, improving multimodal safety and comfort.

Fairhaven Avenue

Through their comprehensive General Plan Update, the City of Santa Ana conducted a Transportation Impact Study which included the evaluation of Fairhaven Avenue between Tustin Street (Tustin Avenue) and Yorba Street as a distinct roadway segment for both Existing Year (2020) and Future Year (2045) conditions. The analysis provided:

- Average Daily Traffic volumes
- Roadway Level of Service based on volume-to-capacity (V/C) ratios
- Consistency between observed/forecasted traffic demand and the Circulation Element roadway classification

The Transportation Impact Study determined that Fairhaven Avenue's existing Secondary Arterial (4-Lane Undivided) designation is inconsistent with both observed and forecasted traffic volumes,

supporting its reclassification to a Two-Lane Secondary Arterial (2-Lane Divided) to better align with operational performance and Complete Streets objectives, which supports lower design speeds, and allows for enhanced pedestrian, bicycle, and streetscape features without compromising roadway performance while also meeting General Plan level of service requirements for roadway performance.

Subsequently, OCTA conditionally approved the reclassification from a Secondary Arterial (4-Lane Undivided) to a Two-Lane Secondary Arterial (2-Lane Divided). This change reflects lower than anticipated growth, updated traffic volumes, and surrounding land use context.

The amendment requires the City of Orange to update our General Plan to achieve consistency (number of lanes and median type) in order for the OCTA MPAH Amendment to become final.

6. PROJECT ANALYSIS

Reclassification of Roadways:

The City of Orange's Circulation and Mobility Element (Circulation Element) identifies goals, objectives, policies and implementation programs that affect the transportation system. The Circulation Element contains policies on the development of the transportation facilities necessary to accommodate orderly growth within the City, provides guidance for future planning efforts, and ensures a balanced transportation system. As a part of the Circulation Element, the Circulation & Mobility Plan documents existing transportation facilities and identifies the desired future conditions of these facilities. The Circulation Element defines the different classifications of roadways to accommodate various daily capacity and functions.

The existing Circulation & Mobility Plan includes six roadway classifications. For each roadway classification, the level of service (LOS) is identified to indicate the performance measure for an arterial that meets the City's required daily capacity minimum of LOS D. Finally, the City Master Plan of Streets and Highways illustrates the proposed roadway classification for each major roadway within Orange.

The proposed General Amendment will reclassify two specific roadway segments within the City as follows:

1. Santiago Canyon Road between the shared Orange-Villa Park boundary and Cannon Street to be reclassified from Major Arterial (6-lane divided) to Asymmetric Major Arterial (5-lane divided); and

2. Fairhaven Avenue, between the shared Orange-Santa Ana boundary and Tustin Street from Secondary Arterial (4-Lane Undivided) to Two-Lane Secondary Arterial (2-Lane Divided).

Attachment 2 identifies the two roadway segments to be reclassified. Additionally, this proposed General Plan Amendment will create two more roadway classifications:
1) Asymmetric Major Arterial (5-Lane Divided) and 2) Two-Lane Secondary Arterial (2-Lane Divided). Adding these two classifications will result in a total of eight roadway classifications within the Circulation & Mobility Plan. Attachment 3 contains the proposed changes to the Circulation Element, including an updated City Master Plan of Streets and Highways. The requested reclassifications for both Santiago Canyon Road and Fairhaven Avenue follow adopted reclassifications by neighboring agencies and OCTA.

The County of Orange prepared a traffic analysis for the reclassification of Santiago Canyon Road (named Villa Park Road within County limits) between Hewes and Cannon Street (Attachment 4) from a divided 6-lane to a divided 5-lane roadway. The results of this analysis support the proposed reclassification, and in May 2025, the County of Orange adopted the reclassification of Villa Park Road (Santiago Canyon Road) (Attachment 5). OCTA, in anticipation of the County of Orange's General Plan amendment, adopted this reclassification in OCTA's Master Plan of Arterial Highways in September 2024 (Attachment 6). OCTA's adoption of the reclassification of Santiago Canyon Road requires the City of Orange to update their General Plan to reclassify this road segment in kind.

As part of a recent General Plan update, the City of Santa Ana evaluated various roadway segments, including Fairhaven Avenue, for reclassification. The results of Santa Ana's traffic analysis supports the reclassification of Fairhaven Avenue, between Grand Avenue to Tustin Street, from an undivided 4-lane to a divided 2-lane roadway (Attachment 7). Santa Ana adopted an updated General Plan in April 2022 (Attachment 8), which includes an updated Mobility Element showing the reclassification of Fairhaven Avenue (Attachment 9). OCTA, in response to Santa Ana's request to reclassify Fairhaven Avenue, conditionally approved the adoption of this reclassification in OCTA's Master Plan of Arterial Highways (Attachment 10). OCTA's conditional adoption of the reclassification of Fairhaven Avenue stipulates that the City of Orange must also reclassify this segment of Fairhaven Avenue in kind.

It is important that the City's Master Plan of Streets and Highways is consistent with neighboring jurisdictions, such as the County of Orange and Santa Ana, to ensure the City's circulation system develops in a manner that promotes regional mobility. This amendment will achieve this consistency.

7. AUTHORIZING GUIDELINES

Orange Municipal Code Section 17.08.020 and 17.10.010 authorizes the Planning Commission to review and make advisory recommendations to the City Council on General Plan Amendments.

8. PUBLIC NOTICE

On January 22, 2026, a notice was published in the Orange City News newspaper for a public hearing before the Planning Commission on February 2, 2026.

9. ENVIRONMENTAL REVIEW

The proposed project is categorically exempt (Common Sense Exemption) from the provisions of the California Environmental Quality Act (CEQA) per State CEQA Guidelines Section 15061(b)(3) because there is no possibility that the revisions to the roadway designations may have a significant effect on the environment.

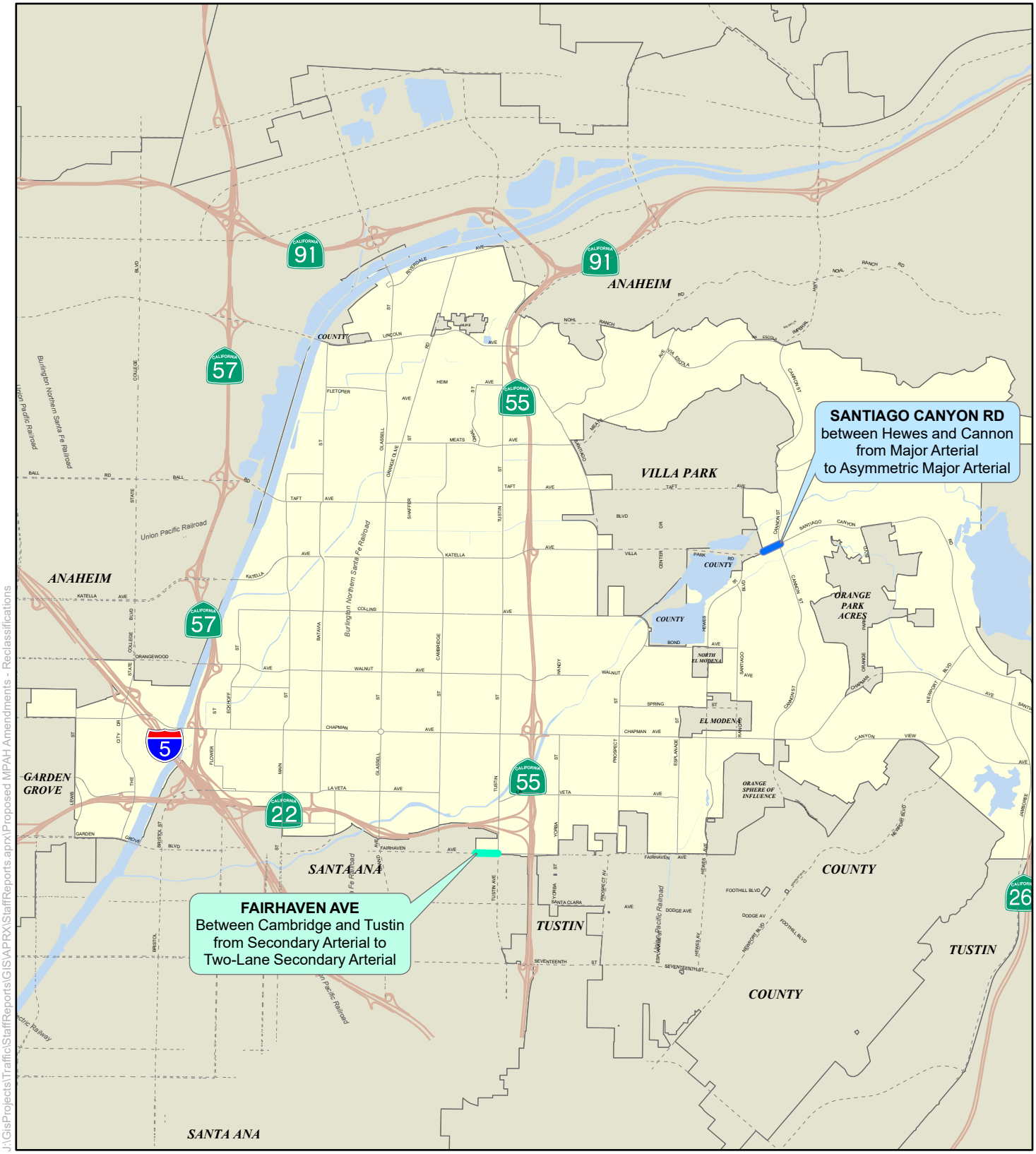
10. ADVISORY BOARD ACTION

None.

11. ATTACHMENTS

- Attachment 1 Planning Commission Resolution No. PC 05-26 (including amended City of Orange General Plan Circulation and Mobility Element)
- Attachment 2 Proposed City Master Plan of Streets and Highways Amendment Reclassification

- Attachment 3 Amended City of Orange General Plan Circulation and Mobility Element (redline version)
- Attachment 4 Santiago Canyon Road (Villa Park Road) MPAH Amendment Traffic Study
- Attachment 5 County of Orange Staff Report of May 6, 2025, for the Santiago Canyon Road (Villa Park Road) reclassification
- Attachment 6 MPAH Amendment Staff Report of September 9, 2024, for the Santiago Canyon Road (Villa Park Road) reclassification
- Attachment 7 City of Santa Ana General Plan Update Appendix K Transportation Impact Study for the Fairhaven Avenue reclassification
- Attachment 8 City of Santa Ana Staff Report from April 19, 2022, for the Fairhaven Avenue reclassification
- Attachment 9 Adopted City of Santa Ana General Plan Mobility Element
- Attachment 10 OCTA Staff Report of November 2, 2020, for the Conditional Amendment of the Fairhaven reclassification in the Countywide Master Plan of Arterial Highways



J:\GisProjects\Traffic\StaffReports\GIS\APRX\StaffReports.aprx\Proposed MPAH Amendments - Reclassifications

City of Orange
Geographic Information System

Legend

- Reclassify as Asymmetric Major Arterial
- Reclassify as Two-Lane Secondary Arterial

Attachment 1

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1/12/2026

Source: City of Orange (2026)

CITY OF ORANGE

PROPOSED CITY MASTER PLAN OF STREETS AND HIGHWAYS AMENDMENT
RECLASSIFICATIONS

CIRCULATION & MOBILITY

INTRODUCTION AND VISION FOR THE FUTURE

Orange's circulation system has been influenced by a variety of historical factors, including the presence of the Santa Fe Railroad, the vision of Alfred B. Chapman and William T. Glassell, the agricultural history of the area, and alternative transportation modes including a historic streetcar system.

In 1887, the Santa Fe Railroad came to Orange and built a station four blocks west of the Plaza. The coming of the railroad set off a real estate boom that brought hundreds of settlers to the area. The railroad also influenced the City's early economic success by providing a means to transport goods, especially citrus, to the entire country. Today, the railroad tracks continue to serve freight trains and provide a critical link to the region via the Metrolink heavy rail transit system.

In the 1870s, Alfred B. Chapman and William T. Glassell subdivided their land into residential and small farm lots centered on a roundabout known today as Plaza Park. Plaza Park was dedicated in 1886 and established the City's two main streets – Chapman Avenue and Glassell Street – as well as the compact street grid of Old Towne Orange. The street grid and railroad system were supported historically by a streetcar system that connected the small towns and settlements that make up the City today.

Over time, the small farms on the outer edges of Orange's core district began to disappear. Two factors influenced this change: the demand for housing after World War II and the appearance of "Quick Decline" disease that destroyed the local citrus industry. As each farm was developed independently, the grid system expanded outward and commercial corridors were established. Orange's roadways began to take on a more suburban pattern of collectors, connectors, and arterials. As development reached the eastern portion of the City, the grid gave way to curvilinear street patterns.

The historic roadways and railways that form the basis for the current circulation network have been complemented over the years by the development of a streetcar system, a transit service, an emerging and continually expanding bicycle trail and route network, and routes for equestrian use in the eastern portion of the City. The City will continue to be served by these multiple modes of transportation and other emerging mobility technologies.

Orange's ***Vision for the Future***, described in the General Plan Introduction, recognizes that the circulation system is a key component of the quality of life in the City. Accordingly, the vision includes the following objectives:

- Residential areas will be connected to commercial, recreational, and open space areas, as well as educational and cultural facilities via a balanced, multi-modal circulation network that accommodates vehicles, pedestrians, cyclists, hikers, and equestrians. This network will create additional opportunities for walking and biking, enhancing safety and well-being for neighborhoods and businesses.
- The City will work to define neighborhoods through the use of open space areas and a trail system that provides a source of aesthetic beauty and recreational opportunities. These open space areas support a healthy and active community.
- We will develop a connected multi-modal network for traveling from one end of town to the other that provides the option for residents from different neighborhoods to access parks, open spaces, and scenic areas by vehicle, transit, foot, bicycle or, where appropriate, horse.

Purpose of the Circulation & Mobility Element

California's General Plan Guidelines mandate that the Circulation & Mobility Element fulfill the following objectives:

- Show a direct relationship to the Land Use Element to ensure that any changes to land use as stated by the Land Use Element and growth occur with adequate circulation and transportation facilities in mind.
- Address relevant issues including the adequacy of "major thoroughfares, transportation routes, terminals, other local public utilities and facilities." The goal of the Circulation & Mobility Element is to identify circulation problems related to these facilities in the early stages and resolve them in local goals and policies without costly delays.

Other relevant issues discussed in the Circulation & Mobility Element include those that address streets, highways, public transit routes, railroads, bicycle and pedestrian routes, recreational trails, paratransit, parking, transportation system management, and air pollution. The hierarchy of streets within the residential areas helps to frame the urban form. Connections between neighborhoods can be achieved by a comprehensive network of sidewalks and trails. Also, the commercial corridors can be enhanced with adequate street capacity, public transit, and pedestrian-friendly environments.

The state also recommends that the Circulation & Mobility Element address coordination efforts among the local, regional, and state transportation plans to better resolve circulation issues. Since many transportation concerns are regional, addressing them requires intergovernmental and regional transportation management plans and policy implementation. These partnerships ensure the most efficient use of funding, infrastructure, and other resources. The state also recommends the "preservation of transportation corridors for future system improvements."

The Circulation & Mobility Element prioritizes the issues and opportunities that exist within Orange's transit network. It is directly responsive to proposed changes in land use and anticipates the impacts of those changes. This Element also seeks to reassure residents and businesses that the City recognizes the link between transportation and land uses, and provides a means to mitigate the impacts of growth.

Another goal of the Circulation & Mobility Element is to increase transportation options and provide increased access to the circulation system for all residents of Orange. This goal includes improved rail and bus transit connections and frequency, implementation of a *Bikeway Master Plan,* and completion of a trails system. Transforming many of Orange's historically auto-oriented commercial corridors, such as Katella Avenue, Main Street, and portions of La Veta Avenue, Chapman Avenue, and Glassell Street into more pedestrian-friendly mixed-use environments is an overarching goal. Where possible, the development of equestrian trails is also encouraged.

One of the main functions of the Circulation & Mobility Element is to guide and direct enhancement of the current circulation system for existing and future developments. Thus, circulation provisions correlate with the Land Use Element to avoid unchecked growth and unnecessary congestion.

Another key objective of the Element is to work toward a future circulation network that provides meaningful alternatives for getting around the community by less auto-dependent means. The City's topography, street and sidewalk system, transit and trail framework, and land use relationships provide an excellent foundation for pursuit of this objective.

The Circulation & Mobility Element does not simply determine automobile routes. It also guides the movement of people and goods, directly affecting Orange's physical, social, and economic environment. Since circulation permits accessibility to places and social amenities, it can either improve or cause deterioration in quality of life. Circulation efficiency also plays a major role in progress and development of the City's economy.

Scope and Content of the Circulation & Mobility Element

The Circulation & Mobility Element comprises three sections:

(1) Introduction;
(2) Issues, Goals, and Policies; and
(3) The Circulation & Mobility Plan.

The first section introduces the contents of the Circulation & Mobility Element. The second section presents issues, goals, and policies for improving circulation. The third section includes the Circulation & Mobility Plan, which designates locations and standards for roadways and non-motorized circulation facilities, and states the community's desired level of transportation service.

Implementation measures designed to promote achievement of the goals and policies are provided in an Appendix to the General Plan.

Relationship to other General Plan Elements

California planning law requires that the Circulation & Mobility Element correlate and maintain consistency with the other General Plan elements. The Circulation & Mobility Element relates most closely to the Land Use, Natural Resources, Noise, Economic Development, Housing, and Urban Design Elements.

The Circulation & Mobility Element is linked to the Land Use Element because the General Plan land use designations identified in the Land Use Element serve as a basis for the allocation of vehicle trips and establishment of capacity levels for circulation planning. The Land Use Element also provides land use designations that accommodate mixed commercial and residential development, which encourage shorter trips and improve the efficiency of the transportation network. The Circulation & Mobility Plan is established to define and provide for adequate levels of service and facilities to support future land uses. This Element recommends roadway and intersection improvements that may require land acquisition. Location of public transportation facilities will also influence pedestrian activity and transit-oriented development, and the physical size of streets will affect urban land uses and the physical appearance of the City.

The Natural Resources Element identifies regional air quality objectives and provides appropriate mitigation efforts that affect the Circulation & Mobility Element. Improving access, encouraging alternative modes of travel, and maintaining air quality and conservation standards are common objectives of the Natural Resources and the Circulation & Mobility Elements.

The Noise Element addresses future noise levels associated with roadways, rail, and other transportation facilities. Future volumes of traffic on the circulation system are directly related to future noise levels and mitigation strategies.

The Economic Development Element identifies desirable economic conditions and land uses that enhance and promote business activity, employment growth, and economic stability. The goals and policies of the Circulation & Mobility Element will determine road capacity in Orange, which will impact the type and location of uses, and parking and access considerations associated with future uses. Both elements share a common objective of planning for future transportation infrastructure needs. Maintaining roadways, bikeways and bus and rail transit facilities is critical to the success of both current and future businesses in Orange.

The Urban Design Element is a framework for shaping the future form and character of Orange. The quality of Orange's physical environment contributes to its identity, attracts new residents, and sets the stage for economic activity. The Urban Design Element builds on the foundation of Orange's already strong sense of place to preserve and strengthen the streetscape environment of commercial corridors and landmarks within the city. The Urban Design Element and Circulation & Mobility Element share a common objective to reinvent City streets as more functional and walkable public places.

ISSUES, GOALS, AND POLICIES

The goals, policies, and implementation programs of the Circulation & Mobility Element seek to achieve a better balance between vehicular, pedestrian, and bicycle travel, and to provide a wide range of viable transportation options to Orange residents. The following six issues are addressed: (1) enhancing the local circulation system; (2) maintaining the regional circulation system; (3) maintaining a viable public transportation network; (4) creating a comprehensive system of sidewalks, trails, and bikeways; (5) providing adequate parking facilities; and (6) improving circulation system aesthetics and safety.

Local Circulation System

The local roadway system serves the community's primary needs for mobility and access, and consists of a hierarchy of City streets to meet those needs. The City's original street system was established as a grid pattern long before a Master Plan of Arterial Highways (MPAH) was adopted. The Old Towne area and many postwar neighborhoods were designed in a classic grid configuration, while in newer parts of the City, physical features such as the Santa Ana River, Santiago Creek, hilly terrain, freeways and the presence of the City of Villa Park have resulted in a system without a definitive pattern. Some major roads do not connect the eastern and western portions of the City and consequently do not provide effective through circulation. A well-designed roadway system will provide convenient access to activities in Orange.

GOAL 1.0: **Provide a safe, efficient, and comprehensive circulation system that serves local needs, meets forecasted demands, and sustains quality of life in neighborhoods.**

Policy 1.1: Plan, build, and maintain an integrated, hierarchical, and multi-modal system of roadways, pedestrian walkways, and bicycle paths throughout the City.

Policy 1.2: Identify key intersections and streets with historical or projected traffic congestion problems and apply creative traffic management measures to improve overall circulation.

Policy 1.3: Consider various methods to increase safety on City arterials and neighborhood streets, including landscaping, provision of bike/transit lanes, and consideration of traffic calming on neighborhood streets in accordance with the City's Neighborhood Residential Traffic Management Program.

Policy 1.4: Prohibit on-street parking where possible to reduce bicycle/automobile conflicts in appropriate target areas as recommended by the *Bikeways Master Plan*.

Policy 1.5: Address possible safety and noise effects of increased rail activity on grade crossings throughout the City.

Policy 1.6: Maintain and repair roadways and sidewalks as necessary to improve circulation and safety.

Policy 1.7: Consolidate driveways along roadways that provide access to commercial uses to minimize side street interruption and promote smooth traffic flows. On-street parking is prohibited on commercial access streets to provide adequate curb-to-curb width for travel lanes.

Regional Circulation System

Mobility in Orange is directly related to the regional transportation network, as the City lies at the confluence of several regional freeways: the Santa Ana Freeway (Interstate 5), Orange Freeway (State Route [SR] 57), Garden Grove Freeway (SR-22), Costa Mesa Freeway (SR-55), Riverside Freeway (SR-91) and Eastern Transportation Corridor (SR-241). In addition to the freeways, other connections to the region include the commuter rail system known as Metrolink, a freight and goods rail transport system, and a regional bikeways system with connections to the Santa Ana River and other locations. Orange is also connected to the region via the Orange County Transportation Authority (OCTA) bus system. City infrastructure must accommodate regional through traffic originating in other communities in addition to providing local residents access to the regional network.

GOAL 2.0: Provide an effective regional transportation network.

Policy 2.1: Ensure consistency with the County MPAH in order to qualify for funding programs.

Policy 2.2: Coordinate with adjacent cities to plan and develop major east/west and north/south arterials and rapid transit to connect the City with the cities of Anaheim, Tustin, Santa Ana, Garden Grove, and Villa Park, as well as developing areas within the City's sphere of influence.

Policy 2.3: Cooperate with and support local and regional agencies' efforts to improve regional arterials and transit in order to address increasing traffic congestion.

Policy 2.4: Coordinate land use planning with anticipated future development of roadways and other transportation facility improvements as well as the expansion of commuter rail and bus service.

Policy 2.5: Ensure that transportation facilities and improvements do not degrade the quality of Orange's commercial and residential areas.

Policy 2.6: Encourage the use of regional rail, transit, bicycling, carpools, and vanpools for work trips to relieve traffic congestion.

Policy 2.7: Continue to support the use of rail corridors within the City for the movement of freight and goods, and work with rail operators to minimize associated traffic delays.

Public Transportation

Public transportation is a crucial component of a comprehensive circulation system. In addition to reducing air pollution and traffic congestion, a successful public transit system provides an alternative mode of travel for those with limited mobility, residents who may not have access to a car, and persons who choose not to drive.

GOAL 3.0: **Connect centers within the City to each other and to the region through efficient and accessible public transportation.**

Policy 3.1: Work with OCTA and other agencies to assess City public transportation needs and to ensure delivery of services when and where they are needed.

Policy 3.2: Enhance and encourage provision of convenient and attractive transit amenities and streetscapes to encourage use of public transportation (e.g., benches, trash cans, shelters, and lighting).

Policy 3.3: Require incorporation of transit-oriented design features within major commercial and employment areas as well as in medium density residential and mixed-use development areas.

Sidewalks, Trails, and Bikeways

In addition to offering recreational and public health benefits, non-vehicular modes of transportation offer commuting options. Also, the mixed-use environments advocated by Land Use Element policies will encourage increased pedestrian activity on City sidewalks for both business and pleasure. An effective pedestrian, bicycle, and equestrian network must be safe and accessible, and must connect key activity centers within the City with each other and with the regional trail system. A comprehensive network of on-street bicycle lanes, off-street bicycle paths, sidewalks, and trails should be developed and maintained to increase the safety and utility of the system, with a particular focus on the City's sidewalk deficient industrial areas

GOAL 4.0: **Provide efficient and accessible modes of pedestrian, bicycle, and equestrian transportation and improved facilities and amenities.**

Policy 4.1: Create a comprehensive bicycle network that is integrated with other transportation systems by establishing complementary on-street and off-street facilities as identified in the City of Orange *Bikeways Master Plan* and OCTA *Commuter Bikeways Strategic Plan*, including Santiago Creek, the Santa Ana River, and the Tustin Branch Trail.

Policy 4.2: Install racks and safe storage facilities at parking areas for City facilities, as appropriate, and encourage incorporation of such facilities within privately-developed projects.

Policy 4.3: Improve citywide awareness of automobile and bicycle safety.

Policy 4.4: Encourage use of the bikeway system by providing adequate signage, trail markings, and other amenities.

Policy 4.5: Ensure that pedestrian sidewalks, trails, and bikeways are safe environments through the use of crime prevention-oriented trail design features, lighting where appropriate, pedestrian and bicycle safety improvements at at-grade rail crossings, access for emergency vehicles, and links to the roadway signal system.

Policy 4.6: Explore opportunities to convert abandoned rail corridors into segments of the City's bikeway and pedestrian trail system.

Policy 4.7: Provide ADA accessible sidewalks and pedestrian amenities throughout the City.

Policy 4.8: Expand and maintain an equestrian trail network and provide for appropriate staging areas and infrastructure.

Parking Facilities

A shortage of parking can cause circulation problems and could lead to a reduction or loss of business activity. Old Towne Orange has been identified as an area of particular concern. As the City develops, providing adequate parking adjacent to other activity centers is increasingly important.

GOAL 5.0: Provide adequate parking to meet the needs of activity centers throughout the City.

Policy 5.1: Provide adequate parking to protect and support the economic vitality and diversity of Old Towne.

Policy 5.2: Plan for and design parking facilities throughout the City that are adequate to meet demand, but also consider land use-parking efficiencies, and the surrounding natural and built environment.

Policy 5.3: Encourage adjacent businesses to consolidate parking facilities and access points.

Policy 5.4: Encourage well-designed structured parking in commercial areas where such features would be economically feasible, safe, and visually integrated with existing development.

Circulation System Aesthetics

Streets that have been made or modified to include visual and pedestrian amenities can improve the overall look and feel of City streets, as well as enhancing functionality for all users. As major commercial corridors are beautified and changed to include a pleasant pedestrian environment, this will have positive effects on the feelings of safety and security for pedestrians, bicyclists, and motorists.

GOAL 6.0: Provide roadway corridors that are aesthetically pleasing and contribute to a feeling of safety, security, and comfort for motorists, bicyclists, and pedestrians.

Policy 6.1: Supply adequate, clear, and correctly placed signage to direct both motorists and non-motorists toward destinations and away from hazards.

Policy 6.2: Provide clear indicators in the right-of-way for where pedestrians and bicyclists are encouraged to walk, bike, or cross safely. These may include special paving, line stripes, and crosswalks.

Policy 6.3: Provide lighting, landscaping, street trees, and other appropriately scaled streetscape features that accommodate all users on commercial corridors. Where appropriate, lighting should be scaled for autos as well as pedestrians.

CIRCULATION & MOBILITY PLAN

The objective of the Circulation & Mobility Plan is to document existing transportation facilities in the planning area used for the movement of people and goods. The Element addresses the desired future condition of these facilities, and their relationship to future land uses identified in the Land Use Element. The Plan describes the circulation system, including the arterial network and intersections, the public transit system, bicycle paths, recreation facilities, parking, and railroad operations. The City's circulation network includes an extensive system of roadways, bus transit service, commuter rail, and freight rail.

Local Circulation System

A well-designed local arterial roadway system that connects to a well-developed regional circulation system provides safe and convenient access to employment, housing, recreation, and commercial areas in Orange. City arterial roadways located on the western side of SR-55 generally follow north-south and east-west orientations. On the eastern side of the freeway, arterials are characterized by curvilinear streets due to undulating geographical surroundings. Key north-south arterials include Tustin Street, Glassell Street, Main Street, and The City Drive. Key east-west arterials include Chapman Avenue, Katella Avenue, Taft Avenue, and parts of La Veta Avenue. These arterial roadways are in turn supported by a network of collector and local streets that provide access to homes and businesses throughout the City.

Roadway Classification System

The City's roadway network is distinguished by a hierarchical classification system that differentiates roads by size, function, and approximate daily capacity based upon Level of Service D (LOS D). LOS is a qualitative measure that characterizes traffic congestion on a scale of A to F with LOS A representing a free-flow condition and LOS F representing extreme congestion. LOS standards can apply to either intersections or links (a section of street between two intersections). Generally speaking, LOS represents the ability of a roadway or an intersection to accommodate traffic.

In the City, intersections are used as actual control points. City roadways consist of both divided and undivided roadways. Divided roadways generally contain a physical barrier or buffer, such as a raised median or a continuous two-way left turn lane, between each direction of travel. Divided roadways remove vehicles making a left turn from the travel lanes so as not to impede through traffic and constrict roadway capacity. Undivided roadways do not contain a buffer between each direction of travel, and therefore left-turning traffic can impede through traffic. Undivided roadways may provide turn movement pockets at intersections. The ~~six~~ eight categories of roadways in Orange are summarized in Table CM-1. Proposed cross-sections for each type of roadway are shown in Figure CM-1.

The City's policy is to use a link capacity standard of LOS D. The following paragraphs represent link capacities of each roadway type at LOS D.

Table CM-1 Roadway Classifications		
Classification	**Facility Type**	**Characteristics**
Smart Street	Smart Street	4-8 lane divided, with possible signal coordination, intersection capacity improvements and/or grade separations
Principal Arterial	8 Lane Divided	Primarily serves through traffic with limited local access
Major Arterial	6 Lane Divided	Serves mostly through traffic with some local access allowed
Asymmetric Major Arterial	5 Lane Divided	Serves mostly through traffic with some local access allowed
Primary Arterial	4 Lane Divided	Serves through and local traffic
Secondary Arterial	4 Lane Undivided	Serves through and local traffic
Two-Lane Secondary Arterial	2 Lane Divided	Serves through and local traffic
Collector Street	2 Lane	Serves mostly local traffic

Smart Streets are typically four- to eight-lane roadways with enhanced capacity and smoother traffic flow than standard arterial streets. These streets have enhanced features such as traffic signal synchronization, bus bays, intersection improvements, and the addition of travel lanes by removing on-street parking and consolidating driveways. The traffic carrying capacities of Smart Streets can range from 60,000 to 79,000 vehicles per day, depending on the number of lanes, degree of access control, peak period loading, and the configurations of major intersections.

Principal Arterials are typically eight-lane divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 67,500 vehicles on an average weekday at LOS D conditions, depending on the degree of access control, peak period traffic loadings, and lane configurations at major intersections. Principal arterials prohibit on-street, curbside parking, and connect directly to freeways.

Major Arterials are six-lane divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 50,700 vehicles on an average weekday at LOS D conditions, depending on the degree of access control, peak period traffic loadings, and lane configurations at major intersections. Major arterials facilitate traffic circulation within Orange, and may prohibit on-street, curbside parking.

Asymmetric Major Arterial are five-lane asymmetrical divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 42,250 vehicles on an average weekday at LOS D conditions, depending on the degree of access control, peak period traffic loadings, and lane configurations at major intersections. Asymmetric major arterials facilitate traffic circulation within Orange, and may prohibit on-street, curbside parking. Occasionally, based on projected volumes, it is necessary to have a cross section with more lanes in one direction than the other (asymmetric lanes) along some Major arterials. The most typical application would be for arterial segments where adjacent area land uses result in higher demand in one of the peak periods. Where such demand creates

the need for an added lane to accommodate the peak surge of traffic, the addition of through lane(s) in one (asymmetric), rather than both directions of travel, is considered.

Primary Arterials are four-lane divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 33,750 vehicles on an average weekday at LOS D conditions, depending on the degree of access control and peak period loadings. Primary Arterials provide for easy circulation in the City, and allow for limited on-street, curbside parking.

Secondary Arterials are four-lane undivided roadways without medians. They can accommodate up to 21,600 vehicles on an average weekday at LOS D conditions, depending on the degree of access control and peak period loadings. Secondary arterials allow for on-street, curbside parking.

Two-Lane Secondary Arterials are two-lane divided roadways with medians or continuous two-way left turn lanes. They can accommodate up to 17,000 vehicles per average weekday at LOS D conditions, depending on the degree of access control and peak period loadings. Two-lane secondary arterials can allow for on-street, curbside parking.

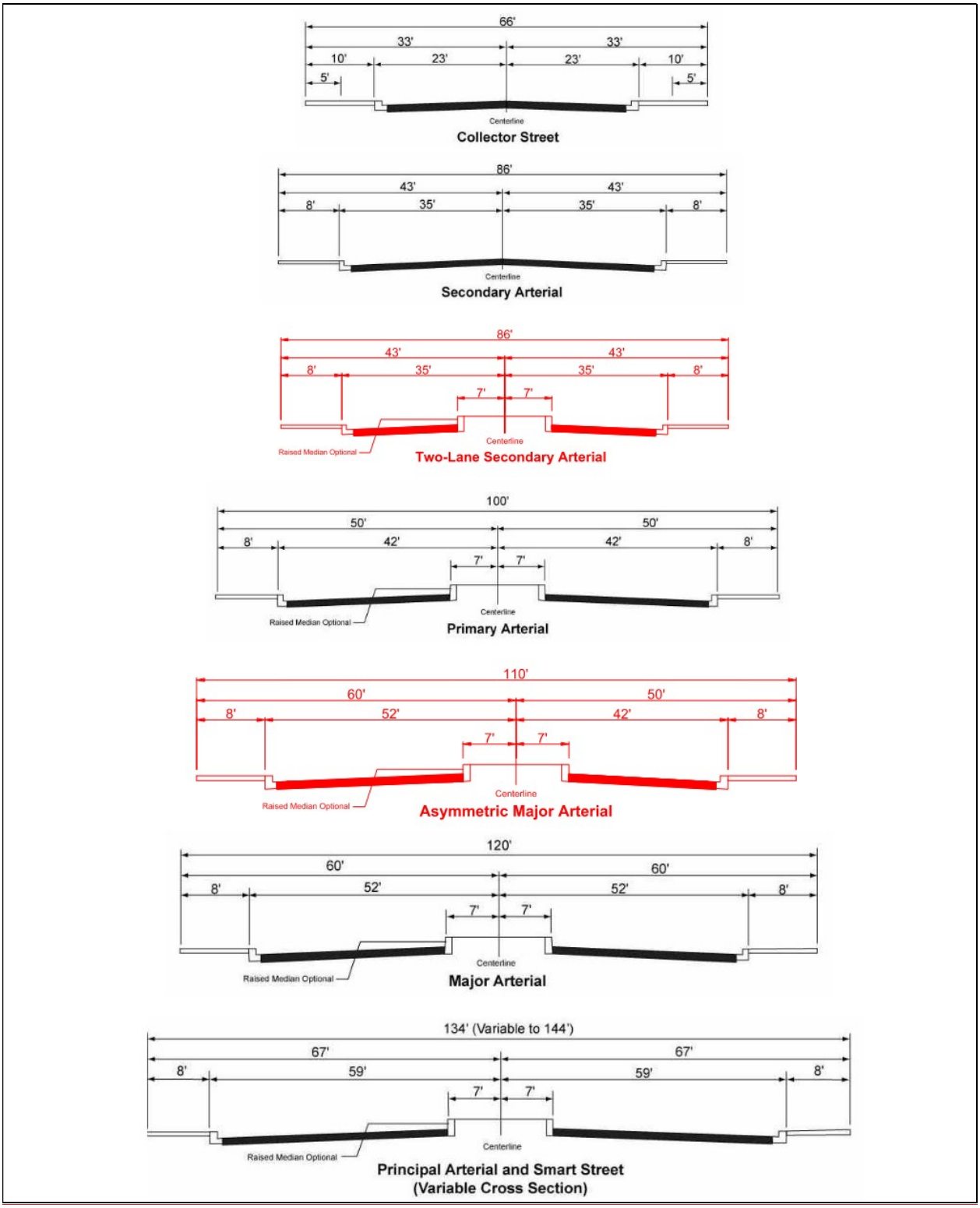


Figure CM-1
Roadway Cross Sections

Collector Streets are typically two-lane roadways without medians that gather and distribute traffic to higher-capacity arterials. They can accommodate up to 10,800 vehicles per average weekday at LOS D conditions, depending on the degree of access control and peak period traffic loadings. Centerline striping is typically not provided on collector streets, and on-street parking is allowed. There are several types of two-lane streets in the City, including divided, undivided, residential, and collector streets. Each type serves a slightly different purpose and may have different capacity thresholds based on various factors.

Performance Criteria

Evaluating the ability of the circulation system to serve residents and businesses in Orange requires establishing performance criteria. Performance criteria have a policy component that establishes a desired LOS, and a technical component that specifies how traffic forecast data can be used to measure criteria achievement.

The LOS definition for intersections is based on a volume-to-capacity (V/C) ratio and provides a more quantitative description of traffic conditions. Table CM-2 presents LOS based on traffic volumes and the design capacity of intersections.

Table CM-2
Level of Service Definitions for Intersections

Level of Service	Volume-to-Capacity Ratio	Description
A	0.00-0.60	Free Flow/Insignificant Delays: No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.
B	0.61-0.70	Stable Operation/Minimal Delays: An occasional approach phase is fully utilized. Many drivers feel somewhat restricted within platoons of vehicles.
C	0.71-0.80	Stable Operation/Acceptable Delays: Major approach phases fully utilized. Most drivers feel somewhat restricted.
D	0.81-0.90	Approaching Unstable/Tolerable Delays: Drivers may have to wait through more than one red signal indication. Queues may develop but dissipate rapidly, without excessive delays.
E	0.91-1.00	Unstable Operation/Significant Delays: Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
F	N/A	Forced Flow/Excessive Delays: Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections.

Source: Highway Capacity Manual, Transportation Research Board, Special Report No. 209, Washington DC, 2000.

Although roadway capacity is generally a function of peak hour intersection performance and the corresponding peak hour volumes, daily arterial segment capacities (link capacities) also provide a measure of the overall LOS of the arterial system. Generally, traffic impact mitigation focuses on peak hour intersection performance, since system performance is typically a function of intersection performance. The City's policy is to use a link capacity standard of LOS D. Table CM-3 presents arterial daily capacities at LOS D and LOS E.

Table CM-3 Arterial Daily Capacity Threshold Assumptions		
Street Type	Daily Capacity	
	LOS D	LOS E
Smart Street – 6- to 8-lane divided	71,100	79,000
Principal – 8-lane divided	67,500	75,000
Major – 6-lane divided	50,700	56,300
Asymmetric Major – 5-lane divided	42,250	47,000
Primary – 4-lane divided	33,750	37,500
Secondary – 4- lane undivided	21,600	24,000
Two-Lane Secondary – 2-lane divided	17,000	18,750
Collector – 2-lane undivided	10,800	12,000
Source: City of Orange General Plan Update Traffic Report, 2008.		

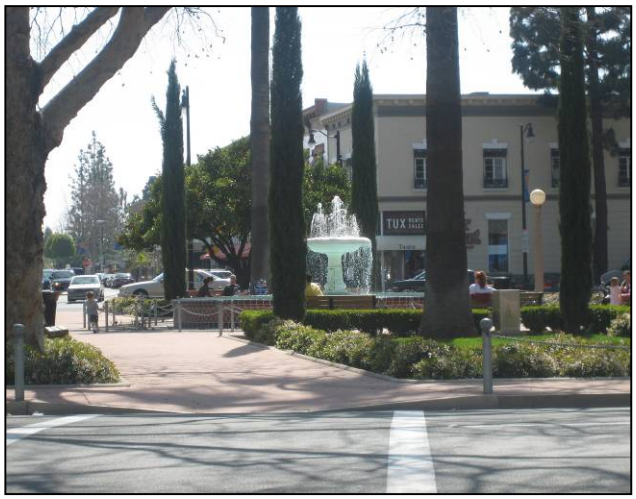
Various LOS policy standards have been established to evaluate observed traffic conditions, future development plans, and circulation system modifications. At the local level, the City of Orange has established LOS D as the lowest acceptable level of service for both roadway segments and peak-hour signalized intersection movements. At the regional planning level, Orange County's Congestion Management Plan (CMP) specifies LOS E as the operating standard for roadways and intersections on the CMP highway system. The CMP Highway System consists of the Orange County smart street network plus the state highway system. Thus, the SR-55 northbound and southbound ramps at Katella Avenue are CMP intersections within the City's jurisdiction. The City does not have an adopted LOS standard for unsignalized intersections. Performance of unsignalized intersections is evaluated on a case-by-case basis.

In addition to the LOS standards for roadways and intersections, the California Environmental Quality Act (CEQA) Guidelines (Section 15064.3), require "vehicle miles traveled" (VMT), to measure transportation impacts on the community. VMT refers to the amount and distance of automobile travel attributable to a project.

For purposes of compliance with CEQA, a significant impact would occur if the baseline and/or cumulative project-generated VMT per service population (population plus employment) exceeds the anticipated City of Orange General Plan Buildout VMT per service population. One vehicle traveling one mile would generate one VMT. Additionally, the project's effect on VMT would be considered significant if it resulted in the baseline and/or cumulative link-level boundary citywide VMT per service population increases under the plus project condition compared to the no project condition. Link-level boundary VMT is calculated by summing all weekday VMT on a roadway network within the City boundary and includes all trips including trips that pass through the City's roadway network but do not start and end with in City.

These thresholds are designed to reduce the number of miles traveled by automobiles, and are implemented within the City of Orange *Traffic Impact Analysis Guidelines*.

In order to maximize the efficiency of its circulation system, the City will look at where physical improvements to the circulation infrastructure can be made to expand capacity and increase traffic flow. To maximize efficiency of the road system, the City will support traffic signal coordination and spacing, and will also discourage on-street parking along arterials. In addition, the City will explore ways to reduce the demand for vehicular transportation, specifically through the provision and maintenance of bike lanes, bikeways, and trails, and will also encourage additional regional transit services and support facilities. The City's Transportation Demand Management (TDM) ordinance (Chapter 10.83 of the Municipal Code) further specifies a variety of techniques available to employers with 100 or more employees to advance the goals of efficiently utilizing the existing and planned transportation system and reducing vehicle emissions.



City Master Plan of Streets and Highways

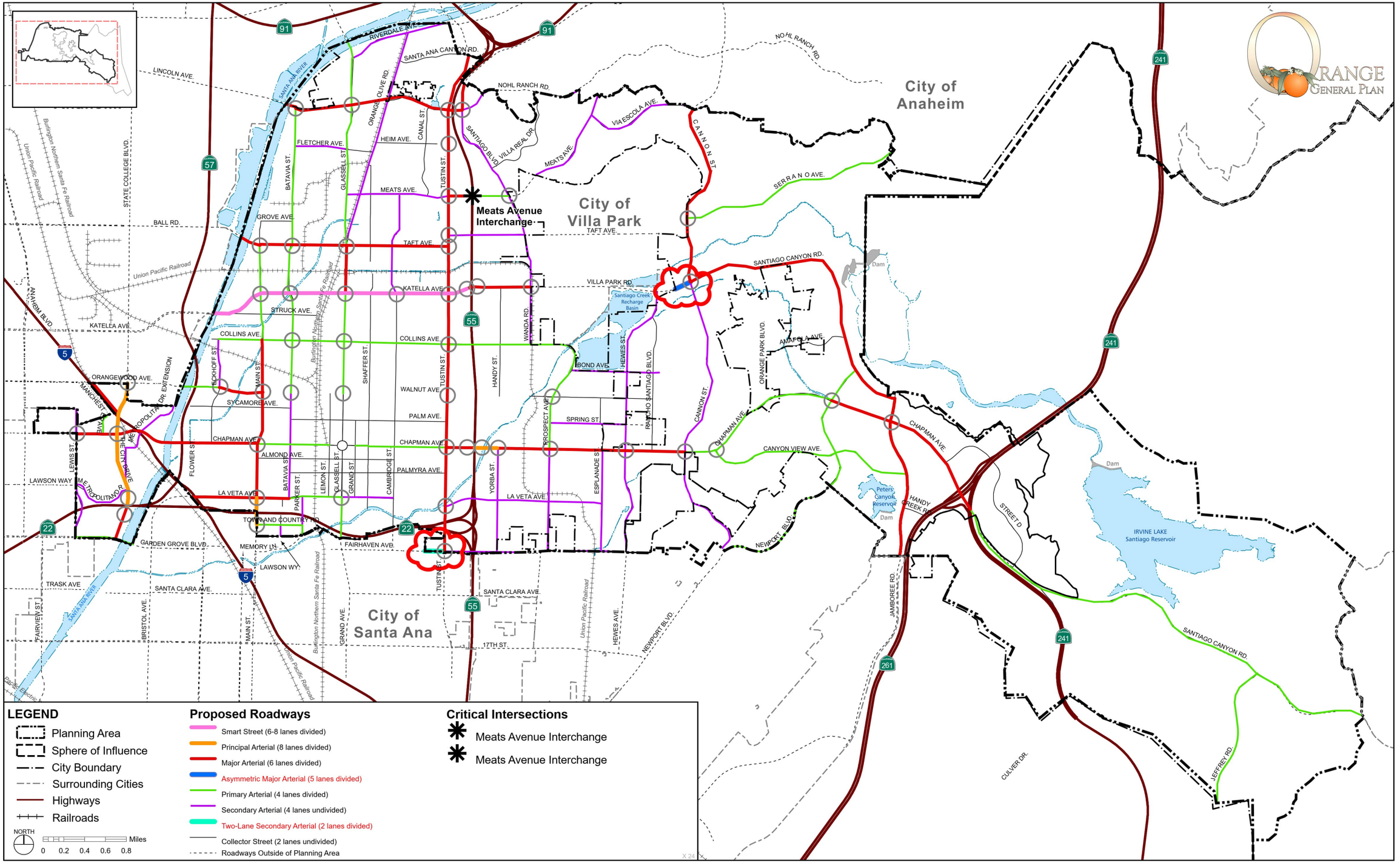
Land Use Element policy will allow land use changes and intensification to occur in specific focus areas within the City. The City's Master Plan of Streets and Highways displayed in Figure CM-2 has been developed in close coordination with land use policy to ensure that traffic generated by new development will not compromise the City's goal to ensure that intersections and roadway segments operate efficiently. The map identifies components of the City's roadway circulation system. The map also indicates where augmented roads are needed, and pinpoints locations for enhanced intersections, including the future Meats Avenue interchange at SR-55. Although most of Orange is already built out, most remaining developable land is located in the eastern part of the City. New development in east Orange will require construction of new roads to provide circulation and traffic flow to residents and businesses. Land Use Element policies enabling reuse and redevelopment within established portions of the City, particularly within the focus areas, may also necessitate roadway widening and intersection enhancements. The City will continue to collect funds for necessary circulation system capital improvements through a program that sets up a fee structure for all new development and redevelopment projects. This program will require developers to pay their fair share for transportation system improvements required by new projects. The City will use the annual seven-year Capital Improvement Program (CIP) process to prioritize, fund, and complete improvements required to achieve build-out of the proposed roadway system identified in Figure CM-2.

Roadway Widening

Roadway widening in specific locations will be necessary to obtain new travel lanes. Additional travel lanes may be acquired either by obtaining additional rights-of-way as necessary or by constructing new lanes within existing rights-of-way. Parking restrictions may be applied to allow additional lanes to be provided within existing rights-of-way.

Old Towne Street Network

The Old Towne street network is a clear example of Orange's grid street pattern. Parallel roadways have been established in both the north-south and east-west direction to distribute traffic evenly. The Plaza area at Glassell Street and Chapman Avenue is a unique feature that creates discontinuous traffic flows along these two primary roadways. However, no plans have been made to modify the National Register-listed Historic Plaza to increase its traffic carrying capacity.



(Redlined) Figure CM-2 City Master Plan of Streets and Highways

GPA 2026-0001 (XX/XX/26)
GPA 2014-0001 (12/8/15)
GPA 2010-0001 (8/10/10)

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In light of these conditions, parallel roadways such as Almond Avenue, Palmyra Avenue, Lemon Street, Olive Street, Shaffer Street, Grand Street, Palm Avenue, and Maple Avenue will continue to serve as local collectors around The Plaza.

Metropolitan Drive Extension

Extending Metropolitan Drive behind the University of California, Irvine (UCI) Medical Center will help facilitate the movement of north-south traffic near The Outlets at Orange shopping area, improve access to Interstate 5 (I-5), and relieve congestion on The City Drive. Metropolitan Drive will be extended from The City Drive/State College Boulevard to the Metropolitan Drive/Rampart Street connection.

Critical Intersection Program

Intersections serve as traffic control points for the circulation system, regulating the flow of vehicles along City streets and sometimes limiting the capacity of the system. In the long term, system capacity and efficiency can both be increased if intersections are designed to handle future anticipated traffic volumes. Typically, the design of the roadways forming an intersection dictates the intersection configuration. Department of Public Works standards indicate that a left-turn pocket may or may not be provided, depending on traffic volumes through the intersection. However, one pocket may not be adequate to handle vehicles during peak hours. Traffic may back up into a through travel lane, resulting in congestion at the intersection and at other locations along the roadway.

One way of providing additional intersection capacity at critical locations is through the use of special intersection configurations known as "critical intersections." Critical intersections deviate from typical City design standards by increasing the number of lanes at an intersection beyond what typically would be required. By increasing capacity at the intersection, the circulation link increases overall system capacity.

The Master Plan of Streets and Highways (Figure CM-2) identifies the locations of critical intersections within Orange. A list of these intersections and diagrams depicting their geometries are on file in the Public Works Department.

Regional Roadway System

The City's local circulation network is connected to an efficient regional circulation system. Figure CM-2 shows the freeways that traverse the Orange planning area. The Santa Ana Freeway (I-5) provides interstate and regional access to the City. In addition, SR-57, SR-55, and SR-22 all provide connections to the City from northern Orange County and neighboring Los Angeles County, San Diego County, Riverside County, and San Bernardino County. SR-91 and SR-241 provide additional, more limited freeway access. SR-241 is a toll facility controlled by the Transportation Corridor Agency (TCA).

I-5 is a northwest-southeast freeway that passes through the southwest corner of the City, and provides direct access to Los Angeles County to the north and San Diego County to the south. I-5 has two interchanges within Orange—one located at its junction with SR-57 and SR-22 (commonly known as the Orange Crush) and the other at State College Boulevard/The City Drive. The junction at the Orange Crush currently has the most severe congestion, which directly affects the roadway system in the City. With projected future growth in Orange and in the region, traffic flow at this junction is expected to worsen. The City will continue to work with and support the efforts of local and regional agencies to mitigate the increased traffic congestion in this area.

SR-91 is an east-west freeway that provides access to key arterial facilities in Orange, including interchanges at Tustin Street and Glassell Street. SR-91 also provides regional access through interchanges with SR-55 and SR-57 and SR-241.

SR-22 is an east-west freeway that crosses through the southern portion of the City. Five SR-22 interchanges are located in the City, at Tustin Street, Glassell Street, Main Street/La Veta Avenue, Bristol Street, and The City Drive.

SR-55 is a north-south freeway that passes through the center of Orange, and provides access to the coastal communities of Orange County. SR-55 has four interchanges in Orange, located at Lincoln Avenue, Katella Avenue, Chapman Avenue, and SR-22. An additional future interchange at Meats Avenue is contemplated within this General Plan.

SR-57 is a north-south freeway that originates at the junction of I-5 and SR-22 and extends to San Dimas in Los Angeles County. It provides access for the eastern parts of Los Angeles County, and central and northern parts of Orange County. SR-57 has three interchanges in Orange, at Chapman Avenue, Orangewood Avenue, and the junctions of I-5 and SR-22.

The Eastern Transportation Corridor (SR-241) is a north-south toll facility located in the eastern portion of the planning area. This facility provides direct access to east Orange. SR-241 has three toll lanes in each direction and provides regional access through an interchange at Santiago Canyon Road.

Consistency with County Master Plan of Arterial Highways

Maintaining consistency with the County's Master Plan of Arterial Highways (MPAH) is required in order to ensure that the City's circulation system develops in a manner that promotes regional mobility. At a practical level, consistency is also required in order for the City to receive transportation funding under Measure M, also known as OC Go. Orange's Master Plan of Streets and Highways (Figure CM-2) is generally consistent with the MPAH.

While the City's Master Plan of Streets and Highways has been consistent with the County MPAH to maintain funding eligibility, both the City of Orange and OCTA have the goal of a realistic and implementable MPAH. A desire of the City is to work with OCTA to downgrade La Veta Avenue between Glassell Street and Cambridge Street from a Secondary Arterial to a

Collector Street to reflect physical constraints related to historic buildings and features in the Old Towne National Register Historic District.

To initiate the MPAH amendment process, a local agency must submit a written request to OCTA describing the amendment requested and provide documentation to support the basis for the request. A copy of the request must be submitted concurrently to the City Managers of adjoining cities. For the facilities under consideration, this would require a letter to be forwarded to the City of Santa Ana.

Once the initial request is forwarded to OCTA, a conference between the City of Orange, OCTA, and potential affected jurisdictions is held to determine whether mutual agreement exists for the MPAH amendment. If mutual agreement exists, then Orange is expected to proceed with adopting this revision to the Circulation & Mobility Element. Upon adoption, the City of Orange would submit the Circulation & Mobility Element to OCTA and request OCTA Board approval of the Orange County MPAH amendment.

Public Transportation

Effective regional transportation strategies are required to successfully implement City and County plans for accommodating future growth. Such strategies must link the City of Orange with other regional employment and commercial centers, as well as airports and other transportation hubs, and should fully integrate alternatives to the automobile. Alternative modes of transportation, including public transportation, bicycling, and walking, are important components of a comprehensive circulation system. These modes of transportation also help reduce air pollution and road congestion.

Public transportation plays a key role in future land use development and mobility. As the roadway system reaches capacity, alternative modes of transportation provide additional capacity as well as an enhanced degree of mobility for residents, workers, and visitors. Existing services are expected to continue while enhancements, many of them currently in the planning stages, will increase the viability of alternative modes of travel. The integration into the circulation system of alternative modes of transportation, such as bus, rail, bicycle, and pedestrian, is essential to maximizing mobility opportunities for residents, workers, and visitors.

Bus Service

OCTA provides public bus service for the City of Orange. In addition, the Riverside Transit Agency (RTA) provides long-distance service between The Village at Orange and the Downtown Terminal in Riverside. Table CM-4 identifies local bus routes that connect various activity centers in Orange to each other and to the region.

Table CM-5 shows the different community, station link, and inter- or intra-County routes that serve Orange. Community routes are express bus routes that provide faster connections to activity centers within and outside Orange County. Station link shuttles provide services between the Orange Transportation Center (OTC) and Orange. Both community and station link routes operate only at peak commuter times.

In addition to the fixed-route service, OCTA also offers several types of specialized community transportation services, such as standard service (curb-to-curb service), door-to-door service, subscription service, and same-day taxi service. Some of these services cater to senior citizens and people with disabilities residing in the City.

OCTA has forecast bus ridership to increase by approximately 75 percent by 2030. Some of this ridership increase will be the result of enhanced services, including express bus routes and introduction of bus rapid transit service. Much of the increase will be driven by increased arterial and freeway congestion levels in conjunction with improved local bus service.

Convenient, accessible, frequent, and easy-to-use public transit is a cornerstone element of the proposed land use plan. Planned mixed-use residential and commercial areas and intensified commercial and professional office corridors must be coupled with increases in transit service. Orange's land use plan features mixed-use districts that strategically concentrate population density near alternative transit facilities, such as the OTC in Old Towne, transit hubs at The Outlets at Orange and South Main Street, and the Anaheim Regional Transportation Intermodal Center (ARTIC) station in Anaheim near the City's western boundary at Katella Avenue.

Table CM-4
Local Bus Routes

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
24	Local	Fullerton–Orange	Malvern Ave. / Chapman Ave. / Tustin St..	The Village at Orange Lincoln Park and Ride
42	Local	Orange–Seal Beach	Lincoln Ave. / Los Alamitos Blvd. / Seal Beach Blvd.	The Village at Orange Lincoln Park and Ride
46	Local	Los Alamitos–Orange	Ball Rd. / Taft Ave.	The Village at Orange Lincoln Park and Ride
47	Local	Brea–Newport Beach	Brea Blvd. / Anaheim Blvd. / Fairview St.	Theo Lacy Jail Orangewood Children's Home UCI Medical Center The Block at Orange
50	Local	Long Beach–Orange	Katella Ave.	The Village at Orange Lincoln Park and Ride
53	Local	Brea–Irvine	Main St.	Batavia Industrial Parks Children's Hospital – CHOC St. Joseph's Hospital OCTA Offices
54	Local	Garden Grove–Orange	Chapman Ave.	Orange Civic Center Orange Transportation Center The Plaza UCI Medical Center The Block at Orange Rancho Santiago Community College

Table CM-4
Local Bus Routes

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
56	Local	Garden Grove–Orange	Garden Grove Blvd.	Orange Transportation Center OCTA Offices Children's Hospital–CHOC St. Joseph's Hospital
57	Local	Brea–Newport Beach	State College Blvd. / Bristol St.	The Block at Orange UCI Medical Center Theo Lacy Jail Orangewood Children's Home
59	Local	Brea–Irvine	Kraemer Blvd. / Glassell St. / Grand Ave. / Von Karman Ave.	Orange Transportation Center Chapman University Orange Plaza
71	Local	Yorba Linda–Balboa	Tustin St. / Red Hill Ave. / Newport Blvd.	The Village at Orange Lincoln Park and Ride

Source: Orange County Transportation Authority, 2006

Table CM-5
Community, Station Link, Intra- and Inter-County Bus Routes

Route #	Route Type	Route Service	Service Corridors	Key Orange Activity Centers Served
131	Community	Yorba Linda–Orange	Lakeview Ave./ Riverdale Ave. / Tustin St.	The Village at Orange Lincoln Park and Ride
147	Community	Brea–Santa Ana	Raiit St. / Greenville St. / Fairview St.	UCI Medical Center The Block at Orange OCTA Offices St. Joseph's Hospital Children's Hospital – CHOC
167	Community	Anaheim–Irvine	Santiago Blvd. / Hewes St. / Bryan Ave.	The Village at Orange Lincoln Park and Ride
453	Station Link	Orange Transportation Center –St. Joseph's Hospital	Chapman Ave. / Main St. / La Veta Ave.	Orange Transportation Center Children's Hospital–CHOC St. Joseph's Hospital OCTA Offices

Table CM-5 Community, Station Link, Intra- and Inter-County Bus Routes				
Route #	**Route Type**	**Route Service**	**Service Corridors**	**Key Orange Activity Centers Served**
213	Intra County	Brea–Irvine Express	SR-55	Lincoln Park and Ride The Village at Orange
757	Inter County	Diamond Bar –Santa Ana Express	SR-57	UCI Medical Center The Block at Orange
RTA 149	Inter County	Riverside–Orange (Operated by RTA)	SR-91	The Village at Orange Downtown Riverside
Source: Orange County Transportation Authority and Riverside Transit Agency, 2006.				

The City recognizes that ridership of both the bus and rail transit systems will increase, and has designed a land use plan that both enables and accommodates increased transit use. A large part of the City's role in accommodating additional transit use includes providing convenient and attractive transit amenities and streetscape features that improve user comfort and perception of safety, thus encouraging transit use. Transit-oriented Development (TOD) design features will be encouraged in major commercial and employment areas within the City, such as the Town and Country Road corridor, South Main Street, Katella Avenue, Uptown Orange, and Old Towne. Such TOD features may consist of streetscape measures such as bus turn-outs, benches, trash receptacles, shelters from wind and rain, and lighting. TOD features may also be more fundamental to the permitted uses and design within projects, such as incorporating child care centers, convenience stores, or personal services within the retail component of mixed-use projects, or near professional office concentrations. These and other measures help to make the transit system more accessible to a wide range of people.

The City will continue to work with OCTA to pursue expanded community circulators, such as the current Station Link service, that will connect people to rail transit, employment centers, residential areas, and commercial corridors. Additional options, such as jitney services that function as group taxis, will also be explored.

The City will also continue to support OCTA initiatives and services that promote the mobility of Orange's senior, disabled, and youth populations. To accommodate the needs of these groups, the City will continue to work with OCTA to offer para-transit services, and will seek ways to improve mobility for Orange youth through transit.

The City of Orange will continue to cooperate with OCTA and other regional providers to establish new bus routes and stops, and to provide transit amenities. New subdivision plans will be reviewed by OCTA to assess impacts on bus services, and to examine the need to provide bus stops or bays. Orange will also work with OCTA to maintain and, if needed, expand successful transfer stations in Old Towne, the Village at Orange, and The Outlets at Orange.

Rail Transit

Many current passenger and commuter fixed-rail transit options in the City will be expanded in the future, offering significant alternatives to automobile transit for many individuals who commute to or from the City for housing or employment. Rail transit now has a proven track record in Orange, and Metrolink seeks to expand rail services in support of land use transformations near current and future rail stations.

Metrolink

Metrolink operates seven commuter rail lines in Southern California, two of which pass through Orange. The Orange County Line offers direct connections to Union Station in Los Angeles to the north and to Oceanside to the south. The Inland Empire–Orange County Line provides direct connections to Riverside/San Bernardino to the east and San Juan Capistrano to the south. Roughly 30 Metrolink trains pass through the City on a daily basis. The Metrolink station in Orange is located three blocks from The Plaza at the OTC, close to a variety of stores and civic uses in Old Towne.

A much-anticipated rail service improvement is intra-county rail service along the County's core transit corridor. This service, which will be provided by Metrolink on behalf of OCTA, is an attempt to provide intra-county trips with a high degree of reliability. This 30-minute service is planned to operate between the Irvine Transportation Center (and possibly Laguna Niguel) and the Fullerton Transportation Center throughout the day to supplement Metrolink's peak period commuter service.

The City recognizes that plans to increase daily service on the current Metrolink lines, improvements to the OTC, and future expansion of Metrolink services to new destinations would be beneficial to Orange by providing multi-modal transportation options for people living and working in the community, thus reducing auto dependence for business and leisure purposes.

Anaheim Regional Transportation Intermodal Center



The Platinum Triangle, which borders Angel Stadium in the City of Anaheim, proposes a variety of high-density multiple-family high-rise housing, office space, and commercial uses. ARTIC is located adjacent to the proposed development, between Angel Stadium and the Honda Center. ARTIC is a major regional transportation center similar in scale to Union Station in Los Angeles and Ontario International Airport in Ontario. The intermodal center is be a stopping point for Amtrak, Metrolink, buses, and future high-speed rail systems that connect to Ontario

Airport, Las Vegas, and the Bay Area.

The City of Orange will coordinate with the City of Anaheim, OCTA, and others to ensure that the City is able to take full advantage of the regional mobility benefits offered by ARTIC. Potential benefits offered to the City by ARTIC include:

- a dynamic mixed-use commercial and residential center at the westernmost end of Katella Avenue; and
- bicycle and pedestrian connections to the Santa Ana River.

California High Speed Rail Corridor

The California High-Speed Rail Authority was established as a state agency in 1996 to direct the planning, design, construction, and operation of a future high-speed train system extending from Sacramento, San Francisco, and Oakland in the north to Los Angeles and San Diego in the south. This high-speed train is proposed to stop at ARTIC. OCTA estimates that by 2025, the California High Speed Rail Corridor will serve between 150,000 and 230,000 passengers each week.

Sidewalks, Trails and Bikeways

Walking and biking contribute to a healthy community, and play increasingly significant roles as alternatives to the automobile. The City recognizes this by providing and maintaining sidewalks, trails, and bikeways to support pedestrians and cyclists.

Pedestrian Facilities

In addition to providing basic transportation routes, sidewalks and pathways offer the opportunity to create appealing public spaces that reflect community pride and invite people to walk. Proposed mixed-use areas and reinvigorated commercial areas throughout the City will provide new and reinvented spaces for people to walk and shop. Walkability and access are essential components of a circulation system that easily and specifically accommodates pedestrians. Features that contribute to walkability include wide sidewalks, safe street crossings, design elements that encourage cautious driving, and a pleasant and safe walking environment. Sidewalks, walkways, well-designed pedestrian crossings, pathways, and pedestrian short-cuts allow people to get from one destination point to another with ease. Dedicated pedestrian paths can provide access between residential and activity areas, especially if streets do not connect. Access strategies for school children, seniors, and people with disabilities should also be incorporated into street and sidewalk plans. The City supports proactive integration of pedestrian improvements and amenities within the circulation system to improve walkability.

The City will create and implement a pedestrian-oriented streetscape master plan addressing key commercial corridors, including Tustin Street, Chapman Avenue, Main Street, Lincoln Avenue, and Katella Avenue. The master plan will address all functional aspects of the pedestrian environment. It will identify pedestrian links that need improvement and

strengthening, determine new pedestrian links to underserved areas, ensure adequate sidewalk widths to accommodate lighting and street trees, develop sidewalks in the industrial area that create links between bus stops, encourage safe routes to schools and recreation facilities, and minimize barriers to pedestrian and bicycle access.

Recreational Trails and Bikeways

A comprehensive network of recreational trails and bikeways greatly benefits Orange residents and visitors by providing popular modes of transportation for recreation. In addition to recreation activities, the City also supports walking and bicycling as viable commute alternatives to the automobile. The City's plan for recreational trails and bikeways is shown in Figure CM-3.

The plan includes trails maintained by the County and private homeowners associations, and is consistent with the OCTA *Commuter Bikeways Strategic Plan*. It is also consistent with the County's major riding and hiking trails and off-road paved bikeways. As described in the ***Vision for the Future,*** the plan will enable the City to connect parks to activity centers and residential areas using a combination of recreational trails and bikeways that truly allows people to travel from place to place within the City without needing an automobile.

Recreational Trails

As shown in Figure CM-3, over 70 miles of existing recreational trails are located within the City, connecting a large number of neighborhoods and community parks. In addition, 104 miles of proposed future trails are planned throughout Orange on land currently utilized for a variety of purposes, including flood control, railroad rights-of-way, and roadways.

The City will use the annual five-year Capital Improvement Program (CIP) process to prioritize, fund, and build proposed trail segments identified in Figure CM-3. These trails have been and will continue to be constructed and administered through cooperative efforts of the City, County, developers, and private homeowner associations.

Desired cross-sections for recreational trails are identified in Figure CM-4. The City may require construction of portions of proposed trails identified in Figure CM-3 as a condition of development approval for projects located adjacent to the proposed trail alignments. Funding for recreational trails and associated restoration projects comes from a variety of federal, state, and regional sources. Priority for funding of trail improvements will be given to projects that complete loops within the system, provide missing links for regional and local trail systems, or serve as destination links to schools, parks, retail businesses, or regional trails.

Priorities for the recreational trail system include:

- trail connections to the Santiago Oaks Regional Park extension west of Cannon Street, consisting of a connection between Calle Grande and Cannon Street, and the Jamestown trail from the Orange Park Acres equestrian arena to Cannon Street;

- trail connection from Serrano Avenue near Fred Barrera Park to Santiago Oaks Regional Park;
- Mabury Ranch Trail connection from the proposed Cerro Villa Park to the Santiago Oaks Regional Park;
- Serrano Avenue connection near Cannon Street; and
- Additional trail connection into Santiago Oaks Regional Park from Orange Park Acres.

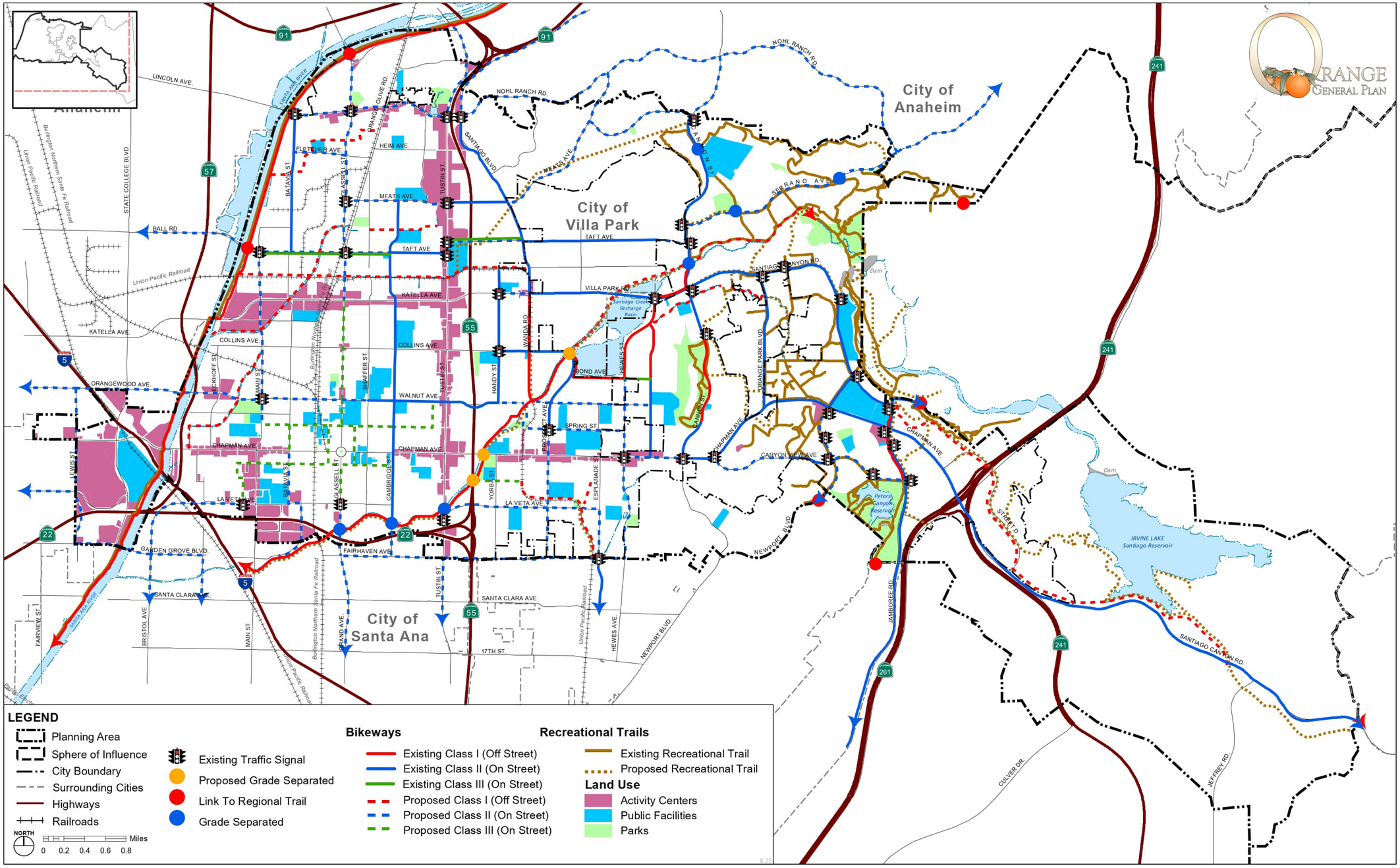
To increase the number of people using non-vehicular means of transportation, the City will encourage putting in place a safe network of crosswalks, grade separations, and walkways to ensure the safety of pedestrians, bicyclists, and equestrians. Where appropriate, traffic calming devices and methods such as median landscaping and provision of bike or transit lanes should be used to slow traffic, improve roadway capacity, and address potential safety issues. The City will continue to work towards improving the overall condition, appearance, and safety of both medians and sidewalks in Orange.

Bikeways



Orange's relatively mild climate permits bicycle riding year-round, and the growing popularity of bicycling has drawn enthusiasts onto the streets and bike trails throughout the City. The plan for recreational trails and bikeways (Figure CM-3) shows the planned system of bikeways within the City. The Orange *Bikeway Master Plan* has established three classes of bicycle routes that adhere to California Department of Transportation (Caltrans) standards:

- **Class I** Off-road bike paths are located on vacated rail lines, water corridors, or areas otherwise separated from streets.
- **Class II** On-road bike lanes are located along arterial roadways that are delineated by painted stripes and other features.
- **Class III** On-road bike routes share use with motor vehicle traffic. They provide a route that is signed but not striped.



Source: City of Orange Community Services Department, 2015.

Figure CM-3 Plan for Recreational Trails and Bikeways

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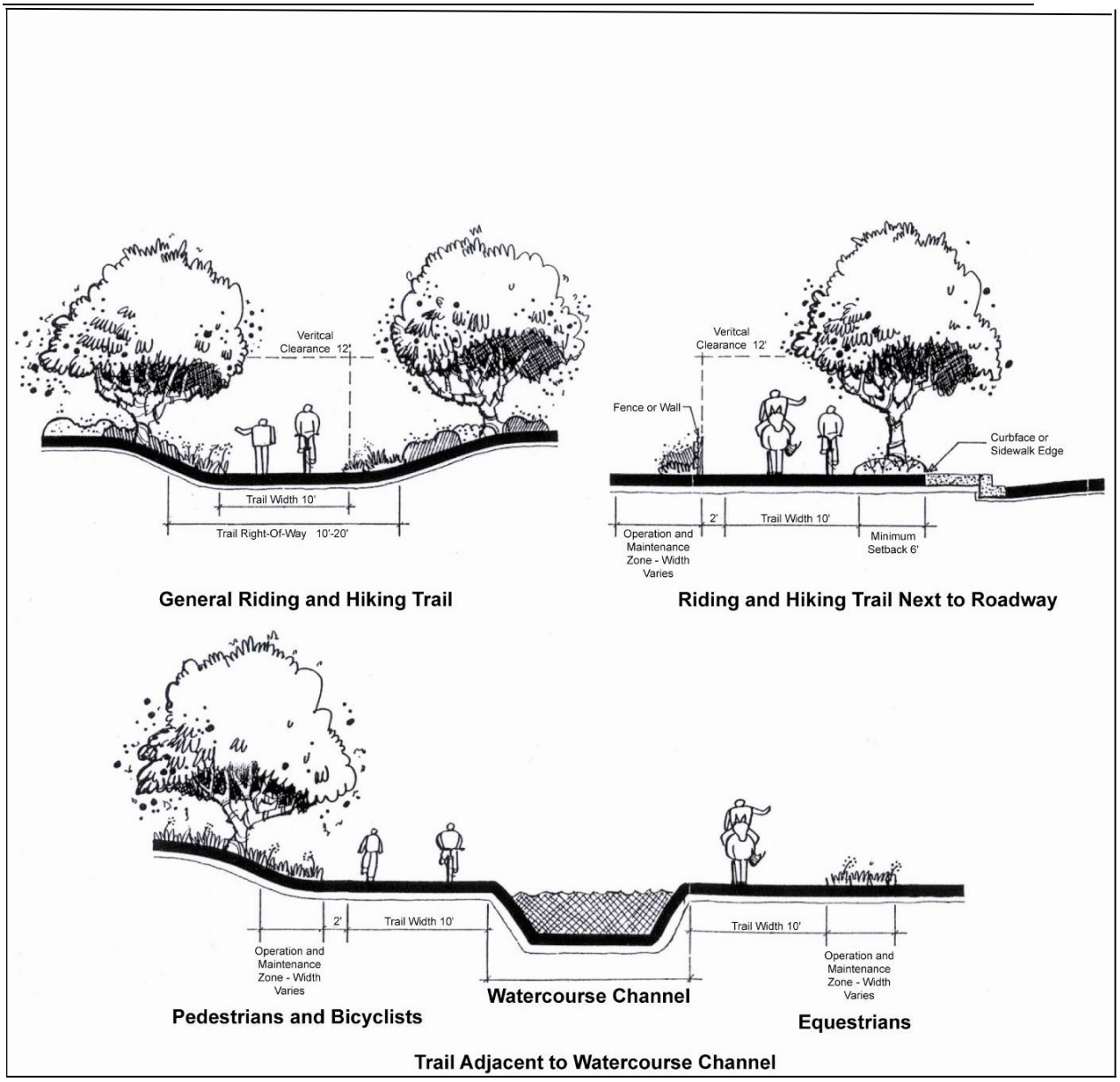


Figure CM-4
Trail Standards

Cross-sections for each type of route are shown in Figure CM-5.

As shown in Figure CM-3, several future bike routes are planned within Orange, including the following high-priority projects:

- Completing Class I bike routes along Santiago Creek and the Tustin Branch Trail
- Establishing Class II bike lanes, including:

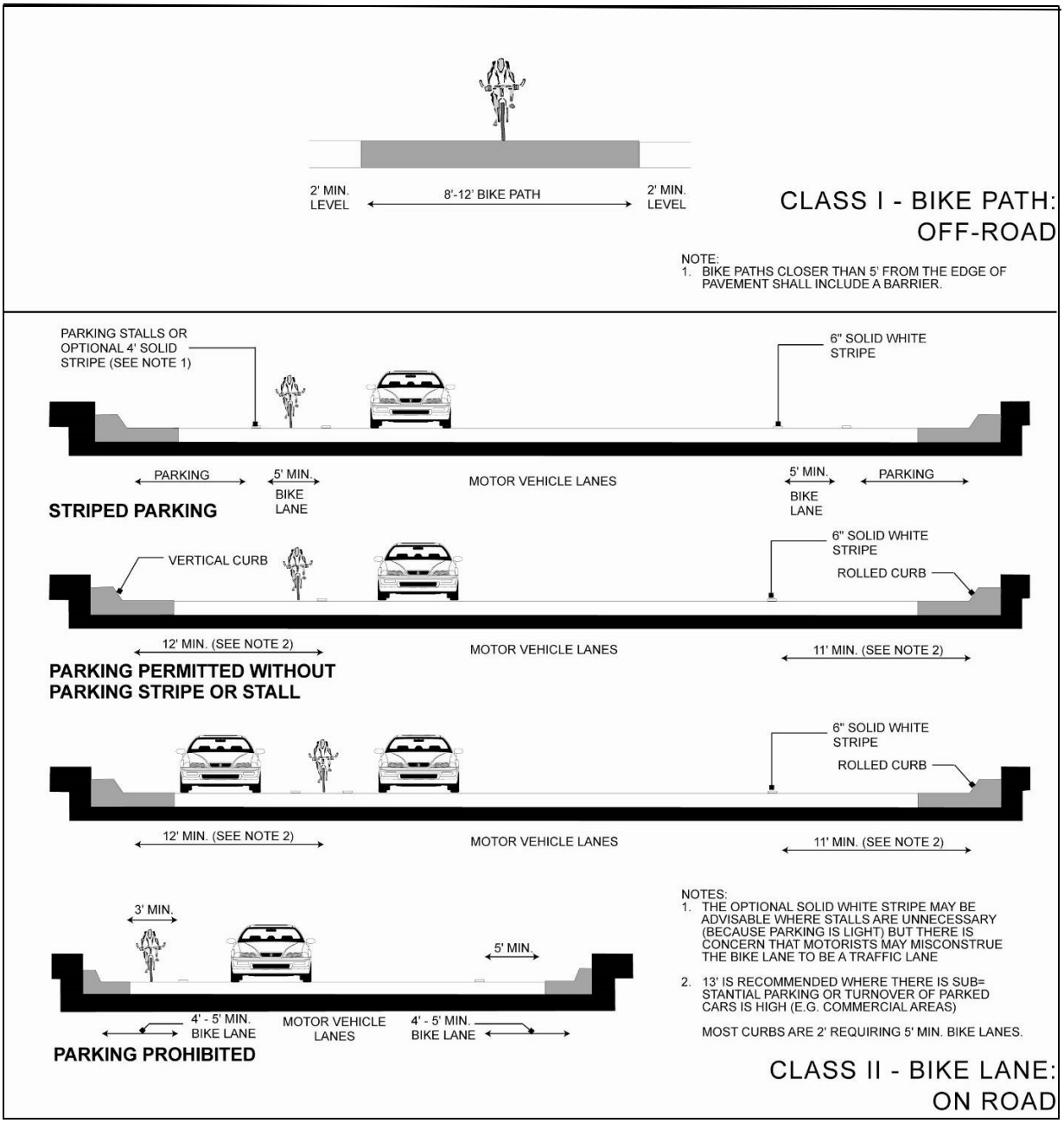


Figure CM-5
Bikeway Standards

- An east/west corridor on Walnut Avenue from the western City limits to Santiago Boulevard
- North/south corridors on Main Street from Taft Street to Palm Street, on Batavia Street from Chapman Avenue to La Veta Avenue, and on Parker Street from La Veta Avenue to the City limits

- Establishing Class III routes along Almond Avenue, Feldner Street, and Bedford Street

The City has completed a paved bike trail along Santiago Creek from Tustin Street to the western City limit that continues on to Main Place Mall and the Discovery Science Center as well as two additional segments to the bike trail, which extends the Santiago Creek Trail from Tustin Street to Grijalva Park, and also connect Grijalva Park at Santiago Creek to Collins Avenue along the City-owned portion of the Tustin Branch Trail right-of-way between Walnut and Collins Avenues. The Santiago Creek trail is planned to extend through and beyond the City, connecting the regional Santa Ana River Trail to Santiago Oaks Regional Park and wilderness areas east of Orange. The City will continue to work towards designing a comprehensive bike trail system that is highly accessible and safe for those who wish to use it.

The City has proposed Class II and III routes along many north-south and east-west arterials, all of which connect to pedestrian trails and Class I routes. The City responds to the need to provide safe and efficient bike travel by making every effort to provide bikeways separate from the roadway. When bicyclists must share the road with automobiles, the City will work to improve overall safety.

Currently, two bicycle parking facilities are located in Orange, at the OTC (Metrolink station) and the Old Towne West Metrolink Parking Structure. The City will work to provide greater bike amenities including delineated bike lanes and clear signage along bike trails. The City will also install bicycle racks and safe storage facilities at parking areas for City facilities, as appropriate, and will require privately developed projects to incorporate on-site bicycle facilities in accordance with the City's Zoning Code (Title 17 of the Orange Municipal Code).

Parking Facilities

Although parking is often considered a separate issue from vehicle circulation, it is important to address on-street parking because it has a direct effect on roadway capacity. In order to facilitate improved traffic flow along Orange's major arterials, the City generally plans to permit on-street parking only on streets classified as Primary or Secondary Arterials or Collector Streets.



Off-street parking deficiencies can reduce business activity, and can cause

vehicles to re-circulate on public streets, which increases traffic volumes and congestion by reducing capacity for through traffic. The City's Zoning Code includes parking requirements to ensure that an adequate number of spaces are provided on-site for most uses. The Code also establishes minimum stall dimensions consistent with current standards for other jurisdictions. These regulations apply to all new developments, and may be applied to current uses that are modified or expanded.

Particular concern has been expressed within the community regarding current and expected future parking shortages in Old Towne. Figure CM-6 identifies the location of existing public parking lots in Old Towne. Most Old Towne parking lots have a maximum time limit of three hours, with or without a permit. However, some parking lots, such as the OTC parking located off Chapman Avenue, have no time limit.

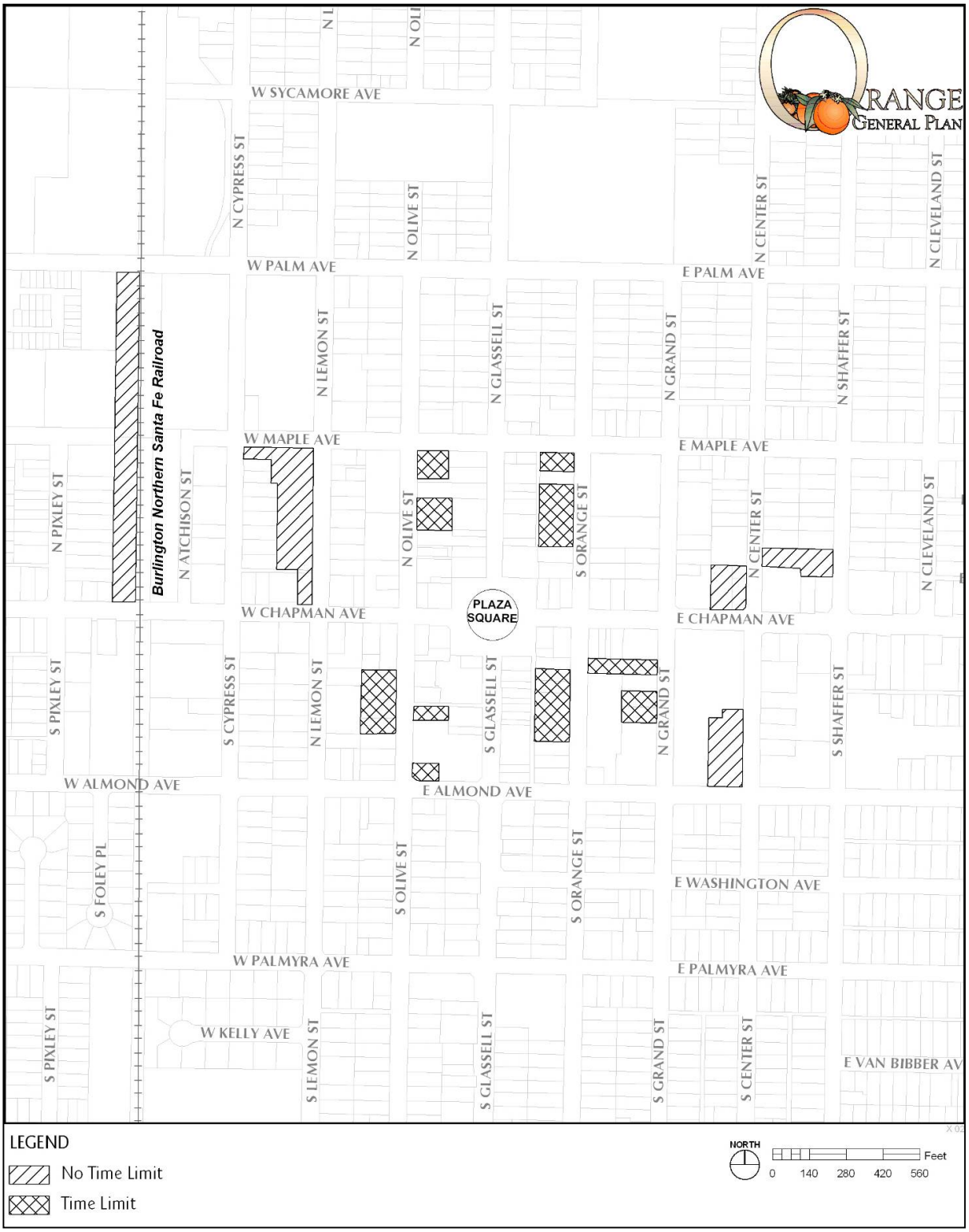
Orange will continue to provide sufficient parking to meet community demands. In Old Towne, the City will study the benefits of creating a parking district and the feasibility of developing underutilized parking lots surrounding The Plaza as public parking facilities. The City may encourage the use of shared parking, consolidated parking facilities, and underground parking or parking structures to provide additional off-street parking to meet future demands in areas throughout the City with higher concentrations of commercial uses.

Circulation System Aesthetics

The City has determined that it is necessary and desirable to improve certain roadways and their rights-of-way to enhance the experience for all users of these corridors. Major commercial corridors have been designated within the Urban Design Element to be improved with pedestrian-scale enhancements. Enhancements could include street trees, sidewalk improvements, lighting, bus shelters, and crosswalks. These improvements not only offer a more aesthetically-pleasing experience for all users in these corridors, they also may offer increased safety and security.

Streetscape improvements offer safety and security to both motorists and non-motorists through increased visual cues, better visibility, and increased activity. Many streetscape enhancements provide not only a comfortable environment for the pedestrian and bicyclist, but also offer drivers visual cues that a non-motorist could be expected in an area. Improvements such as striping, bus shelters, and pedestrian-scaled signage guide the non-motorist towards areas that are most appropriate for their use. These same cues help the motorist to see where the presence of pedestrians and bicyclists is most likely to occur. For example, a well-marked crosswalk guides the pedestrian towards the location in the right-of-way most appropriate for crossing, while also alerting the motorist to slow down and look out for pedestrian traffic.

Visibility offered by pedestrian-scaled lighting benefits non-motorists and motorists alike. Pedestrians and bicyclists are better able to see their way, which increases their feelings of security. Improvements that create a sense of security for pedestrians encourage increased use and activity. This increased activity, in turn, leads to a greater feeling of safety. The City has acknowledged the importance of improving the experience of users on many of its major commercial corridors.



*Note: Possession of City issued parking permit enables holder to exceed specified time limit

GPA 2010-0001 (8/10/10)

Figure CM-6
Public Parking Lots in Old Towne Orange

CIRCULATION & MOBILITY IMPLEMENTATION

The goals, policies, and plans identified in this Element are implemented through a variety of City plans, ordinances, development requirements, capital improvements, and ongoing collaboration with regional agencies and neighboring jurisdictions. Specific implementation measures for this Element are contained in the General Plan Appendix.

Transportation Assessment of Proposed Amendment to the Master Plan of Arterial Highways (MPAH) for Villa Park Road

Prepared for:
Orange County Public Works

March 2024

OC23-0971.01

FEHR PEERS

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Executive Summary

Fehr & Peers completed a transportation assessment to evaluate the roadway designation in the Master Plan of Arterial Highways (MPAH) for Villa Park Road. The study covers Villa Park Road from Wanda Street to Cannon Street, spanning the jurisdictions of the City of Orange, City of Villa Park, and Unincorporated Orange County. This assessment consisted of a review of operations (in the form of LOS and queueing), safety, and user comfort (particularly for non-auto modes). This led to us identifying suggested future lane configurations and bike/ped facilities, which in turn, led to a recommendation regarding the most appropriate MPAH designation.

Villa Park Road between Hewes Street and Cannon Street is a four-lane Primary Arterial and is planned to be a six-lane Major Arterial based on the current MPAH designation. The Orange County Transportation Authority (OCTA) MPAH Guideline (August 2017), designates a Major Arterial highway as a six-lane divided (raised or painted) roadway, with a typical right-of-way width of 120 feet. The right-of-way for Villa Park Road between Hewes Street and Cannon Street is 100 feet, which excludes the off-street trail on the north side of the roadway **(Table 1)**. According to our operations and cross-section analysis, a five-lane Primary Arterial (three westbound lanes and two eastbound lanes) will be sufficient to serve future traffic demand and can fit within the available right-of-way.

Table 1: MPAH Designation

Facility	Extent	Current Designation	Proposed Designation
Villa Park Road	Hewes Street to Cannon Street	Major Arterial (Divided 6-lane)	**Primary Arterial (Divided 5-lane)**
Villa Park Road	Wanda Street to Hewes Street	Primary Arterial (Divided 4-lane)	Primary Arterial (Divided 4-lane)

*Note: Proposed designation that differ from the current MPAH designation is highlighted in **bold**.*
Source: Fehr & Peers, 2023.

1. Introduction

Study Area

Through coordination with Orange County Transportation Authority (OCTA), Orange County Public Works, and the cities of Villa Park and Orange, 15 study intersections and 15 study roadway segments were identified for this assessment **(Figure 1)**. This study evaluated parallel roadway segments and intersections along the corridor to better understand traffic operations in the area and to help guide recommendations along Villa Park Road.

Study Intersections

1. Wanda Road and Villa Park Road (Signalized)
2. Kathleen Lane and Villa Park Road (Side-Street Stop Control [SSSC])[1]
3. Morrow Circle and Villa Park Road (SSSC)
4. Prado Woods Drive and Villa Park Road (SSSC)
5. Kenwick Drive and Villa Park Road (SSSC)
6. Radec Court and Villa Park Road (SSSC)
7. Center Drive and Villa Park Road (Signalized)
8. Park Villa Lane and Villa Park Road (SSSC)
9. Lemon Street and Villa Park Road (Signalized)
10. Hewes Street and Villa Park Road (Signalized)
11. Linda Vista Street and Villa Park Road (SSSC)
12. Cannon Street and Santiago Canyon Road (Signalized)
13. Cannon Street and Taft Avenue (Signalized)
14. Cannon Street and Serrano Avenue (Signalized)
15. Cannon Street and Loma Street (SSSC)

Study Segments

1. Villa Park Road between Wanda Road and Center Drive
2. Villa Park Road between Center Drive and Hewes Street
3. Villa Park Road between Hewes Street and Cannon Street
4. Santiago Canyon Road east of Cannon Street
5. Taft Avenue between Santiago Boulevard and Center Drive
6. Taft Avenue between Center Drive and Cannon Street

[1] In the HCM methodology, Side-Street Stop Controlled (SSSC) intersection is analyzed as Two-Way Stop Control (TWSC).

7. Serrano Avenue east of Cannon Road
8. Santiago Boulevard north of Taft Avenue
9. Wanda Road between Villa Park Road and Taft Avenue
10. Wanda Road south of Villa Park Road
11. Hewes Street south of Villa Park Road
12. Cannon Street north of Serrano Avenue
13. Cannon Street between Taft Avenue and Serrano Avenue
14. Cannon Street between Santiago Canyon Road and Taft Avenue
15. Cannon Street south of Santiago Canyon Road

Analysis Scenarios

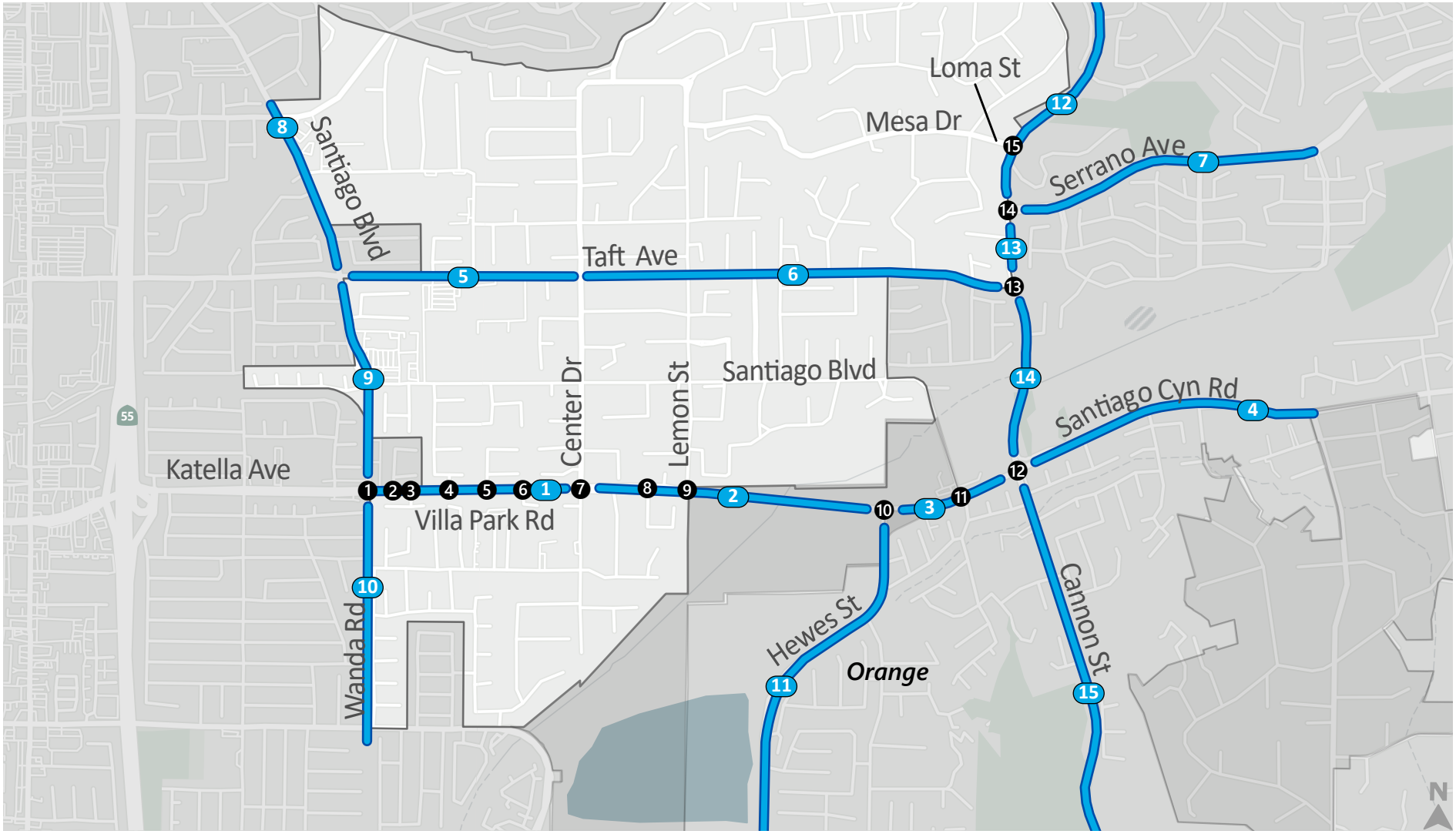
To determine the existing and future needs of the transportation network, Fehr & Peers considered the following scenarios in the analysis:

- Existing (2023) Conditions – Consists of traffic counts collected on April 26, 2023, a typical weekday during an event at Angels Stadium.
- Future Year (2045) Conditions – Consists of traffic forecasts estimated using the County of Orange's travel demand forecasting model, OCTAM.

Report Outline

The remainder of this report contains the following chapters:

- Chapter 2 – Analysis Methodology
- Chapter 3 – Existing (2023) Conditions
- Chapter 4 – Future Year (2045) Conditions
- Chapter 5 – Recommendations
- Chapter 6 – Vehicle Miles Traveled (VMT) Assessment



Study Intersections
Study Segments
City of Villa Park
City of Orange
Unincorporated Orange County

OC23-0971.01

Figure 1: Study Intersections and Segments
Villa Park Road MPAH Amendment

2. Analysis Methodology

This study provides a review of vehicle and multi-modal traffic operations through the corridor.

Roadway LOS Methodology

Study segments were evaluated based on V/C ratios, which were calculated by comparing Average Daily Traffic (ADT) to the theoretical daily capacity. This calculation does not indicate the service level throughout the course of the day, but rather provides a rough estimate of what the service level will be at the primary intersections during peak hours. Roadway capacities for all existing and planned facilities were referenced from the *Guidance for Administration of Orange County Master Plan of Arterial Highways, Orange County Transportation Authority (2017)*, which documents capacities necessary to achieve LOS A through LOS E for various roadway classifications. A threshold of LOS E was utilized for all V/C calculations in conformance with the MPAH. The LOS grades and descriptions for segments are summarized in **Table 2**. Per each jurisdiction's requirements, LOS C is used as the limit of acceptable performance.

Intersection LOS Methodology

Consistent with the County's *Transportation Implementation Manual (2020),* all signalized study intersections within the study area were analyzed utilizing the ICU methodology. ICU methodology reports the volume-to-capacity (V/C) ratio for signalized intersections. The V/C ratio is determined by evaluating the critical movements for each intersection and comparing them to the critical movement capacity of the intersection. For all ICU calculations, a saturation flow rate of 1,700 vehicles per hour per lane (vphpl) and 5% lost time was used.

As the ICU methodology doesn't account for signal timing parameters and several other factors, all signalized intersections were also analyzed using the Transportation Research Board (TRB) *Highway Capacity Manual, 7th Edition* (HCM) methodology. HCM methodology uses signal timing inputs to estimate the average control delay for vehicles at signalized intersections.

All unsignalized intersections were analyzed using HCM methodology, which estimates the worst-case lane delay for side-street stop-controlled intersections. Traffic signal warrants were conducted for unsignalized intersections operating worse than the LOS standards.

After the quantitative V/C or delay estimates are complete, the methodologies assign a qualitative letter grade which represents the operations of the intersection. These grades range from level of service (LOS) A (minimal delay) to LOS F (excessive congestion). LOS E represents at-capacity operations. Descriptions of the LOS letter grades for intersections are provided in **Table 2**.

All ICU and HCM intersection operation analysis was performed using the PTV Vistro 2020 and Synchro 11 software, respectively. Per each jurisdiction's requirements, LOS D is used as the limit of acceptable performance.

Table 2: Intersection LOS Grades

Level Of Service	Description	Signalized Volume-to-Capacity (V/C)	Signalized Delay (Seconds)	Unsignalized Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length	0.000-0.600	≤ 10.0	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths	0.601-0.700	> 10.0 to 20.0	> 10.0 to 15.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear	0.701-0.800	> 20.0 to 35.0	> 15.0 to 25.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable	0.801-0.900	> 35.0 to 55.0	> 25.0 to 35.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences	0.901-1.000	> 55.0 to 80.0	> 35.0 to 50.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	Greater than 1.000	> 80.0	> 50.0

Source: Fehr & Peers, 2023.

Signalized Intersection Queueing Methodology

The HCM methodology was also used to evaluate signalized intersection turn-lane storage capacities. Storage capacities were compared against 95th percentile queue estimates using the Synchro 11 software.

Peak Hour Traffic Signal Warrants

The Peak Hour Traffic Signal Warrant (*California Manual on Uniform Traffic Control Devices (MUTCD) 2014 Edition)* is intended to examine whether a signal is justifiable, but it does not mandate that a signal be installed. Peak hour traffic signal warrants were conducted for all unsignalized intersections operating below acceptable LOS standards.

Multi-modal LOS Methodology

In an effort to provide quantitative data for all user groups, Fehr & Peers developed PersonDelay+, a tool utilizing HCM methodology that provides a more complete picture of how all users are affected by intersection operations. PersonDelay+ reports person delay for all users: vehicle drivers and passengers, pedestrians, and bicyclists for signalized intersections. The data needed is routinely collected as part of the traffic analyses and Complete Streets studies, including capacity, average passenger occupancy, cycle length and effective green time. The LOS grades and descriptions are consistent with the information

provided in **Table 2**. None of the jurisdictions have adopted standards for multi-modal LOS analysis. Therefore, we assumed that LOS D is used as the limit of acceptable performance.

LOS grades below LOS D indicate that on average each person waits over a minute to cross the intersection on foot or by bike. Generally, bike delays are similar to vehicle delays, but that average intersection delay is weighted by measured bicycle counts. Pedestrian delay is a factor of the intersection cycle length and green times that cause the pedestrians to wait for a walk signal.

Collision Review

Vehicle collisions with bicycles and pedestrians along the corridor were reviewed to evaluate potential trends. Data was pulled from the last five years from the Transportation Injury Mapping System (TIMS) database which summarizes reported California crash data from the Statewide Integrated Traffic Records System (SWITRS).

Data Collection

Turning movement and daily traffic counts were collected on Wednesday, April 26th, 2023. Counts were collected on this day to represent peak travel demand in the area. On this day school was in session and a special event (baseball game) was happening at Angels Stadium. This later condition, an event at Angels Stadium or Honda Center, occurs on over a third of the days per calendar year.

Turning movement counts were collected during typical peak commute periods (7:00 AM – 9:00 AM and 4:00 PM to 6:00 PM), and vehicle classifications and bicycle and pedestrian counts were collected at select roadway segments and intersections, respectively. Signal timings were obtained from appropriate jurisdictions.

Future Year Forecasting Methodology

The Orange County Transportation Analysis Model (OCTAM) version 5.0 was utilized to prepare traffic forecasts. OCTAM is consistent with the 2020 SCAG Regional Transportation Plan/Sustainable Communities Strategy (2020 RTP/SCS) with a 2016 base year and a 2045 future year and is the most appropriate model for use in this project because it includes the most recent land use and roadway information for the area. Pending development proposals in the surrounding study area were confirmed with the City of Orange, City of Villa Park, and County staff to account for major pending and approved land use projects **(Table 3).**

Table 3: Pending/Approved Developments

Project Name	Jurisdictions	Location	Quantity	Units
Milan Property	City of Orange	North of Santiago Canyon Road between Cannon Street and Orange Park Boulevard	200	Dwelling Units
Orange Heights	City of Orange	South of Santiago Canyon Road, east of Jamboree Road	1,180	Dwelling Units
Villa Park RV Parking	Orange County	Southeast Corner of Hewes Street and Villa Park Road	69,095	Square Feet

Source: Fehr & Peers, 2023.

Traffic forecasts for study intersections and segments were developed using the Difference Method which is consistent with methodologies delineated in the *National Cooperative Highway Research Program Report (NCHRP) 765* published by the *Transportation Research Board (TRB): Analytical Travel Forecasting Approaches for Project Level Planning and Design (Transportation Research Board, 2014)*. In this study, the Base Year and Future Year model outputs were used to calculate a model growth for the study area, which was then applied to existing traffic volumes to develop 2045 forecasts. Bicycle and pedestrian volumes were assumed to be similar in future conditions.

3. Existing (2023) Conditions

LOS Analysis

The existing turning movements and daily traffic volumes are summarized in **Attachment A**. Existing volumes were utilized along with existing lane configurations to conduct the ICU and HCM analysis. The existing segment, intersection LOS, and multi-modal LOS results are summarized in **Attachment B**, respectively. LOS worksheets are provided in **Attachment C**.

All **roadway segments** operate at LOS C or better except the following:

13. Cannon Street between Taft Avenue and Serrano Avenue (LOS E)
14. Cannon Street between Santiago Canyon Road and Taft Avenue (LOS D)

All **unsignalized intersections** operate at LOS E or F, except Trenton Avenue and Villa Park Road. These intersections have stop control for the side-street, and HCM uses the worst-case movement delay to estimate the intersection LOS. All side-streets have relatively low volumes, which results in only a few vehicles experiencing high delays at the intersections. Since adjacent traffic signals typically meter traffic and provide gaps for stop-controlled movements to be made, gaps in traffic are likely resulting in less delay for the stop-controlled movements than reflected in the LOS analysis.

The following three **signalized intersections** operate at worse than LOS D in the ICU and/or HCM analysis:

12. Cannon Street and Santiago Canyon Road (HCM PM LOS E)
13. Cannon Street and Taft Avenue (ICU PM LOS E and HCM AM LOS E)
14. Cannon Street and Serrano Avenue (ICU PM LOS E)

The following two **signalized intersections** along the Villa Park Road operate at worse than LOS D in the multi-modal LOS analysis. The intersection Wanda Road and Villa Park Road has the highest pedestrian and bike volumes in the corridor (26 at the peak in the AM and 21 at the peak in the PM). Pedestrians on average wait approximately a minute to cross the intersection. The intersection of Hewes Street and Villa Park Road has fewer bikes and peds (5 at the peak in the AM and 9 at the peak in the PM) with the greatest delays for those crossing Villa Park Road.

1. Wanda Road and Villa Park Road (Pedestrian AM and PM LOS E)
10. Hewes Street and Villa Park Road (Bike and Pedestrian AM and PM LOS E)

Queuing Analysis

The queuing analysis was prepared for the intersection of Cannon Street and Villa Park Road since it is the only signalized intersection along Villa Park Road that doesn't meet the County's LOS standard. The intersections queuing analysis is summarized in **Attachment B** and detailed queueing worksheets are

provided in **Attachment D**. The northbound left and southbound left exceed the available storage, and the eastbound left is at capacity.

Signal Warrants

We evaluated the signal warrants for the seven unsignalized intersections which don't meet the County's LOS standards along Villa Park Road. Only the intersection of Linda Vista Street and Villa Park Road meets the peak hour signal warrant[2] (**Attachment E**).

Collision Review

The bicyclist and pedestrian collisions were reviewed from 2018 to 2022, acquired from the Transportation Injury Mapping System (TIMS), which is the most recent data available. There were three reported bike collisions and one pedestrian-involved collision along Villa Park Road between Wanda Road and Cannon Road from 2018 to 2022, which accounts for 29% of the total 14 collisions (**Attachment F**). The three bike collisions all occurred at the Villa Park Road and Wanda Road intersection, while the pedestrian involved collision occurred at Villa Park Road, 225 feet west of Cannon Street. The severity level of the four collisions was "visible injury".

[2] Traffic Signal Warrant Disclaimer: This analysis is intended to examine the general correlation between the planned level of existing facility and the need to install new traffic signals. It estimates existing traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured, rather than forecast, traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

4. Future Year (2045) Conditions

LOS Analysis

To accurately model the future year roadway network, Fehr & Peers referenced the OCTA 2023 MPAH, 2020 SCAG Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), and coordinated with relevant jurisdictions to identify roadway improvements in the study area. The following roadway improvements were assumed in the future year assessment:

- Wanda Road south of Villa Park Road is widened from three to four lanes (MPAH)
- Cannon Street between Santiago Canyon Road and Serrano Avenue is widened in the northbound direction from two to three lanes (City of Orange)

The MPAH identifies Villa Park Road, between Hewes Street and Cannon Street, as six lanes (currently four lanes). The widening was assumed in the modeling and forecasting efforts to analyze unconstrained demand but was not assumed in the intersection and segment operations analysis.

Future year turning movements and daily traffic volumes are provided in **Attachment A** and were utilized along with future year lane configurations to conduct the ICU and HCM analysis. Consistent with standard practice, the HCM analysis assumes routine traffic signal maintenance would occur, and signal timing parameters would be optimized to accommodate future traffic volumes.

The future year roadway segment, intersection LOS, and multi-modal LOS results are summarized in **Attachment B**. LOS worksheets are provided in **Attachment C**.

The following **roadway segments** are forecast to operate below County's LOS C standard:

3. Villa Park Road between Hewes Street and Cannon Street (LOS D)
4. Santiago Canyon Road east of Cannon Street (LOS D)
13. Cannon Street between Taft Avenue and Serrano Avenue (LOS D)

The roadways surrounding Villa Park Road have sufficient capacity to accommodate increased traffic, but Villa Park Road provides the most desirable east/west street in the area and is forecast to have high demand. The segments between Hewes Street and Cannon Street are estimated to not meet the County's LOS standard. There is a significant demand for northbound/southbound traffic on Cannon Street north of Villa Park Road and Hewes Street south of Villa Park Road. This analysis confirms widening Villa Park Road between Hewes Street and Cannon Street is necessary for it to operate within the County's LOS standards.

The side street movements for all **unsignalized intersections** are forecast to operate at LOS E or F or worse. However, all the side-streets have relatively low volumes, which results in only a few vehicles experiencing high delays at the intersections. Since adjacent traffic signals typically meter traffic and

provide gaps for stop-controlled movements to be made, gaps in traffic are likely being underestimated and conditions will be better than the analysis suggests.

The following four **signalized intersections** are forecast to operate at LOS E or F in the ICU and/or HCM analysis:

10. Hewes Street and Villa Park Road (ICU and HCM AM LOS E)
12. Cannon Street and Santiago Canyon Road (ICU AM and PM LOS E)
13. Cannon Street and Taft Avenue (ICU and HCM AM LOS E)
14. Cannon Street and Serrano Avenue (ICU AM LOS F)

The following three **signalized intersections** along the Villa Park Road are forecast to operate at LOS E using a multi-modal LOS analysis. Similar to existing conditions, the pedestrian wait time to cross is on average over a minute at Wanda Street and Hewes Street. The wait times to cross at the intersection of Villa Park Road and Cannon Street is also forecast to be over a minute on average which is worse than existing conditions.

1. Wanda Road and Villa Park Road (Pedestrian AM and PM LOS E)
10. Hewes Street and Villa Park Road (Bike and Pedestrian AM and PM LOS E)
12. Cannon Street and Santiago Canyon Road (Bike and Pedestrian PM LOS E)

Queueing Analysis

The intersections of Hewes Street/Villa Park Road and Cannon Street/Villa Park Road are the only signalized intersections along Villa Park Road that will fail to meet the County's LOS standards. The queuing analysis is summarized in **Attachment B** and detailed queueing worksheets are provided in **Attachment D**. The queues at the following movements exceed available storage capacities:

- Hewes Street and Villa Park Road: westbound left-turn
- Cannon Street and Santiago Canyon Road: eastbound left-turn, northbound left-turn and southbound right-turn

Signal Warrants

Peak hour signal warrants for the unsignalized intersections which operate below County's standards along Villa Park Road are provided in **Attachment E**. Only the intersection of Linda Vista Street and Villa Park Road meets peak hour signal warrant.

5. Recommendations

The recommendations below will provide acceptable operating conditions within the existing right-of-way and built curb-to-curb width.

The future forecasts along Villa Park Road indicate that more capacity is needed between Hewes Street and Cannon Street to effectively serve the future demand. This assessment concluded that an additional westbound through lane on Villa Park Road between Hewes Street and Cannon Street would be the best use of the available right-of-way to increase capacity, meet operational goals, and limit impacts to adjacent properties.

In addition to capacity improvements, we recommend bicycle and pedestrian treatments to improve conditions along the corridor.

Villa Park Road Between Wanda Street and Hewes Street

This segment of Villa Park Road has sufficient capacity to meet future traffic demands. While the unsignalized intersections are not forecast to meet the County's standards, they are also not anticipated to meet the warrants for a signal. The analysis does not consider the effects of upstream signals in creating gaps, and the County should monitor the unsignalized intersections for potential signalization if delays become unreasonable.

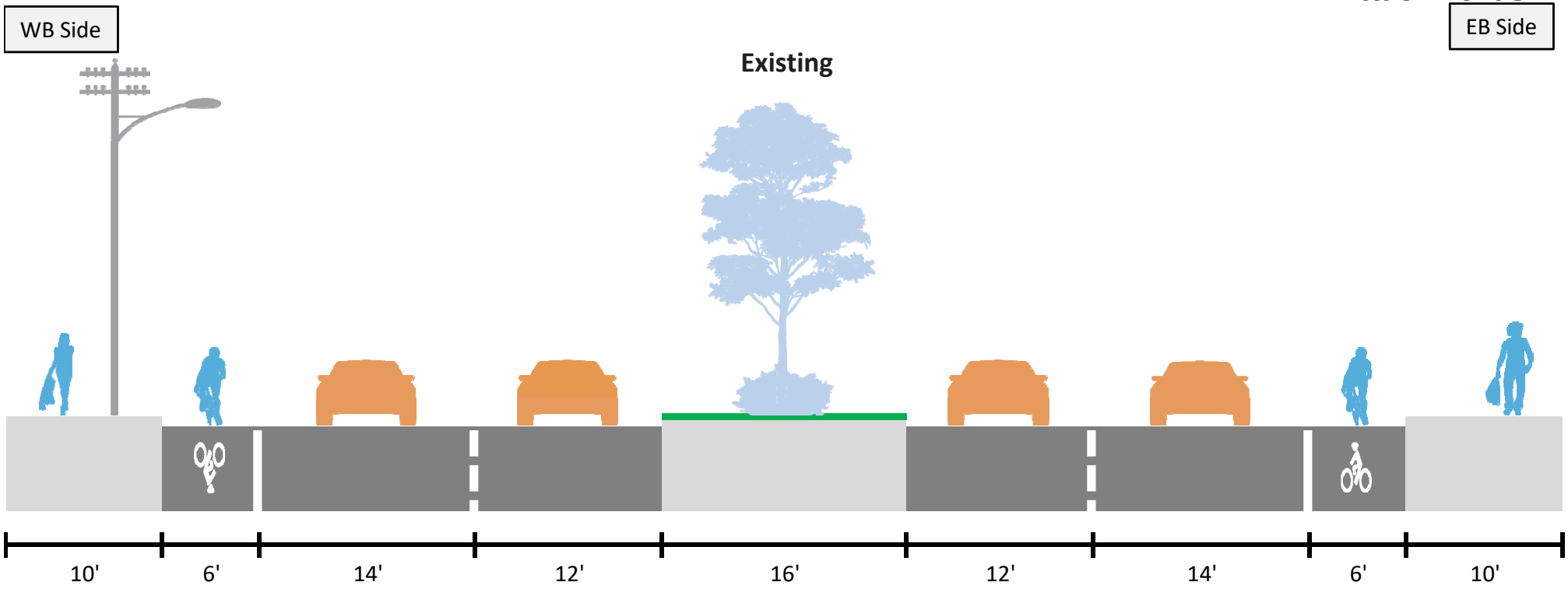
To improve bicyclist and pedestrian safety and comfort, we recommend restriping the corridor to provide a three-foot buffer between the bike lane and travel lanes, narrowing the two vehicle lanes to 12 feet and 11 feet. The recommended restriping can occur within the available right-of-way and existing curb-to-curb width, without affecting the exiting raised median. This design would provide a six-foot bike lane between Wanda Street and Lemon Street and an eight-foot bike lane between Lemon Street and Hewes Street. The recommended roadway cross-section for Villa Park Road between Wanda Street and Lemon Street is shown on **Figure 2**, and the recommended cross-section for Villa Park Road between Lemon Street and Hewes Street is shown on **Figure 3**.

The buffer will enhance the visibility of the bike lane and increase the separation between motor vehicles and bicyclists. The buffered bike lane also provides space for bicyclists to pass another bicyclist without encroaching into the adjacent motor vehicle lane. According to the guidelines from U.S. Department of Transportation Federal Highway Administration (FHWA), the range of lane widths for urban arterials and collectors ranges from 10 to 12 feet.[3] The Orange County Highway Design Manual Section 1003.2 requires a Class II bike lane on a curbed street to be a minimum of five feet.

[3] Table 3: Range for Lane Width, U.S. Department of Transportation Federal Highway Administration, https://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_lanewidth.cfm

Figure 2: Roadway Cross-section for Villa Park Road Between Wanda Street and Lemon Street

Attachment 5



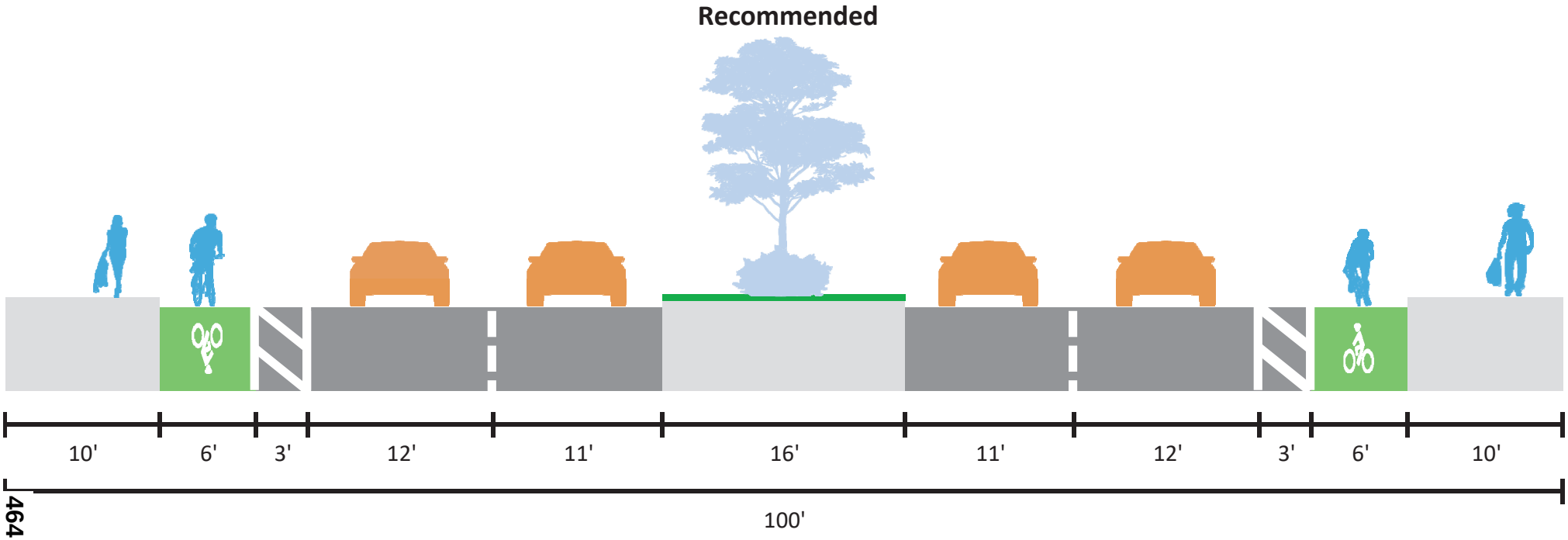
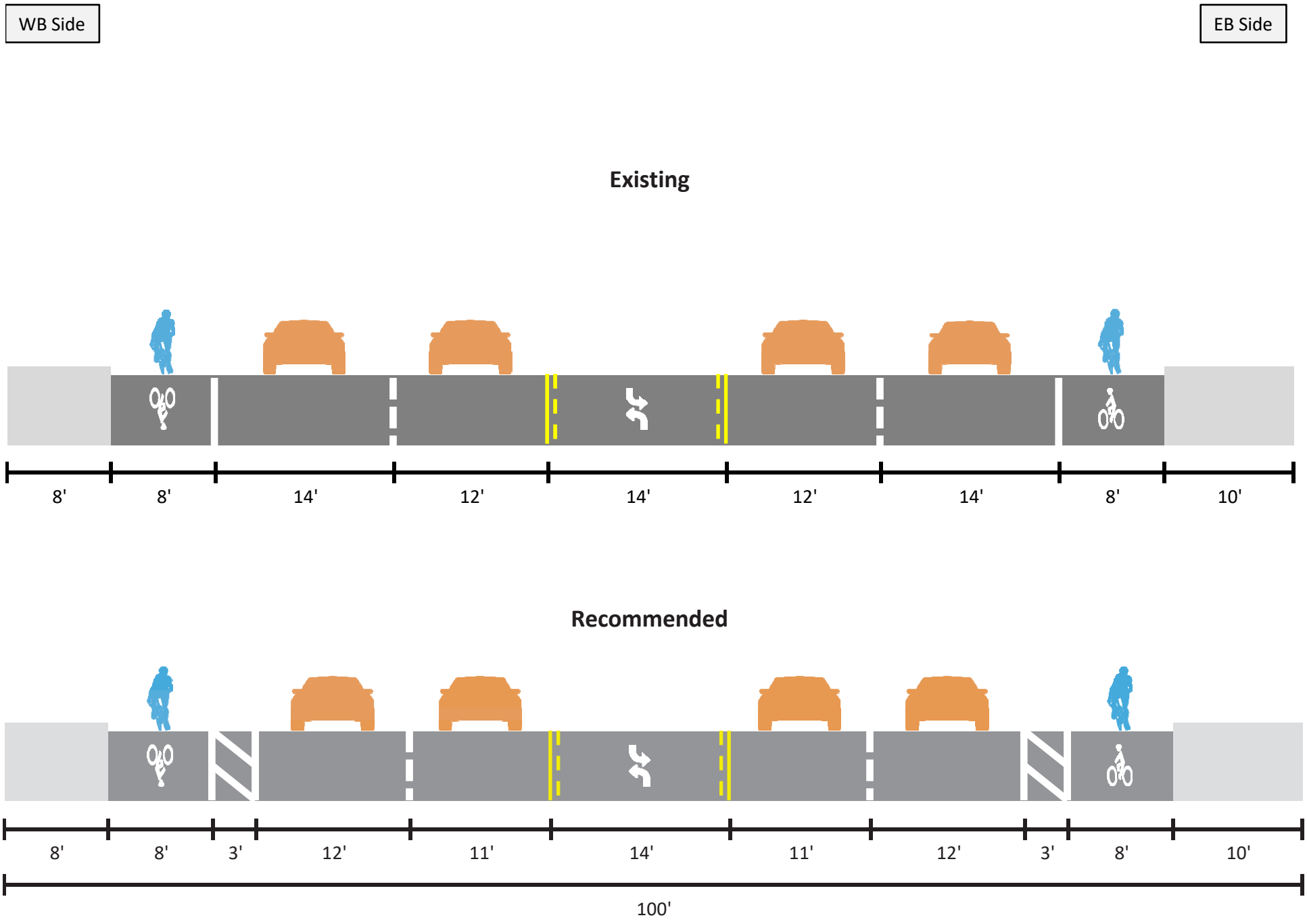


Figure 3: Recommended Roadway Cross-section for Villa Park Road Between Lemon Street and Hewes Street



Villa Park Road Between Hewes Street and Cannon Street

This segment of Villa Park Road will degrade to LOS D, which is below the County's standard. The signalized intersection of Hewes Street and Villa Park Road will not meet the County's standard, and conditions are forecast to worsen at the signalized intersection of Cannon Street and Villa Park Road and unsignalized intersection of Linda Vista Street and Villa Park Road. Vehicle queues at each of these intersections are forecast to extend past available storage, in some cases as far as to adjacent intersections.

To provide conditions that meet the County's operating standards, we recommend the westbound direction of the segment be restriped from two to three lanes between Hewes Street and Cannon Street. This recommendation requires the narrowing of through travel lanes and the center median to 11 feet each to accommodate a third 11-foot westbound vehicle lane. Further, we recommend extending the bike buffer to Cannon Street from Hewes Street by modifying the existing eight-foot Class II bike lane to a five-foot bike lane and a three-foot striped buffer. The recommended cross-section for Villa Park Road between Hewes Street and Cannon Street is shown on **Figure 4**.

In addition to the broader recommendations of a third westbound through lane and bike buffer, these elements should be included in future plans which are shown in **Attachment G**:

Hewes Street and Villa Park Road

- Restripe the westbound approach to add a trap westbound left-turn lane (two total left-turn lanes)
- Extend the westbound left-turn pocket to 450 feet

Linda Vista Street and Villa Park Road

- Signalize the intersection
- Restripe the intersection to add a westbound through lane (three total through lanes)

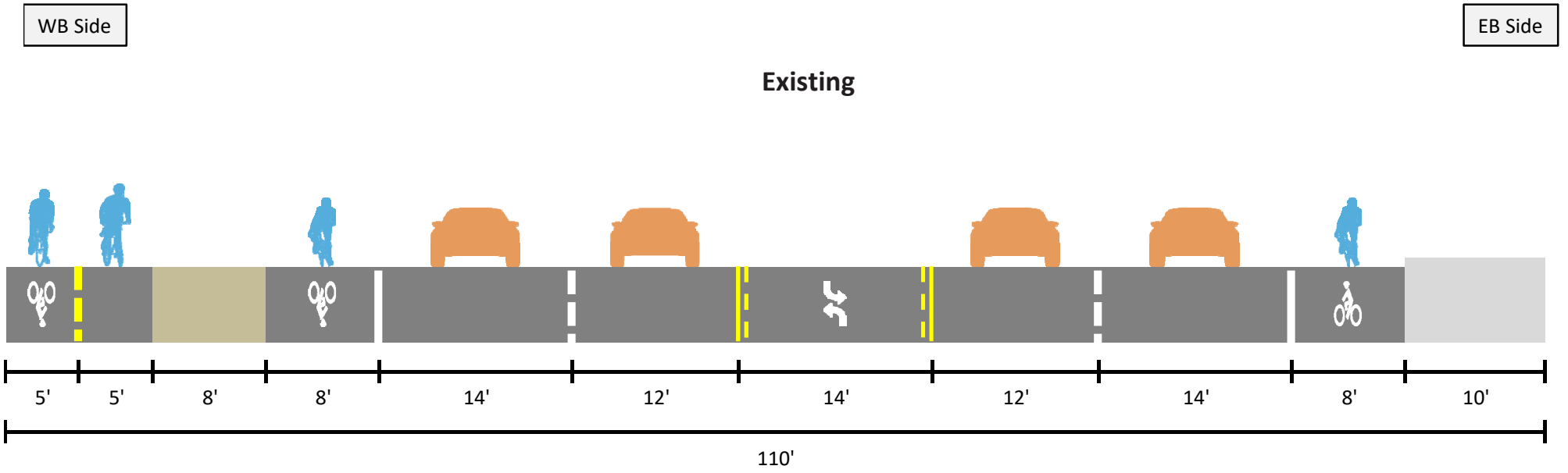
Cannon Street and Santiago Canyon Road

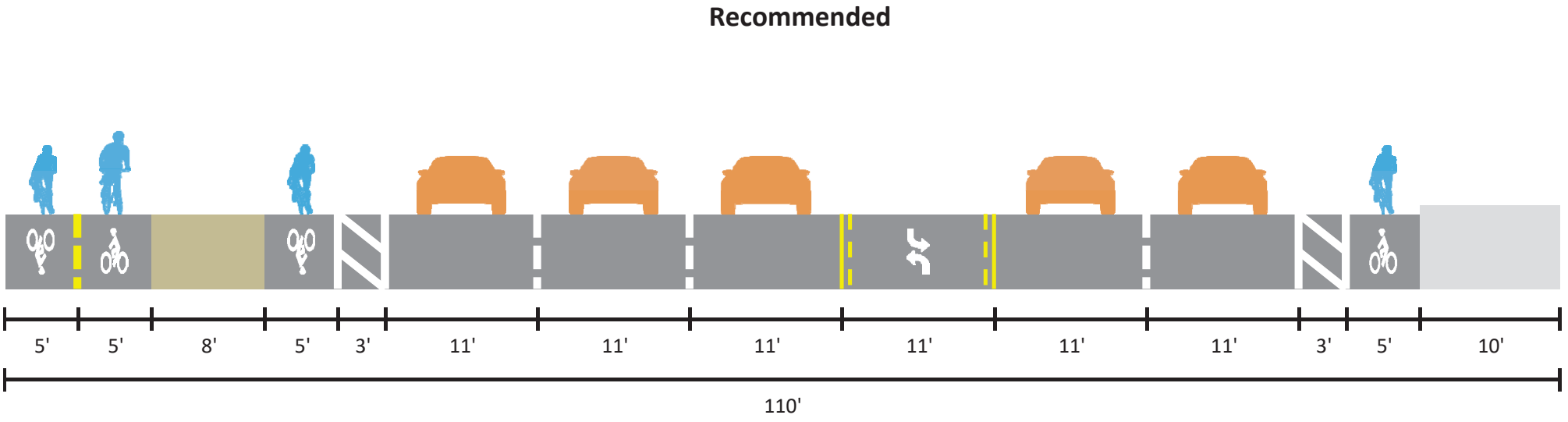
- Stripe a westbound through lane (three total through lanes)
- Add a westbound receiving lane (three total through lanes)
- Restripe one southbound through lane into a trap right-turn lane (two total right-turn lanes)
- Restripe shared southbound through/left lane into a southbound through lane (one total through lane)
- Restripe the existing Class II bike lane between the southbound left-most right-turn lane and the through lane
- Update northbound and southbound signal phasing from split to protected phasing.

The recommended improvement above would meet operational goals and balance multimodal needs along the corridor without requiring roadway widening or additional right-of-way. The recommended cross section provides fewer lanes than what is currently planned in the City of Orange's General Plan Circulation Element. This improvement would not prevent a future project from consideration if future traffic conditions warranted three lanes in each direction.

Fehr & Peers considered other alternatives for the Cannon Street and Santiago Canyon Road intersection but found them to operate inadequately during the PM peak hour. These alternatives were similar to the recommended improvement with a reduction in westbound through lanes and a southbound channelized right turn lane (that would provide a free southbound right movement). A focused alternatives analysis that summarizes average delay results for these alternatives is provided in **Table 8** and was used to screen these alternatives for further consideration.

Figure 4: Recommended Roadway Cross-section for Villa Park Road Between Hewes Street and Cannon Street





LOS Results with Recommended Improvements

The recommended improvements above will provide acceptable daily roadway LOS, peak hour LOS and queues within provided storage. The bicycle and pedestrian delays will also be reduced by the capacity improvements, though not to better than LOS D conditions. **Table 4** summarizes the daily roadway segment LOS results with the improvement. The intersection peak hour LOS and queueing results for the proposed improvements are summarized in **Tables 5, 6,** and **7**, and LOS and queuing worksheets are provided in **Attachments C** and **D**.

Additional directional traffic volume and capacity calculations are provided for Villa Park Road between Hewes Street and Cannon Street. The westbound direction ADT volumes are approximately 1,700 vehicles higher in the existing condition traffic counts and the future forecast westbound ADT is approximately 2,600 vehicles higher than the eastbound direction. As shown, the capacity assessment for the 5-lane cross section as well as the eastbound or westbound isolated direction capacity assessment all result in LOS C or better conditions, further justifying the recommendation for the additional lane in only the westbound direction.

Table 4: Future Year Roadway LOS with Improvements

Segment	Lanes	ADT	Capacity	V/C	LOS
No Improvements					
Villa Park Road between Hewes Street and Cannon Street	4	30,400	37,500	0.81	**D**
With Improvements					
Villa Park Road between Hewes Street and Cannon Street	5	30,400	46,900	0.65	B
Villa Park Road between Hewes Street and Cannon Street (Eastbound)	2	13,900	18,760	0.74	C
Villa Park Road between Hewes Street and Cannon Street (Westbound)	3	16,500	28,140	0.59	A

Note(s):

1. **Bold** symbolizes segment operates below Jurisdictions' LOS standards.
2. Capacities for LOS E were referenced for arterial types from the MPAH.
3. The MPAH does not list capacities for five-lane facilities. The five-lane capacity was estimated by interpolating between the four-lane and 6-lane divided arterial types.

Source: Fehr & Peers, 2023.

Table 5: Future Year Intersection LOS with Improvements

Intersection	Control	Methodology	Peak Hour	Future Year without Improvements		Future Year with Improvements	
				V/C / Delay	LOS	V/C / Delay	LOS
10. Hewes Street and Villa Park Road	Signalized	ICU / HCM	AM	**0.955 / 70**	**E / E**	0.733 / 41	C / D
			PM	0.889 / 25	D / C	0.791 / 19	C / B
11. Linda Vista Street and Villa Park Road	TWSC/ Signalized	HCM	AM	**>100**	**F**	0.495 / 14	A / B
			PM	**>100**	**F**	0.526 / 6	A / A
12. Cannon Street and Santiago Canyon Road	Signalized	ICU / HCM	AM	**0.914** / 49	**E** / D	0.768 / 36	C / D
			PM	**0.935** / 47	**E** / D	0.828 / 54	D / D

Note(s):

1. ">100" is reported for highly congested movements where more than 100 seconds is reported.
2. **Bold** symbolizes segment operates below Jurisdictions' LOS standards.

Source: Fehr & Peers, 2023.

Table 6: Future Year Multi-modal LOS with Improvements

Intersection	Mode	Peak Hour	Future Year without Improvements		Future Year with Improvements	
			Delay	LOS	Delay	LOS
1. Wanda Road and Villa Park Road	Bike/ Pedestrian	AM	14.2 / 73.0	B / E	14.2 / 73.0	B / E
		PM	47.8 / 60.4	D / E	47.8 / 60.4	D / E
9. Lemon Street and Villa Park Road	Bike/ Pedestrian	AM	5.8 / 8.3	A / A	5.8 / 8.3	A / A
		PM	6.2 / 9.6	A / A	6.2 / 9.6	A / A
10. Hewes Street and Villa Park Road	Bike/ Pedestrian	AM	62.7 / 63.9	E / E	62.6 / 63.9	E / E
		PM	58.7 / 65.6	E / E	47.1 / 50.6	D / D
12. Cannon Street and Santiago Canyon Road	Bike/ Pedestrian	AM	22.8 / 42.2	B / D	19.8 / 41.0	B / D
		PM	64.3 / 76.8	E / E	39.5 / 49.5	D / D

Source: Fehr & Peers, 2023.

Table 7: Future Year 95th Percentile Queues with Improvements

Intersection	Movement	Storage (ft)	Peak Hour	Future Year without Improvements Queue (ft)	Future Year with Improvements Queue (ft)
10. Hewes Street and Villa Park Road	EBT	>1,000	AM	1,025	825
			PM	475	200
	WBL	425[3]	AM	**1,075**	425
			PM	**350**	200
	WBT	550	AM	425	425
			PM	175	150
	NBL	550	AM	450	425
			PM	275	225
	NBR	550	AM	125	125
			PM	225	200
12. Cannon Street and Santiago Canyon Road	EBL	425	AM	175	200
			PM	**675**	425
	EBT	675	AM	375	500
			PM	250	200
	WBL	225	AM	50	50
			PM	50	50
	WBT	>1,000	AM	325	175
			PM	925	500
	WBR	700	AM	0	0
			PM	625	575
	NBL	150	AM	**225**	150
			PM	125	125
	NBT	500	AM	125	125
			PM	350	325
	SBL	550	AM	475	550
			PM	250	350
	SBT	>1,000	AM	475	450
			PM	275	300
	SBR	400	AM	**1,025**	75
			PM	**600**	75

Notes:
1. Queues were calculated using HCM 7th methodologies and are rounded up to the nearest 25-foot increment.
2. "EB" = eastbound, "WB" = westbound, "NB" = northbound, "SB" = southbound, "L" = left, "T" = through, "R" = right.
3. Hewes Street and Villa Park Road WBL turn pocket is proposed to be widened to 450' under Future Year with Improvements conditions.
4. **Bold** symbolizes movement is at or exceeds available storage capacity.
5. Underlined symbolizes movement is at capacity.

Source: Fehr & Peers, 2023.

Table 8 shows the forecasted intersection operations at Intersection 12: Cannon Street and Santiago Canyon Road under the three considered alternatives. Only Alternative 1 provides acceptable conditions during the PM peak hour.

Table 8: Cannon Street/Santiago Canyon Road Future Year Intersection LOS Alternative Results, PM Peak Hour

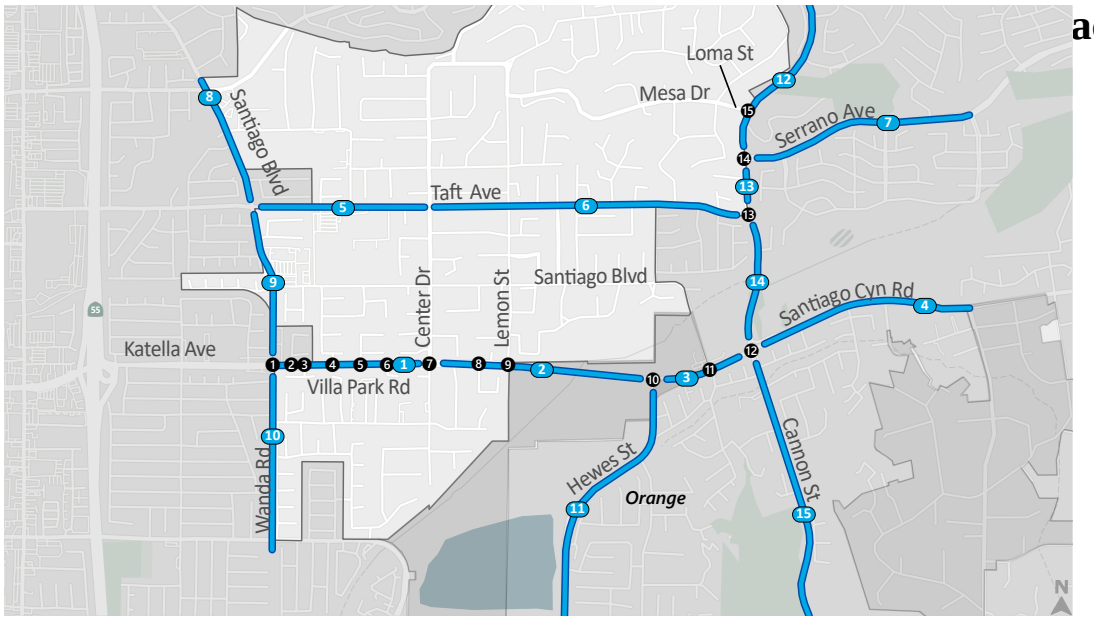
Alternative	Methodology	Future Year with Improvements	
		Delay (sec)	LOS
Alternative 1 (Recommended): Three WB Through Lanes Two SB Right Turn Lanes	HCM	36	D
Alternative 2: Two WB Through Lanes Two SB Right Turn Lanes	HCM	**59**	**E**
Alternative 3: Two WB Through Lanes One SB Right Turn Lane (Channelized)	HCM	**64**	**E**

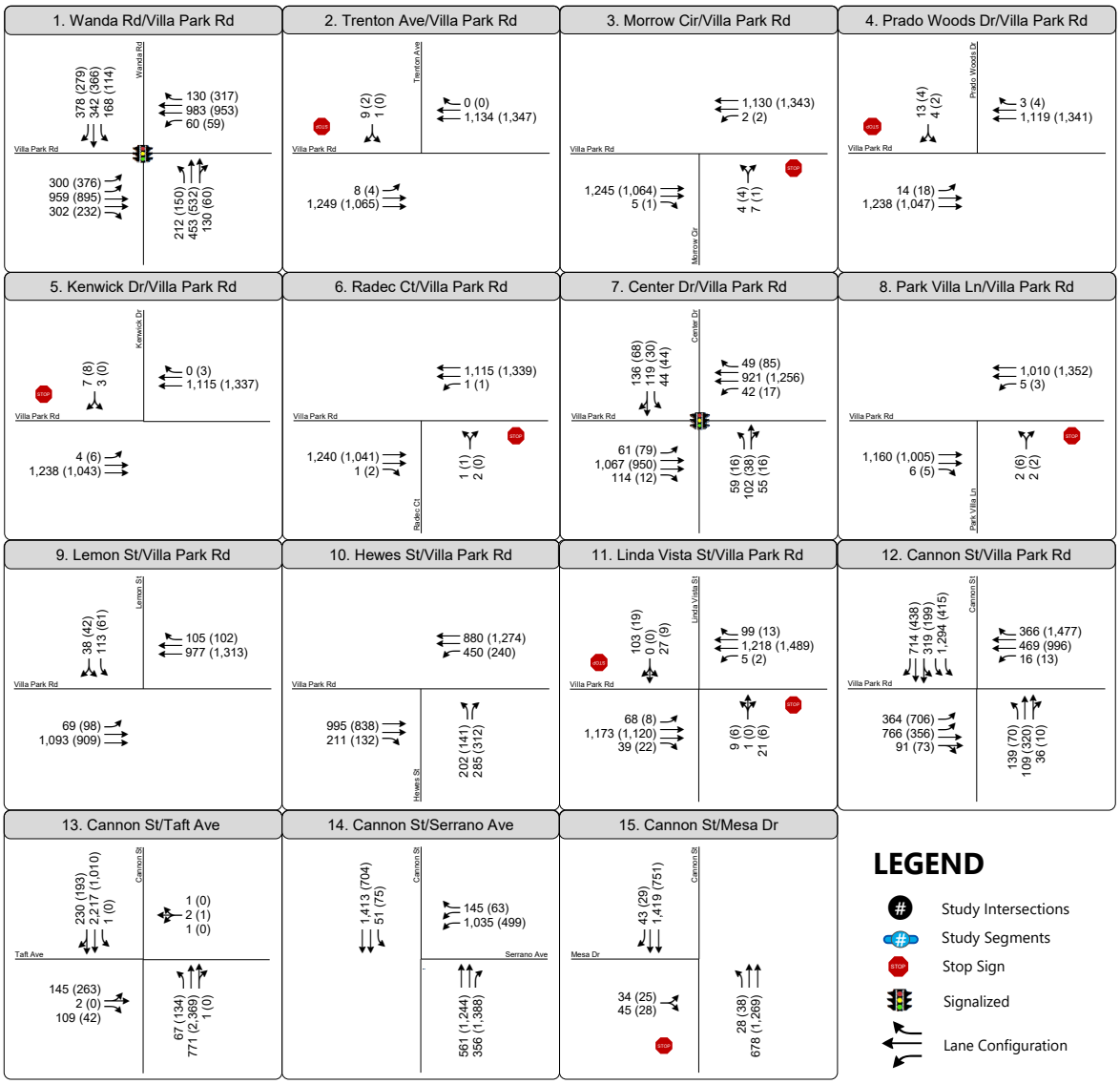
Source: Fehr & Peers, 2024.

6. Vehicle Miles Traveled (VMT) Assessment

Villa Park Road from Lemon Street to west of Cannon Street is planned to be a six-lane Major Arterial in the current MPAH. According to the operations and cross-section analysis, a five-lane design (three westbound lanes and two eastbound lanes) along Villa Park Road between Hewes Street and Cannon Street is sufficient to serve future traffic demand. The above recommendation won't add additional capacity than what has been assumed in adopted Circulation Plans and EIRs for the County and City of Orange and Villa Park. Since no capacity is being added we can conclude that no VMT will be induced, and that the change to the MPAH designation would result in a less-than-significant transportation impact.

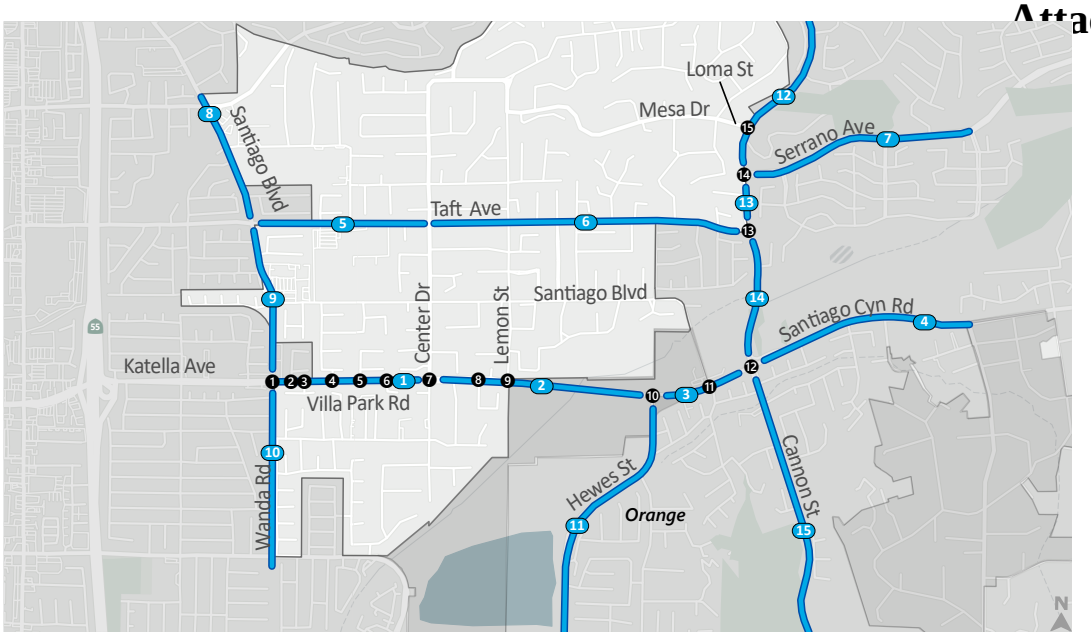
Attachment A: Traffic Volume Data

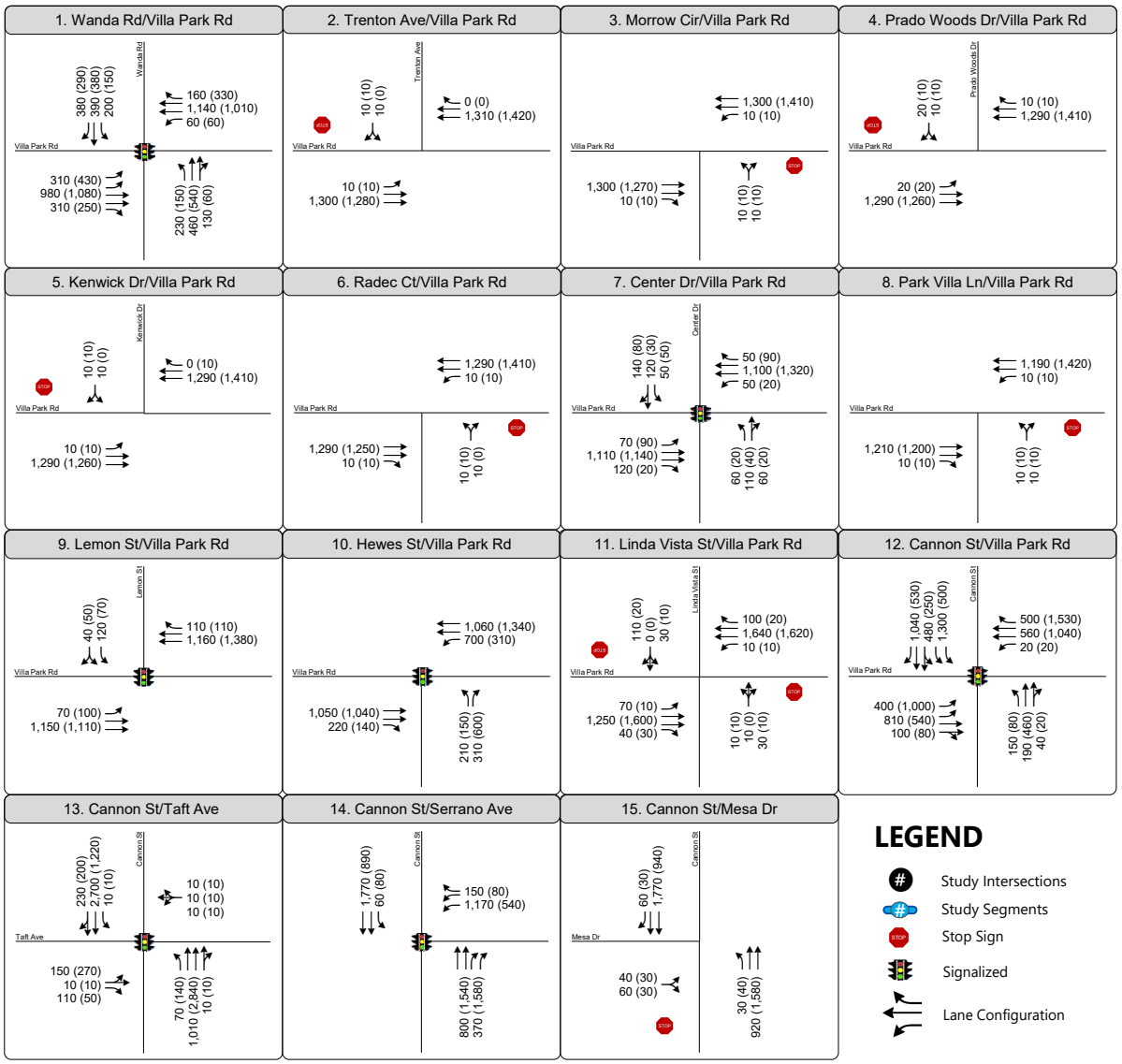




Existing (2023)

Peak Hour Traffic Volumes and Lane Configurations





Future Year (2045)
Peak Hour Traffic Volumes and Lane Configurations

INTERSECTION TURNING MOVEMENT COUNTS

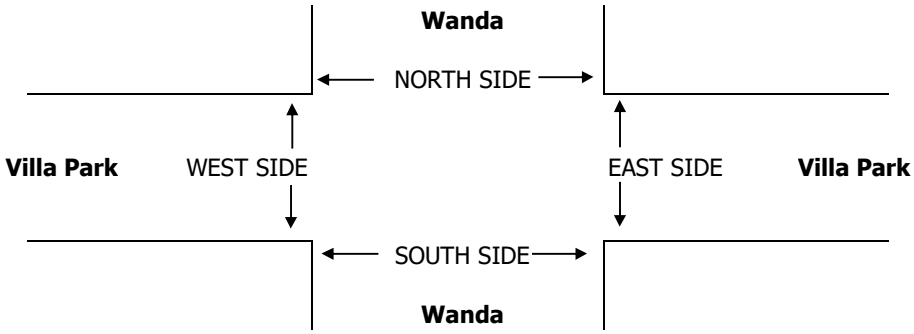
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Wed, Apr 26, 23	LOCATION:	Villa Park - Orange	PROJECT #:	SC3962
	NORTH & SOUTH:	Wanda	LOCATION #:	1
	EAST & WEST:	Villa Park	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Wanda			SOUTHBOUND Wanda			EASTBOUND Katella			WESTBOUND Villa Park			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 1	SR 1	EL 2	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL
AM	7:00 AM	31	44	14	26	41	60	43	176	37	3	158	20	653
	7:15 AM	30	49	16	31	35	79	55	168	39	9	169	20	700
	7:30 AM	41	90	25	45	78	81	79	267	65	7	263	34	1,075
	7:45 AM	51	127	34	38	105	104	54	270	74	19	251	24	1,151
	8:00 AM	62	145	32	39	88	102	76	221	102	18	253	33	1,171
	8:15 AM	58	91	39	46	71	91	91	201	61	16	216	39	1,020
	8:30 AM	58	74	19	28	70	57	53	147	51	32	194	52	835
	8:45 AM	41	66	14	28	53	64	53	153	47	29	144	50	742
	VOLUMES	372	686	193	281	541	638	504	1,603	476	133	1,648	272	7,347
	APPROACH %	30%	55%	15%	19%	37%	44%	20%	62%	18%	6%	80%	13%	
	APP/DEPART	1,251	/	1,462	1,460	/	1,150	2,583	/	2,077	2,053	/	2,658	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	212	453	130	168	342	378	300	959	302	60	983	130	4,417
	APPROACH %	27%	57%	16%	19%	39%	43%	19%	61%	19%	5%	84%	11%	
	PEAK HR FACTOR		0.832			0.899			0.950			0.965		0.943
	APP/DEPART	795	/	883	888	/	704	1,561	/	1,257	1,173	/	1,573	0
PM	4:00 PM	39	107	25	29	74	75	70	201	62	16	206	63	967
	4:15 PM	34	108	17	24	80	64	96	239	67	18	246	65	1,058
	4:30 PM	36	112	19	25	80	58	94	202	78	21	246	59	1,030
	4:45 PM	38	131	17	22	76	60	89	220	77	10	200	67	1,007
	5:00 PM	37	130	16	24	94	64	93	237	70	20	259	76	1,120
	5:15 PM	44	137	18	34	100	89	84	199	43	17	237	93	1,095
	5:30 PM	31	134	9	34	96	66	110	204	42	12	257	81	1,076
	5:45 PM	23	113	22	36	98	64	101	185	45	15	200	65	967
	VOLUMES	282	972	143	228	698	540	737	1,687	484	129	1,851	569	8,320
	APPROACH %	20%	70%	10%	16%	48%	37%	25%	58%	17%	5%	73%	22%	
	APP/DEPART	1,397	/	2,278	1,466	/	1,311	2,908	/	2,058	2,549	/	2,673	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	150	532	60	114	366	279	376	860	232	59	953	317	4,298
	APPROACH %	20%	72%	8%	15%	48%	37%	26%	59%	16%	4%	72%	24%	
	PEAK HR FACTOR		0.932			0.851			0.918			0.936		0.959
	APP/DEPART	742	/	1,225	759	/	657	1,468	/	1,034	1,329	/	1,382	0



INTERSECTION TURNING MOVEMENT COUNTS

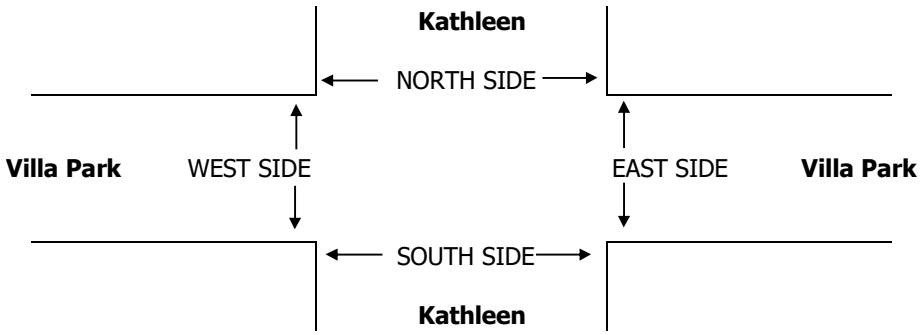
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Kathleen	LOCATION #:	2
	EAST & WEST:	Villa Park	CONTROL:	STOP S

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Kathleen			SOUTHBOUND Kathleen			EASTBOUND Katella			WESTBOUND Villa Park			
	LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	0	0	0	1	1	186	0	0	176	0	364
	7:15 AM	0	0	0	0	0	3	0	219	0	0	195	0	417
	7:30 AM	0	0	0	0	0	4	1	306	0	0	229	0	540
	7:45 AM	0	0	0	0	0	3	3	374	0	0	290	0	670
	8:00 AM	0	0	0	0	0	0	2	277	0	0	282	0	561
	8:15 AM	0	0	0	1	0	2	2	287	0	0	280	0	572
	8:30 AM	0	0	0	0	0	1	0	218	0	0	262	0	481
	8:45 AM	0	0	0	0	0	0	1	188	0	0	217	1	407
	VOLUMES	0	0	0	1	0	14	10	2,055	0	0	1,931	1	4,017
	APPROACH %	0%	0%	0%	7%	0%	93%	0%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	11	15	/	0	2,070	/	2,056	1,932	/	1,950	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	0	0	1	0	9	8	1,244	0	0	1,081	0	2,346
	APPROACH %	0%	0%	0%	10%	0%	90%	1%	99%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.625			0.832			0.932		0.875
	APP/DEPART	0	/	8	10	/	0	1,255	/	1,245	1,081	/	1,093	0
PM	4:00 PM	0	0	0	0	0	1	5	255	0	0	262	0	523
	4:15 PM	0	0	0	0	0	1	0	269	0	0	323	0	593
	4:30 PM	0	0	0	0	0	0	1	268	0	0	302	0	571
	4:45 PM	0	0	0	0	0	0	1	247	0	0	275	0	523
	5:00 PM	0	0	0	0	0	1	1	255	0	0	331	0	588
	5:15 PM	0	0	0	0	0	1	1	264	0	0	360	0	626
	5:30 PM	0	0	0	0	0	4	2	228	0	0	320	0	554
	5:45 PM	0	0	0	0	0	3	1	250	0	0	265	3	522
	VOLUMES	0	0	0	0	0	11	12	2,036	0	0	2,438	3	4,506
	APPROACH %	0%	0%	0%	0%	0%	100%	1%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	15	11	/	0	2,054	/	2,036	2,441	/	2,455	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	0	0	0	0	2	4	1,034	0	0	1,268	0	2,310
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	99%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.500			0.963			0.881		0.921
	APP/DEPART	0	/	4	2	/	0	1,040	/	1,034	1,268	/	1,272	0



INTERSECTION TURNING MOVEMENT COUNTS

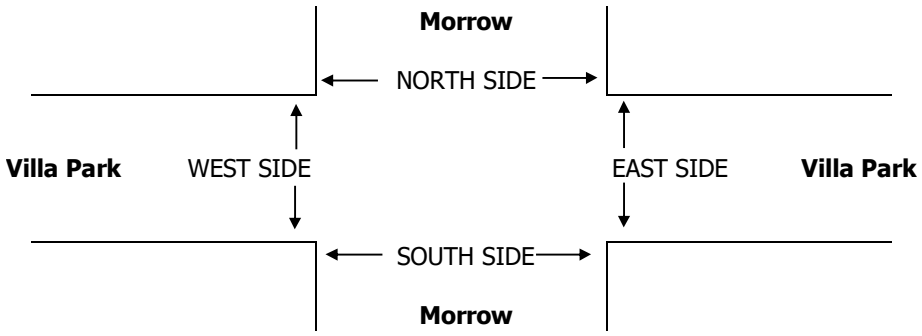
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Morrow	LOCATION #:	3
	EAST & WEST:	Villa Park	CONTROL:	STOP N

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Morrow			SOUTHBOUND Morrow			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL
AM	7:00 AM	3	0	0	0	0	0	0	186	0	1	173	0	363
	7:15 AM	0	0	0	0	0	0	0	218	1	0	195	0	414
	7:30 AM	2	0	2	0	0	0	0	305	1	1	227	0	538
	7:45 AM	0	0	2	0	0	0	0	372	1	0	290	0	665
	8:00 AM	0	0	2	0	0	0	0	276	1	1	282	0	562
	8:15 AM	2	0	1	0	0	0	0	286	2	0	283	0	574
	8:30 AM	1	0	1	0	0	0	0	217	1	0	261	0	481
	8:45 AM	1	0	0	0	0	0	0	186	2	0	217	0	406
	VOLUMES	9	0	8	0	0	0	0	2,046	9	3	1,928	0	4,003
	APPROACH %	53%	0%	47%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	17	/	0	0	/	10	2,055	/	2,056	1,931	/	1,937	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	4	0	7	0	0	0	0	1,239	5	2	1,082	0	2,339
	APPROACH %	36%	0%	64%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.688			0.000			0.834			0.934		0.879
	APP/DEPART	11	/	0	0	/	6	1,244	/	1,247	1,084	/	1,086	0
PM	4:00 PM	0	0	1	0	0	0	0	254	1	1	262	0	519
	4:15 PM	1	0	0	0	0	0	0	269	0	0	322	0	592
	4:30 PM	1	0	0	0	0	0	0	268	0	0	301	0	570
	4:45 PM	1	0	1	0	0	0	0	247	0	1	274	0	524
	5:00 PM	1	0	0	1	0	0	0	254	1	0	330	0	587
	5:15 PM	1	0	0	0	0	0	0	264	0	1	359	0	625
	5:30 PM	0	0	0	0	0	0	0	217	1	0	327	0	545
	5:45 PM	1	0	0	0	0	0	0	250	0	0	267	0	518
	VOLUMES	6	0	2	1	0	0	0	2,023	3	3	2,442	0	4,480
	APPROACH %	75%	0%	25%	100%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	8	/	0	1	/	6	2,026	/	2,026	2,445	/	2,448	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	4	0	1	1	0	0	0	1,033	1	2	1,264	0	2,306
	APPROACH %	80%	0%	20%	100%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.625			0.250			0.965			0.879		0.922
	APP/DEPART	5	/	0	1	/	3	1,034	/	1,035	1,266	/	1,268	0



INTERSECTION TURNING MOVEMENT COUNTS

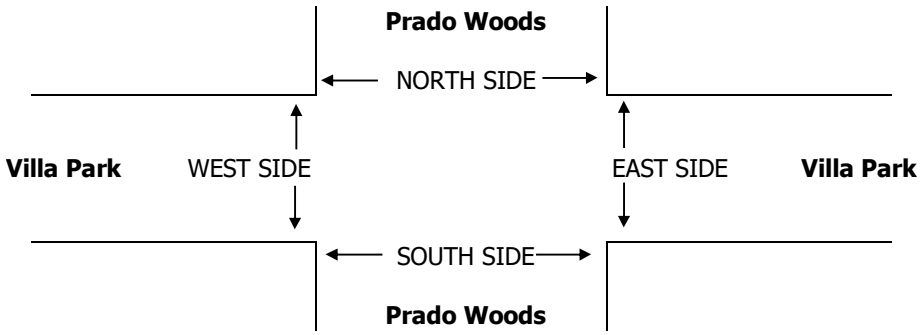
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Prado Woods	LOCATION #:	4
	EAST & WEST:	Villa Park	CONTROL:	STOP S

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Prado Woods			SOUTHBOUND Prado Woods			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	0	0	0	2	1	186	0	0	171	0	360
	7:15 AM	0	0	0	1	0	3	2	216	0	0	192	0	414
	7:30 AM	0	0	0	3	0	3	1	307	0	0	225	0	539
	7:45 AM	0	0	0	1	0	4	3	371	0	0	290	3	672
	8:00 AM	0	0	0	0	0	2	4	268	0	0	281	0	555
	8:15 AM	0	0	0	0	0	4	6	281	0	0	277	0	568
	8:30 AM	0	0	0	0	0	2	2	216	0	0	259	0	479
	8:45 AM	0	0	0	0	0	2	3	183	0	0	215	0	403
	VOLUMES	0	0	0	5	0	22	22	2,028	0	0	1,910	3	3,990
	APPROACH %	0%	0%	0%	19%	0%	81%	1%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	22	27	/	0	2,050	/	2,033	1,913	/	1,935	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	0	0	4	0	13	14	1,227	0	0	1,073	3	2,334
	APPROACH %	0%	0%	0%	24%	0%	76%	1%	99%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.708			0.830			0.918		0.868
	APP/DEPART	0	/	15	17	/	0	1,241	/	1,231	1,076	/	1,088	0
PM	4:00 PM	0	0	0	1	0	3	1	254	0	0	266	2	527
	4:15 PM	0	0	0	0	0	0	3	257	0	0	322	1	583
	4:30 PM	0	0	0	0	0	1	7	261	0	0	300	0	569
	4:45 PM	0	0	0	1	0	2	3	245	0	0	273	0	524
	5:00 PM	0	0	0	1	0	0	2	253	0	0	330	1	587
	5:15 PM	0	0	0	0	0	1	6	258	0	0	359	3	627
	5:30 PM	0	0	0	0	0	0	3	214	0	0	327	0	544
	5:45 PM	0	0	0	0	0	1	0	250	0	0	266	1	518
	VOLUMES	0	0	0	3	0	8	25	1,992	0	0	2,443	8	4,479
	APPROACH %	0%	0%	0%	27%	0%	73%	1%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	33	11	/	0	2,017	/	1,995	2,451	/	2,451	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	0	0	2	0	4	18	1,017	0	0	1,262	4	2,307
	APPROACH %	0%	0%	0%	33%	0%	67%	2%	98%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.500			0.965			0.874		0.920
	APP/DEPART	0	/	22	6	/	0	1,035	/	1,019	1,266	/	1,266	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wed, Apr 26, 23

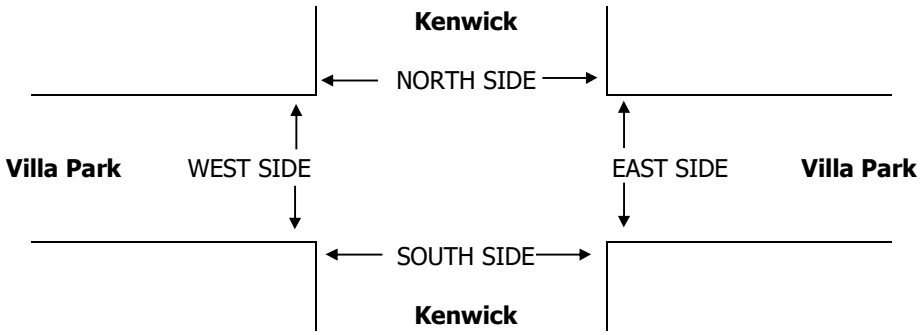
LOCATION: Villa Park
NORTH & SOUTH: Kenwick
EAST & WEST: Villa Park

PROJECT #: SC3962
LOCATION #: 5
CONTROL: STOP S

NOTES:

AM / PM / MD / OTHER / OTHER

		NORTHBOUND Kenwick			SOUTHBOUND Kenwick			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	0	0	0	1	0	186	0	0	170	0	357
	7:15 AM	0	0	0	0	0	1	0	217	0	0	191	0	409
	7:30 AM	0	0	0	1	0	2	0	304	0	0	223	0	530
	7:45 AM	0	0	0	0	0	2	2	370	0	0	296	0	670
	8:00 AM	0	0	0	2	0	1	0	268	0	0	280	0	551
	8:15 AM	0	0	0	0	0	2	2	279	0	0	275	0	558
	8:30 AM	0	0	0	0	0	0	0	216	0	0	259	0	475
	8:45 AM	0	0	0	0	0	0	1	182	0	0	215	0	398
	VOLUMES	0	0	0	3	0	9	5	2,022	0	0	1,909	0	3,949
	APPROACH %	0%	0%	0%	25%	0%	75%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	0	/	5	12	/	0	2,027	/	2,026	1,910	/	1,918	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	0	0	3	0	7	4	1,221	0	0	1,074	0	2,309
	APPROACH %	0%	0%	0%	30%	0%	70%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.833			0.823			0.907		0.862
	APP/DEPART	0	/	4	10	/	0	1,225	/	1,224	1,074	/	1,081	0
PM	4:00 PM	0	0	0	0	0	0	2	253	0	0	268	0	523
	4:15 PM	0	0	0	0	0	0	1	256	0	0	323	0	580
	4:30 PM	0	0	0	0	0	1	1	260	0	0	307	0	569
	4:45 PM	0	0	0	0	0	4	2	244	0	0	269	1	520
	5:00 PM	0	0	0	0	0	1	2	248	0	0	329	1	581
	5:15 PM	0	0	0	0	0	2	1	256	0	0	359	1	619
	5:30 PM	0	0	0	1	0	1	1	213	0	0	326	0	542
	5:45 PM	0	0	0	1	0	1	2	248	0	0	266	1	519
	VOLUMES	0	0	0	2	0	10	12	1,978	0	0	2,447	4	4,455
	APPROACH %	0%	0%	0%	17%	0%	83%	1%	99%	0%	0%	100%	0%	
	APP/DEPART	0	/	16	12	/	0	1,992	/	1,980	2,451	/	2,459	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	0	0	0	0	8	6	1,008	0	0	1,264	3	2,291
	APPROACH %	0%	0%	0%	0%	0%	100%	1%	99%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.000			0.500			0.973			0.880		0.924
	APP/DEPART	0	/	9	8	/	0	1,016	/	1,008	1,267	/	1,274	0



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

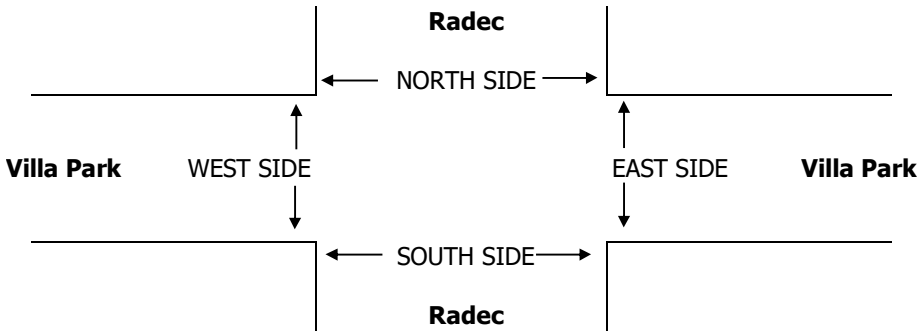
DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Radec	LOCATION #:	6
	EAST & WEST:	Villa Park	CONTROL:	STOP N

NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

		NORTHBOUND Radec			SOUTHBOUND Radec			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	185	1	0	170	0	356
	7:15 AM	0	0	0	0	0	0	0	206	1	0	191	0	398
	7:30 AM	0	0	2	0	0	0	0	303	1	0	222	0	528
	7:45 AM	1	0	0	0	0	0	0	370	0	1	295	0	667
	8:00 AM	0	0	0	0	0	0	0	270	0	0	286	0	556
	8:15 AM	0	0	0	0	0	0	0	279	0	0	275	0	554
	8:30 AM	0	0	0	0	0	0	0	215	0	0	258	0	473
	8:45 AM	1	0	0	0	0	0	0	183	0	0	215	0	399
	VOLUMES	2	0	2	0	0	0	0	2,011	3	1	1,912	0	3,935
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	4	/	0	0	/	4	2,016	/	2,015	1,915	/	1,916	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	1	0	2	0	0	0	0	1,222	1	1	1,078	0	2,307
	APPROACH %	33%	0%	67%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.375			0.000			0.827			0.912		0.865
	APP/DEPART	3	/	0	0	/	2	1,224	/	1,225	1,080	/	1,080	0
PM	4:00 PM	0	0	1	0	0	0	0	252	1	0	268	0	522
	4:15 PM	0	0	0	0	0	0	0	256	0	0	323	0	579
	4:30 PM	0	0	0	0	0	0	0	260	0	0	307	0	567
	4:45 PM	1	0	0	0	0	0	0	242	2	1	279	0	525
	5:00 PM	0	0	0	0	0	0	0	244	0	0	330	0	574
	5:15 PM	0	0	0	0	0	0	0	256	0	0	360	0	616
	5:30 PM	0	0	0	0	0	0	0	214	0	0	326	0	540
	5:45 PM	0	0	0	0	0	0	0	249	0	0	267	0	516
	VOLUMES	1	0	1	0	0	0	0	1,973	3	1	2,460	0	4,439
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	2	/	0	0	/	4	1,976	/	1,974	2,461	/	2,461	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	1	0	0	0	0	0	0	1,002	2	1	1,276	0	2,282
	APPROACH %	100%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	PEAK HR FACTOR		0.250			0.000			0.965			0.887		0.926
	APP/DEPART	1	/	0	0	/	3	1,004	/	1,002	1,277	/	1,277	0



INTERSECTION TURNING MOVEMENT COUNTS

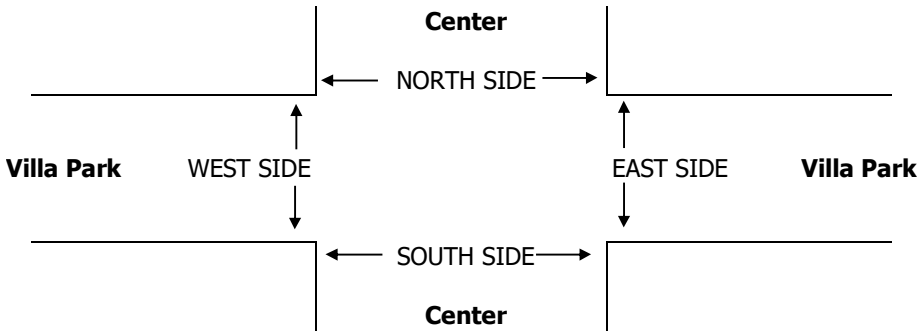
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Center	LOCATION #:	7
	EAST & WEST:	Villa Park	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Center			SOUTHBOUND Center			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 1	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
AM	7:00 AM	1	1	2	6	2	14	11	165	6	4	154	1	367
	7:15 AM	2	5	10	10	8	10	11	192	5	1	180	7	441
	7:30 AM	10	10	6	10	25	15	9	256	31	10	200	10	592
	7:45 AM	27	49	28	6	49	25	23	286	65	23	250	13	844
	8:00 AM	20	29	16	13	23	48	17	245	14	6	220	16	667
	8:15 AM	2	14	5	15	22	48	12	262	4	3	227	10	624
	8:30 AM	5	7	9	18	15	43	14	197	1	4	210	12	535
	8:45 AM	5	2	6	6	6	19	10	170	6	4	190	11	435
	VOLUMES	72	117	82	84	150	222	107	1,773	132	55	1,631	80	4,505
	APPROACH %	27%	43%	30%	18%	33%	49%	5%	88%	7%	3%	92%	5%	
	APP/DEPART	271	/	302	456	/	336	2,012	/	1,940	1,766	/	1,927	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	59	102	55	44	119	136	61	1,049	114	42	897	49	2,727
	APPROACH %	27%	47%	25%	15%	40%	45%	5%	86%	9%	4%	91%	5%	
	PEAK HR FACTOR		0.519			0.879			0.818			0.864		0.808
	APP/DEPART	216	/	211	299	/	275	1,224	/	1,148	988	/	1,093	0
PM	4:00 PM	4	7	7	7	11	19	25	233	4	8	245	16	586
	4:15 PM	5	8	9	10	6	18	18	242	3	12	313	10	654
	4:30 PM	1	5	6	10	7	22	17	227	4	4	270	15	588
	4:45 PM	5	9	6	10	8	11	24	222	2	6	277	28	608
	5:00 PM	2	12	3	15	9	19	22	219	3	2	302	22	630
	5:15 PM	8	12	1	9	6	16	16	241	3	5	346	20	683
	5:30 PM	2	11	3	12	9	20	15	197	5	2	300	10	586
	5:45 PM	5	6	2	12	7	20	21	202	4	5	244	9	537
	VOLUMES	32	70	37	85	63	145	158	1,783	28	44	2,297	130	4,872
	APPROACH %	23%	50%	27%	29%	22%	49%	8%	91%	1%	2%	93%	5%	
	APP/DEPART	139	/	358	293	/	134	1,969	/	1,906	2,471	/	2,474	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	16	38	16	44	30	68	79	909	12	17	1,195	85	2,509
	APPROACH %	23%	54%	23%	31%	21%	48%	8%	91%	1%	1%	92%	7%	
	PEAK HR FACTOR		0.833			0.826			0.962			0.874		0.918
	APP/DEPART	70	/	202	142	/	59	1,000	/	969	1,297	/	1,279	0



INTERSECTION TURNING MOVEMENT COUNTS

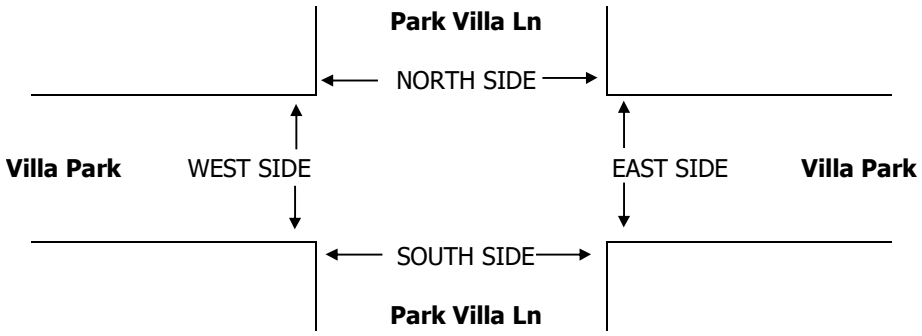
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park	PROJECT #:	SC3962
	NORTH & SOUTH:	Park Villa Ln	LOCATION #:	8
	EAST & WEST:	Villa Park	CONTROL:	STOP N

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Park Villa Ln			SOUTHBOUND Park Villa Ln			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	170	0	0	159	0	329
	7:15 AM	1	0	0	0	0	0	0	216	0	0	189	0	406
	7:30 AM	0	0	0	0	0	0	0	272	2	0	224	0	498
	7:45 AM	0	0	1	0	0	0	0	305	0	1	286	0	593
	8:00 AM	2	0	0	0	0	0	0	285	0	2	252	0	541
	8:15 AM	0	0	1	0	0	0	0	283	4	2	223	0	513
	8:30 AM	3	0	3	0	0	0	0	224	1	1	231	0	463
	8:45 AM	3	0	3	0	0	0	0	184	0	0	197	0	387
	VOLUMES	9	0	8	0	0	0	0	1,939	7	6	1,761	0	3,730
	APPROACH %	53%	0%	47%	0%	0%	0%	0%	100%	0%	0%	100%	0%	
	APP/DEPART	17	/	0	0	/	10	1,946	/	1,950	1,767	/	1,770	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	2	0	2	0	0	0	0	1,145	6	5	985	0	2,145
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	99%	1%	1%	99%	0%	
	PEAK HR FACTOR		0.500			0.000			0.943			0.862		0.904
	APP/DEPART	4	/	0	0	/	8	1,151	/	1,150	990	/	987	0
PM	4:00 PM	1	0	0	0	0	0	0	261	5	2	276	0	545
	4:15 PM	2	0	3	0	0	0	0	255	2	1	337	0	600
	4:30 PM	1	0	0	0	0	0	0	237	3	0	287	0	528
	4:45 PM	2	0	2	0	0	0	0	241	1	2	332	0	580
	5:00 PM	1	0	0	0	0	0	0	238	1	0	321	0	561
	5:15 PM	2	0	0	0	0	0	0	242	0	1	359	0	604
	5:30 PM	0	0	1	0	0	0	0	221	0	0	301	0	523
	5:45 PM	0	0	0	0	0	0	0	208	0	1	260	0	469
	VOLUMES	9	0	6	0	0	0	0	1,903	12	7	2,473	0	4,410
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	99%	1%	0%	100%	0%	
	APP/DEPART	15	/	0	0	/	15	1,915	/	1,913	2,480	/	2,482	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	6	0	2	0	0	0	0	958	5	3	1,299	0	2,273
	APPROACH %	75%	0%	25%	0%	0%	0%	0%	99%	1%	0%	100%	0%	
	PEAK HR FACTOR		0.500			0.000			0.995			0.904		0.941
	APP/DEPART	8	/	0	0	/	7	963	/	961	1,302	/	1,305	0



INTERSECTION TURNING MOVEMENT COUNTS

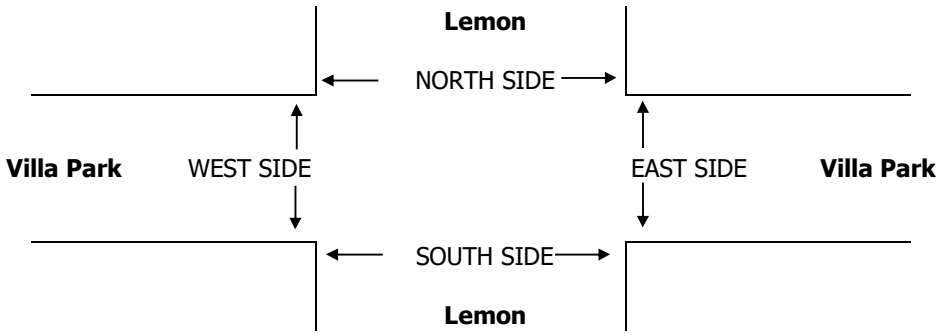
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park - Orange	PROJECT #:	SC3962
	NORTH & SOUTH:	Lemon	LOCATION #:	9
	EAST & WEST:	Villa Park	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND Lemon			SOUTHBOUND Lemon			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL X	NT X	NR X	SL 1.5	ST X	SR 0.5	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL
AM	7:00 AM	0	0	0	12	0	6	13	163	0	0	152	4	350
	7:15 AM	0	0	0	18	0	5	16	203	0	0	184	10	436
	7:30 AM	0	0	0	20	0	4	13	261	0	0	228	11	537
	7:45 AM	0	0	0	31	0	13	14	307	0	0	275	33	673
	8:00 AM	0	0	0	34	0	10	19	251	0	0	242	35	591
	8:15 AM	0	0	0	28	0	11	23	260	0	0	215	26	563
	8:30 AM	0	0	0	19	0	15	27	201	0	0	217	12	491
	8:45 AM	0	0	0	16	0	9	19	164	0	0	188	15	411
	VOLUMES	0	0	0	178	0	73	144	1,810	0	0	1,701	146	4,052
	APPROACH %	0%	0%	0%	71%	0%	29%	7%	93%	0%	0%	92%	8%	
	APP/DEPART	0	/	289	251	/	0	1,954	/	1,988	1,847	/	1,775	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	0	0	113	0	38	69	1,079	0	0	960	105	2,364
	APPROACH %	0%	0%	0%	75%	0%	25%	6%	94%	0%	0%	90%	10%	
	PEAK HR FACTOR		0.000			0.858			0.894			0.864		0.878
	APP/DEPART	0	/	173	151	/	0	1,148	/	1,192	1,065	/	999	0
PM	4:00 PM	0	0	0	7	0	5	12	225	0	0	278	28	555
	4:15 PM	0	0	0	15	0	10	20	246	0	0	316	28	635
	4:30 PM	0	0	0	14	0	11	25	213	0	0	267	24	554
	4:45 PM	0	0	0	13	0	8	23	232	0	0	323	22	621
	5:00 PM	0	0	0	15	0	15	20	223	0	0	303	22	598
	5:15 PM	0	0	0	18	0	10	26	201	0	0	344	32	631
	5:30 PM	0	0	0	15	0	9	29	208	0	0	292	26	579
	5:45 PM	0	0	0	15	0	6	19	187	0	0	284	33	544
	VOLUMES	0	0	0	112	0	74	174	1,735	0	0	2,407	215	4,717
	APPROACH %	0%	0%	0%	60%	0%	40%	9%	91%	0%	0%	92%	8%	
	APP/DEPART	0	/	386	186	/	0	1,909	/	1,847	2,622	/	2,484	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	0	0	61	0	42	98	864	0	0	1,262	102	2,429
	APPROACH %	0%	0%	0%	59%	0%	41%	10%	90%	0%	0%	93%	7%	
	PEAK HR FACTOR		0.000			0.858			0.943			0.907		0.962
	APP/DEPART	0	/	198	103	/	0	962	/	925	1,364	/	1,306	0



INTERSECTION TURNING MOVEMENT COUNTS

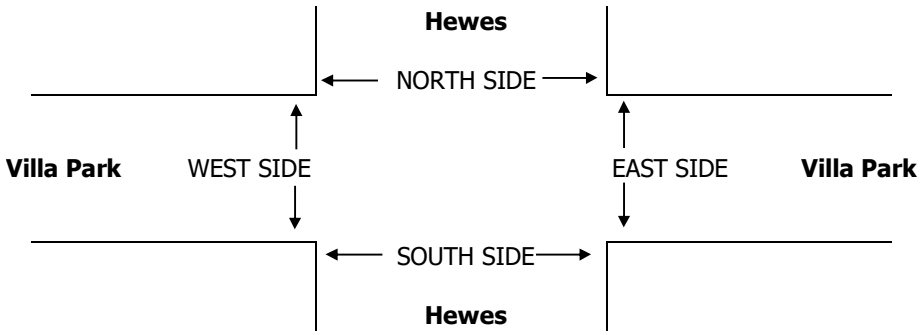
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Orange	PROJECT #:	SC3962
	NORTH & SOUTH:	Hewes	LOCATION #:	10
	EAST & WEST:	Villa Park	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Hewes			SOUTHBOUND Hewes			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 1	NT X	NR 1	SL X	ST X	SR X	EL X	ET 2	ER 0	WL 1	WT 2	WR X	TOTAL
AM	7:00 AM	23	0	21	0	0	0	0	142	23	48	139	0	396
	7:15 AM	29	0	40	0	0	0	0	191	32	71	168	0	531
	7:30 AM	44	0	46	0	0	0	0	224	59	85	197	0	655
	7:45 AM	60	0	74	0	0	0	0	257	52	129	267	0	839
	8:00 AM	58	0	75	0	0	0	0	248	47	127	202	0	757
	8:15 AM	40	0	90	0	0	0	0	247	53	109	200	0	739
	8:30 AM	35	0	39	0	0	0	0	180	33	90	204	0	581
	8:45 AM	29	0	39	0	0	0	0	164	22	53	170	0	477
	VOLUMES	318	0	424	0	0	0	0	1,653	321	712	1,547	0	4,975
	APPROACH %	43%	0%	57%	0%	0%	0%	0%	84%	16%	32%	68%	0%	
	APP/DEPART	742	/	0	0	/	1,033	1,974	/	2,077	2,259	/	1,865	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	202	0	285	0	0	0	0	976	211	450	866	0	2,990
	APPROACH %	41%	0%	59%	0%	0%	0%	0%	82%	18%	34%	66%	0%	
	PEAK HR FACTOR		0.909			0.000			0.960			0.831		0.891
	APP/DEPART	487	/	0	0	/	661	1,187	/	1,261	1,316	/	1,068	0
PM	4:00 PM	30	0	83	0	0	0	0	208	33	48	281	0	683
	4:15 PM	37	0	62	0	0	0	0	238	32	61	336	0	766
	4:30 PM	40	0	69	0	0	0	0	189	30	59	279	0	666
	4:45 PM	38	0	82	0	0	0	0	176	42	64	292	0	694
	5:00 PM	26	0	99	0	0	0	0	234	28	56	312	0	755
	5:15 PM	33	0	95	0	0	0	0	189	33	61	327	0	738
	5:30 PM	28	0	84	0	0	0	0	190	29	67	294	0	692
	5:45 PM	46	0	71	0	0	0	0	170	34	54	252	0	627
	VOLUMES	278	0	645	0	0	0	0	1,594	261	470	2,373	0	5,621
	APPROACH %	30%	0%	70%	0%	0%	0%	0%	86%	14%	17%	83%	0%	
	APP/DEPART	923	/	0	0	/	731	1,855	/	2,239	2,843	/	2,651	0
	BEGIN PEAK HR		4:15 PM											
	VOLUMES	141	0	312	0	0	0	0	837	132	240	1,219	0	2,881
	APPROACH %	31%	0%	69%	0%	0%	0%	0%	86%	14%	16%	84%	0%	
	PEAK HR FACTOR		0.906			0.000			0.897			0.919		0.940
	APP/DEPART	453	/	0	0	/	372	969	/	1,149	1,459	/	1,360	0



INTERSECTION TURNING MOVEMENT COUNTS

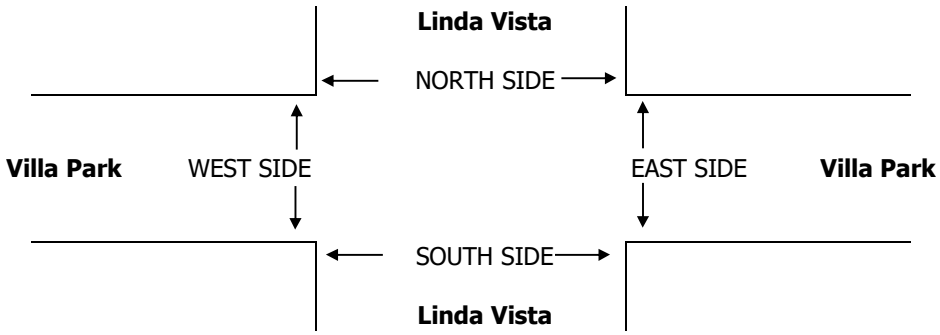
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
Wed, Apr 26, 23	LOCATION:	Orange	PROJECT #:	SC3962	
	NORTH & SOUTH:	Linda Vista	LOCATION #:	11	
	EAST & WEST:	Villa Park	CONTROL:	STOP N/S	

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Linda Vista			SOUTHBOUND Santiago			EASTBOUND Villa Park			WESTBOUND Villa Park			
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
AM	7:00 AM	3	0	2	1	0	1	3	165	1	1	182	2	361
	7:15 AM	1	0	5	2	0	6	3	190	6	1	233	5	452
	7:30 AM	2	0	4	5	0	6	7	249	9	1	292	12	587
	7:45 AM	2	0	7	3	0	30	26	307	20	1	309	37	742
	8:00 AM	2	0	3	5	0	37	17	293	6	1	332	16	712
	8:15 AM	3	1	7	14	0	30	18	301	4	2	275	34	689
	8:30 AM	4	0	6	8	0	14	10	229	2	1	262	8	544
	8:45 AM	0	0	2	5	0	12	14	181	6	1	225	6	452
	VOLUMES	17	1	36	43	0	136	98	1,915	54	9	2,110	120	4,539
	APPROACH %	31%	2%	67%	24%	0%	76%	5%	93%	3%	0%	94%	5%	
	APP/DEPART	54	/	219	179	/	63	2,067	/	1,994	2,239	/	2,263	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	9	1	21	27	0	103	68	1,150	39	5	1,208	99	2,730
	APPROACH %	29%	3%	68%	21%	0%	79%	5%	91%	3%	0%	92%	8%	
	PEAK HR FACTOR		0.705			0.739			0.890			0.940		0.920
	APP/DEPART	31	/	168	130	/	44	1,257	/	1,198	1,312	/	1,320	0
PM	4:00 PM	0	0	4	6	0	12	2	278	4	1	311	3	621
	4:15 PM	4	0	1	4	0	8	4	278	5	4	349	6	663
	4:30 PM	3	0	3	3	0	13	4	273	3	0	330	6	638
	4:45 PM	3	0	1	3	0	3	1	252	6	0	352	2	623
	5:00 PM	0	0	1	2	0	1	0	323	7	1	394	3	732
	5:15 PM	0	0	1	1	0	2	3	272	6	1	406	2	694
	5:30 PM	4	0	3	1	0	3	0	261	3	3	339	1	618
	5:45 PM	2	0	2	3	0	5	3	254	3	3	315	1	591
	VOLUMES	16	0	16	23	0	47	17	2,191	37	13	2,796	24	5,180
	APPROACH %	50%	0%	50%	33%	0%	67%	1%	98%	2%	0%	99%	1%	
	APP/DEPART	32	/	41	70	/	50	2,245	/	2,230	2,833	/	2,859	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	6	0	6	9	0	19	8	1,120	22	2	1,482	13	2,687
	APPROACH %	50%	0%	50%	32%	0%	68%	1%	97%	2%	0%	99%	1%	
	PEAK HR FACTOR		0.500			0.438			0.871			0.915		0.918
	APP/DEPART	12	/	21	28	/	24	1,150	/	1,135	1,497	/	1,507	0



INTERSECTION TURNING MOVEMENT COUNTS

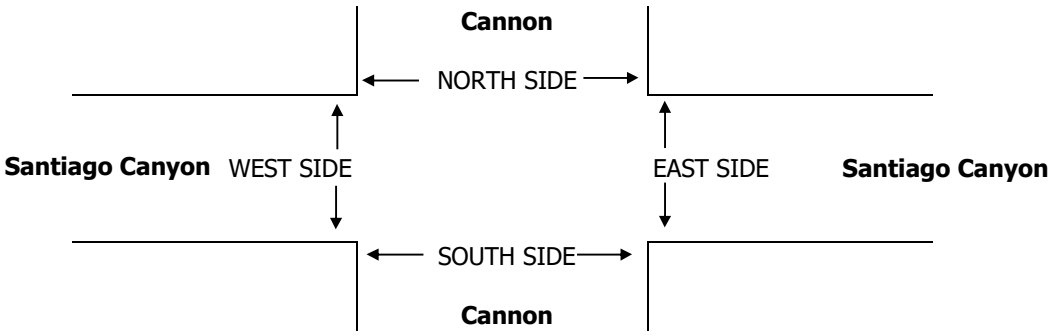
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Orange	PROJECT #:	SC3962
Wed, Apr 26, 23	NORTH & SOUTH:	Cannon	LOCATION #:	12
	EAST & WEST:	Santiago Canyon	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Cannon			SOUTHBOUND Cannon			EASTBOUND Santiago Canyon			WESTBOUND Santiago Canyon			
	LANES:	NL 1	NT 2	NR 0	SL 2.5	ST 1.5	SR 1	EL 2	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL
AM	7:00 AM	14	14	2	245	66	117	33	129	6	1	54	37	718
	7:15 AM	16	20	1	338	67	154	58	134	5	1	69	62	925
	7:30 AM	29	23	9	325	86	172	70	160	19	5	104	87	1,089
	7:45 AM	54	25	12	303	87	207	91	182	44	6	96	85	1,192
	8:00 AM	38	36	7	321	54	182	95	194	12	2	129	85	1,155
	8:15 AM	18	25	8	345	50	153	108	198	16	3	140	109	1,173
	8:30 AM	17	19	4	270	72	157	85	148	10	0	97	106	985
	8:45 AM	19	17	3	175	44	117	60	121	7	0	97	84	744
	VOLUMES	205	179	46	2,322	526	1,259	600	1,266	119	18	786	655	7,981
	APPROACH %	48%	42%	11%	57%	13%	31%	30%	64%	6%	1%	54%	45%	
	APP/DEPART	430	/	1,434	4,107	/	663	1,985	/	3,635	1,459	/	2,249	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	139	109	36	1,294	277	714	364	734	91	16	469	366	4,609
	APPROACH %	49%	38%	13%	57%	12%	31%	31%	62%	8%	2%	55%	43%	
	PEAK HR FACTOR		0.780			0.957			0.923			0.844		0.967
	APP/DEPART	284	/	839	2,285	/	383	1,189	/	2,065	851	/	1,322	0
PM	4:00 PM	20	53	4	96	27	95	202	61	25	2	200	283	1,068
	4:15 PM	16	63	2	84	28	120	187	76	20	1	223	324	1,144
	4:30 PM	16	55	0	84	33	106	192	67	20	2	218	334	1,127
	4:45 PM	20	81	0	105	44	108	172	73	11	6	226	375	1,221
	5:00 PM	18	81	5	94	30	126	204	97	21	2	254	373	1,305
	5:15 PM	10	65	3	98	42	107	172	82	20	5	292	348	1,244
	5:30 PM	22	93	2	118	44	97	158	86	21	0	224	381	1,246
	5:45 PM	19	86	0	85	42	86	164	73	22	1	214	311	1,103
	VOLUMES	141	577	16	764	290	845	1,451	615	160	19	1,851	2,729	9,458
	APPROACH %	19%	79%	2%	40%	15%	44%	65%	28%	7%	0%	40%	59%	
	APP/DEPART	734	/	4,757	1,899	/	469	2,226	/	1,395	4,599	/	2,837	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	70	320	10	415	160	438	706	338	73	13	996	1,477	5,016
	APPROACH %	18%	80%	3%	41%	16%	43%	63%	30%	7%	1%	40%	59%	
	PEAK HR FACTOR		0.855			0.978			0.867			0.964		0.961
	APP/DEPART	400	/	2,503	1,013	/	246	1,117	/	763	2,486	/	1,504	0



INTERSECTION TURNING MOVEMENT COUNTS

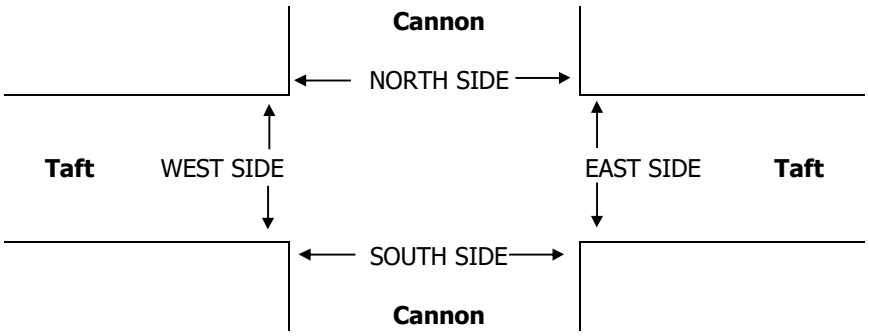
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Villa Park - Orange	PROJECT #:	SC3962
	NORTH & SOUTH:	Cannon	LOCATION #:	13
	EAST & WEST:	Taft	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Cannon			SOUTHBOUND Cannon			EASTBOUND Taft			WESTBOUND Taft			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 0.5	ET 0.5	ER 1	WL 0	WT 1	WR 0	TOTAL
AM	7:00 AM	4	83	0	0	461	28	8	0	12	0	0	0	596
	7:15 AM	3	132	0	0	577	38	13	1	17	0	0	0	781
	7:30 AM	10	155	0	0	600	49	20	0	13	0	0	0	847
	7:45 AM	11	198	1	1	560	57	36	0	27	0	0	1	892
	8:00 AM	22	181	0	0	532	70	45	2	36	1	0	0	889
	8:15 AM	24	212	0	0	504	54	44	0	33	0	2	0	873
	8:30 AM	20	174	0	0	423	44	33	0	26	0	0	0	720
	8:45 AM	24	146	1	0	305	40	28	0	14	0	0	0	558
	VOLUMES	118	1,281	2	1	3,962	380	227	3	178	1	2	1	6,156
	APPROACH %	8%	91%	0%	0%	91%	9%	56%	1%	44%	25%	50%	25%	
	APP/DEPART	1,401	/	1,508	4,343	/	4,141	408	/	6	4	/	501	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	67	746	1	1	2,196	230	145	2	109	1	2	1	3,501
	APPROACH %	8%	92%	0%	0%	90%	9%	57%	1%	43%	25%	50%	25%	
	PEAK HR FACTOR		0.862			0.935			0.771			0.500		0.981
	APP/DEPART	814	/	891	2,427	/	2,306	256	/	4	4	/	300	0
PM	4:00 PM	19	536	2	1	220	46	58	0	15	2	0	0	899
	4:15 PM	40	533	0	0	232	51	73	0	12	0	0	0	941
	4:30 PM	24	556	0	0	200	38	75	0	12	0	0	0	905
	4:45 PM	40	567	0	0	271	55	64	0	9	0	0	0	1,006
	5:00 PM	37	606	0	0	234	39	51	0	9	0	0	0	976
	5:15 PM	26	566	0	0	251	51	79	0	12	0	1	0	986
	5:30 PM	31	587	0	0	241	48	69	0	12	0	0	0	988
	5:45 PM	25	521	0	0	183	53	65	1	14	0	0	0	862
	VOLUMES	242	4,472	2	1	1,832	381	534	1	95	2	1	0	7,563
	APPROACH %	5%	95%	0%	0%	83%	17%	85%	0%	15%	67%	33%	0%	
	APP/DEPART	4,716	/	5,006	2,214	/	1,929	630	/	4	3	/	624	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	134	2,326	0	0	997	193	263	0	42	0	1	0	3,956
	APPROACH %	5%	95%	0%	0%	84%	16%	86%	0%	14%	0%	100%	0%	
	PEAK HR FACTOR		0.956			0.913			0.838			0.250		0.983
	APP/DEPART	2,460	/	2,589	1,190	/	1,039	305	/	0	1	/	328	0



INTERSECTION TURNING MOVEMENT COUNTS

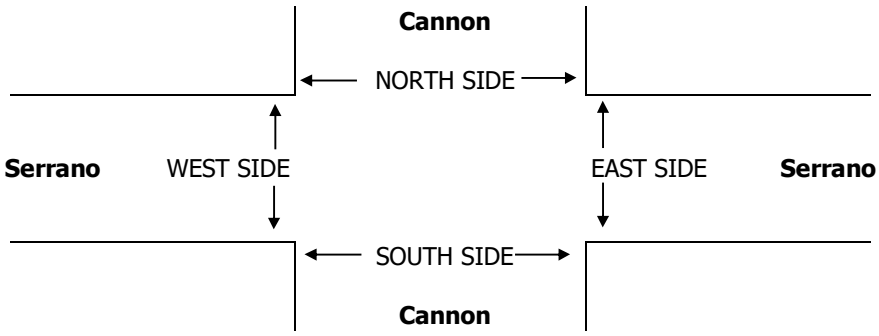
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:				
Wed, Apr 26, 23	LOCATION:	Orange	PROJECT #:	SC3962
	NORTH & SOUTH:	Cannon	LOCATION #:	14
	EAST & WEST:	Serrano	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Cannon			SOUTHBOUND Cannon			EASTBOUND Serrano			WESTBOUND Serrano			
	LANES:	NL X	NT 2	NR 1	SL 1	ST 2	SR X	EL X	ET X	ER X	WL 2	WT X	WR 1	TOTAL
AM	7:00 AM	0	56	35	5	243	0	0	0	0	246	0	10	595
	7:15 AM	0	86	59	4	348	0	0	0	0	267	0	17	781
	7:30 AM	0	115	60	9	384	0	0	0	0	276	0	26	870
	7:45 AM	0	134	93	8	351	0	0	0	0	267	0	42	895
	8:00 AM	0	129	96	13	339	0	0	0	0	263	0	50	890
	8:15 AM	0	149	107	21	329	0	0	0	0	229	0	27	862
	8:30 AM	0	130	77	15	252	0	0	0	0	215	0	27	716
	8:45 AM	0	100	74	14	172	0	0	0	0	173	0	12	545
	VOLUMES	0	899	601	89	2,418	0	0	0	0	1,936	0	211	6,154
	APPROACH %	0%	60%	40%	4%	96%	0%	0%	0%	0%	90%	0%	10%	
	APP/DEPART	1,500	/	1,110	2,507	/	4,354	0	/	690	2,147	/	0	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	527	356	51	1,403	0	0	0	0	1,035	0	145	3,517
	APPROACH %	0%	60%	40%	4%	96%	0%	0%	0%	0%	88%	0%	12%	
	PEAK HR FACTOR		0.862			0.925			0.000			0.942		0.982
	APP/DEPART	883	/	672	1,454	/	2,438	0	/	407	1,180	/	0	0
PM	4:00 PM	0	270	324	21	146	0	0	0	0	121	0	13	895
	4:15 PM	0	272	334	15	150	0	0	0	0	133	0	23	927
	4:30 PM	0	267	364	21	129	0	0	0	0	109	0	15	905
	4:45 PM	0	279	352	26	195	0	0	0	0	131	0	17	1,000
	5:00 PM	0	292	365	14	155	0	0	0	0	118	0	13	957
	5:15 PM	0	295	344	17	167	0	0	0	0	135	0	14	972
	5:30 PM	0	329	327	18	184	0	0	0	0	115	0	19	992
	5:45 PM	0	268	318	22	136	0	0	0	0	100	0	16	860
	VOLUMES	0	2,272	2,728	154	1,262	0	0	0	0	962	0	130	7,508
	APPROACH %	0%	45%	55%	11%	89%	0%	0%	0%	0%	88%	0%	12%	
	APP/DEPART	5,000	/	2,402	1,416	/	2,224	0	/	2,882	1,092	/	0	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	0	1,195	1,388	75	701	0	0	0	0	499	0	63	3,921
	APPROACH %	0%	46%	54%	10%	90%	0%	0%	0%	0%	89%	0%	11%	
	PEAK HR FACTOR		0.983			0.878			0.000			0.943		0.980
	APP/DEPART	2,583	/	1,258	776	/	1,200	0	/	1,463	562	/	0	0



INTERSECTION TURNING MOVEMENT COUNTS

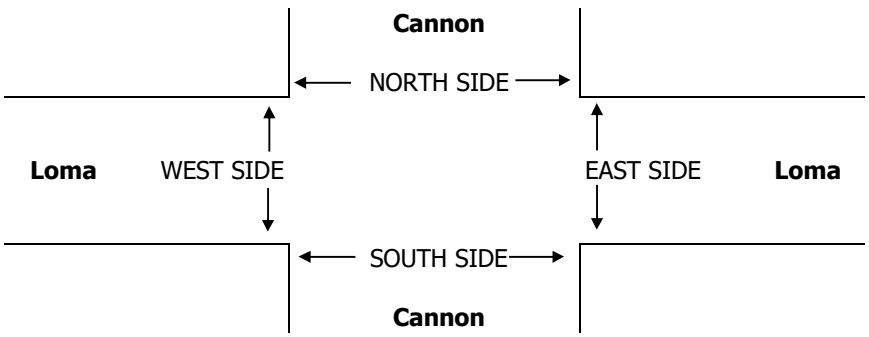
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Villa Park - Orange	PROJECT #:	SC3962
Wed, Apr 26, 23	NORTH & SOUTH:	Cannon	LOCATION #:	15
	EAST & WEST:	Loma	CONTROL:	STOP E

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Cannon			SOUTHBOUND Cannon			EASTBOUND Loma			WESTBOUND Loma			
	LANES:	NL 1	NT 2	NR X	SL X	ST 2	SR 0	EL 0	ET X	ER 0	WL X	WT X	WR X	TOTAL
AM	7:00 AM	3	63	0	0	242	5	5	0	6	0	0	0	324
	7:15 AM	1	90	0	0	347	5	9	0	5	0	0	0	457
	7:30 AM	5	136	0	0	379	8	7	0	14	0	0	0	549
	7:45 AM	11	160	0	0	352	14	10	0	7	0	0	0	554
	8:00 AM	5	174	0	0	350	13	7	0	12	0	0	0	561
	8:15 AM	7	169	0	0	338	8	10	0	12	0	0	0	544
	8:30 AM	11	146	0	0	256	5	10	0	11	0	0	0	439
	8:45 AM	10	102	0	0	188	6	8	0	8	0	0	0	322
	VOLUMES	53	1,040	0	0	2,452	64	66	0	75	0	0	0	3,750
	APPROACH %	5%	95%	0%	0%	97%	3%	47%	0%	53%	0%	0%	0%	
	APP/DEPART	1,093	/	1,106	2,516	/	2,527	141	/	0	0	/	117	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	28	639	0	0	1,419	43	34	0	45	0	0	0	2,208
	APPROACH %	4%	96%	0%	0%	97%	3%	43%	0%	57%	0%	0%	0%	
	PEAK HR FACTOR		0.932			0.944			0.898			0.000		0.984
	APP/DEPART	667	/	673	1,462	/	1,464	79	/	0	0	/	71	0
PM	4:00 PM	11	272	0	0	159	4	1	0	7	0	0	0	454
	4:15 PM	8	287	0	0	153	7	7	0	11	0	0	0	473
	4:30 PM	6	276	0	0	150	11	4	0	6	0	0	0	453
	4:45 PM	10	286	0	0	212	6	8	0	7	0	0	0	529
	5:00 PM	10	295	0	0	170	4	6	0	6	0	0	0	491
	5:15 PM	9	300	0	0	174	12	9	0	9	0	0	0	513
	5:30 PM	9	330	0	0	195	7	2	0	6	0	0	0	549
	5:45 PM	12	272	0	0	151	8	1	0	6	0	0	0	450
	VOLUMES	75	2,318	0	0	1,364	59	38	0	58	0	0	0	3,912
	APPROACH %	3%	97%	0%	0%	96%	4%	40%	0%	60%	0%	0%	0%	
	APP/DEPART	2,393	/	2,356	1,423	/	1,430	96	/	0	0	/	126	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	38	1,211	0	0	751	29	25	0	28	0	0	0	2,082
	APPROACH %	3%	97%	0%	0%	96%	4%	47%	0%	53%	0%	0%	0%	
	PEAK HR FACTOR		0.921			0.894			0.736			0.000		0.948
	APP/DEPART	1,249	/	1,236	780	/	784	53	/	0	0	/	62	0



Wednesday, April 26, 2023 | CITY: Villa Park | PROJECT: SC3962

ADT4 Villa Park Rd from N Wanda Rd to Center Dr. | Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	25		12			12:00	166		166		
0:15	12		10			12:15	182		215		
0:30	13		7			12:30	165		232		
0:45	7	57	6	35	92	12:45	149	662	184	797	1459
1:00	5		7			13:00	150		169		
1:15	9		7			13:15	183		194		
1:30	5		4			13:30	149		204		
1:45	5	24	2	20	44	13:45	165	647	175	742	1389
2:00	3		3			14:00	171		220		
2:15	5		3			14:15	159		169		
2:30	5		4			14:30	185		202		
2:45	5	18	7	17	35	14:45	180	695	252	843	1538
3:00	1		5			15:00	186		248		
3:15	4		4			15:15	203		348		
3:30	2		13			15:30	209		288		
3:45	3	10	8	30	40	15:45	238	836	349	1233	2069
4:00	7		9			16:00	255		285		
4:15	6		13			16:15	280		329		
4:30	5		16			16:30	246		326		
4:45	7	25	30	68	93	16:45	259	1040	277	1217	2257
5:00	12		41			17:00	277		355		
5:15	17		52			17:15	251		347		
5:30	27		62			17:30	247		350		
5:45	26	82	93	248	330	17:45	243	1018	280	1332	2350
6:00	51		80			18:00	234		281		
6:15	72		125			18:15	210		250		
6:30	104		139			18:30	224		220		
6:45	142	369	175	519	888	18:45	172	840	147	898	1738
7:00	216		181			19:00	160		176		
7:15	215		198			19:15	168		130		
7:30	337		304			19:30	148		111		
7:45	342	1110	294	977	2087	19:45	156	632	95	512	1144
8:00	292		304			20:00	152		102		
8:15	286		271			20:15	156		82		
8:30	194		278			20:30	139		70		
8:45	195	967	223	1076	2043	20:45	157	604	50	304	908
9:00	154		203			21:00	127		70		
9:15	143		205			21:15	121		52		
9:30	156		205			21:30	106		56		
9:45	151	604	209	822	1426	21:45	97	451	40	218	669
10:00	167		168			22:00	82		29		
10:15	146		218			22:15	47		42		
10:30	144		178			22:30	56		26		
10:45	159	616	197	761	1377	22:45	38	223	21	118	341
11:00	135		187			23:00	29		20		
11:15	184		162			23:15	28		18		
11:30	152		174			23:30	17		14		
11:45	157	628	202	725	1353	23:45	19	93	13	65	158
Total Vol.		4510		5298	**9808**			7741		8279	**16020**

	Daily Totals EB	WB	**Combined**
	12251	13577	**25828**

	AM			**PM**		
Split %	46.0%	54.0%	**38.0%**	48.3%	51.7%	**62.0%**
Peak Hour	7:30	7:30	**7:30**	16:15	17:00	**16:45**
Volume	1257	1173	**2430**	1062	1332	**2363**
P.H.F.	0.92	0.96	**0.95**	0.95	0.94	**0.93**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS5 Villa Park Rd from Center Dr to Hewes St

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	28	1	0	1	0	0	0	0	0	0	0	0	30	12:00	2	245	24	0	8	2	0	0	2	0	1	0	0	284
0:15	0	19	1	0	0	0	0	0	0	0	0	0	0	20	12:15	0	279	37	0	13	3	0	0	2	0	1	0	0	335
0:30	0	17	0	0	0	0	0	0	0	0	0	0	0	17	12:30	0	285	26	0	13	2	0	0	0	0	0	0	0	326
0:45	0	9	0	0	0	0	0	0	0	0	0	0	0	9	12:45	1	251	41	1	6	1	0	0	0	0	0	0	0	301
1:00	0	11	0	0	0	0	0	0	0	0	0	0	0	11	13:00	1	249	33	0	16	4	0	0	0	0	0	0	0	303
1:15	0	10	0	0	1	0	0	0	0	0	0	0	0	11	13:15	1	295	30	1	10	1	0	0	1	0	0	0	0	339
1:30	0	9	3	0	0	0	0	0	0	0	0	0	0	12	13:30	0	255	27	0	7	5	0	0	1	0	0	0	0	295
1:45	0	5	0	0	0	0	0	0	0	0	0	0	0	5	13:45	0	313	20	0	6	2	0	0	0	0	0	0	0	341
2:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7	14:00	2	281	35	1	12	1	0	0	2	0	0	0	0	334
2:15	0	6	0	0	0	0	0	0	0	0	0	0	0	6	14:15	3	242	31	0	10	3	0	1	1	0	2	0	0	293
2:30	0	5	1	0	0	0	0	0	0	0	0	0	0	6	14:30	0	304	39	4	14	3	0	0	0	0	0	0	0	364
2:45	0	7	2	0	1	0	0	0	0	0	0	0	0	10	14:45	0	351	40	0	15	3	0	0	1	0	0	0	0	410
3:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8	15:00	0	392	52	1	21	3	0	0	0	0	0	0	0	469
3:15	0	6	0	0	1	0	0	0	0	0	0	0	0	7	15:15	4	425	45	0	20	3	0	0	0	0	3	0	0	500
3:30	0	8	0	0	1	0	0	0	0	0	0	0	0	9	15:30	4	501	34	0	26	0	0	0	0	0	0	0	0	565
3:45	0	10	0	0	0	0	0	0	0	0	0	0	0	10	15:45	0	439	45	0	16	2	0	1	1	0	1	0	0	505
4:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8	16:00	0	474	55	1	15	4	0	1	2	0	0	0	0	552
4:15	0	15	1	0	1	0	0	0	0	0	0	0	0	17	16:15	3	567	63	1	7	2	0	0	0	0	0	0	0	643
4:30	0	17	2	0	1	0	0	0	0	0	0	0	0	20	16:30	4	468	47	1	18	0	0	0	0	0	0	0	0	538
4:45	0	23	4	0	2	0	0	0	0	0	0	0	0	29	16:45	2	472	56	1	14	2	0	0	1	0	0	0	0	548
5:00	0	26	4	0	4	0	0	0	0	0	0	0	0	34	17:00	3	542	50	0	5	0	0	0	0	0	0	0	0	600
5:15	0	52	9	0	1	0	0	0	0	0	0	0	0	62	17:15	2	522	49	1	8	0	0	0	0	0	0	0	0	582
5:30	0	68	8	0	2	0	0	0	0	0	0	0	0	78	17:30	1	498	31	0	10	0	0	1	0	0	0	0	0	541
5:45	1	67	10	0	1	2	0	0	1	0	0	0	0	82	17:45	4	443	47	0	6	2	0	0	0	0	0	0	0	502
6:00	0	93	19	0	2	0	0	0	0	0	0	0	0	114	18:00	2	498	52	0	6	1	0	0	0	0	0	0	0	559
6:15	0	146	23	0	15	1	0	0	0	0	0	0	0	185	18:15	1	373	31	0	4	1	0	0	0	0	0	0	0	410
6:30	1	179	33	0	21	1	0	0	1	1	0	0	0	237	18:30	2	377	37	0	3	0	0	1	0	0	0	0	0	420
6:45	0	209	43	1	25	6	0	0	0	0	1	0	0	285	18:45	2	303	38	0	5	0	0	0	0	0	0	0	0	348
7:00	0	271	28	1	25	2	0	0	0	0	0	0	0	327	19:00	1	258	28	0	1	0	0	0	0	0	0	0	0	288
7:15	2	350	37	2	28	0	0	0	0	1	0	0	0	420	19:15	2	245	11	0	4	0	0	0	0	0	0	0	0	262
7:30	1	443	46	0	31	3	0	0	0	0	0	0	0	524	19:30	1	210	16	0	0	0	0	0	0	0	0	0	0	227
7:45	0	542	65	0	26	1	0	0	1	0	1	0	0	636	19:45	0	211	23	0	0	0	0	0	0	0	0	0	0	234
8:00	3	465	62	0	20	3	0	0	0	0	2	0	0	555	20:00	2	167	20	0	1	0	0	0	0	0	0	0	0	190
8:15	0	469	56	0	13	2	0	0	0	0	0	0	0	540	20:15	0	162	13	0	0	0	0	0	0	0	0	0	0	175
8:30	2	371	49	1	28	1	0	0	0	0	0	0	0	452	20:30	0	155	17	0	1	0	0	0	0	0	0	0	0	173
8:45	0	317	36	4	23	1	0	1	1	1	1	0	0	385	20:45	0	165	16	0	1	0	0	0	0	0	0	0	0	182
9:00	2	266	39	1	12	2	0	0	0	1	0	0	0	323	21:00	1	153	17	0	1	0	0	0	0	0	0	0	0	172
9:15	0	283	38	4	11	3	0	0	1	0	1	0	0	341	21:15	0	146	16	0	0	0	0	0	0	0	0	0	0	162
9:30	0	248	49	1	11	2	0	1	0	0	0	0	0	312	21:30	0	135	8	0	1	0	0	0	0	0	0	0	0	144
9:45	0	251	46	1	8	4	0	0	1	0	1	0	0	312	21:45	0	103	5	0	0	0	0	0	0	0	0	0	0	108
10:00	0	276	44	1	17	1	0	0	0	0	0	0	0	339	22:00	0	91	8	0	0	0	0	0	0	0	0	0	0	99
10:15	0	240	46	1	19	2	0	0	0	0	0	0	0	308	22:15	0	77	8	0	0	0	0	0	0	0	0	0	0	85
10:30	0	202	39	2	10	2	0	0	0	0	0	0	0	255	22:30	2	58	7	0	1	0	0	0	0	0	0	0	0	68
10:45	1	244	43	0	7	3	0	0	0	0	0	0	0	298	22:45	0	47	9	0	0	0	0	0	0	0	0	0	0	56
11:00	0	244	47	0	13	2	0	0	0	0	0	0	0	306	23:00	0	42	3	0	0	0	0	0	0	0	0	0	0	45
11:15	0	253	27	1	16	2	0	0	0	0	0	0	0	299	23:15	0	29	4	0	1	0	0	0	0	0	0	0	0	34
11:30	0	248	38	1	11	4	0	1	1	0	0	0	0	304	23:30	0	17	3	0	0	0	0	0	0	0	0	0	0	20
11:45	0	259	45	0	9	1	0	0	0	0	0	0	0	314	23:45	0	28	1	0	1	0	0	0	0	0	0	0	0	30
TOTAL	13	7,307	1,047	22	418	51	0	3	7	4	7	0	0	8,879	TOTAL	53	13,143	1,348	13	327	50	0	5	14	0	8	0	0	14,961

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	2,255

PM PEAK HOUR	4:15 PM
PM PEAK VOLUME	2,329

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
TOTAL: AM+PM	66	20,450	2,395	35	745	101	0	8	21	4	15	0	0	23,840
% OF TOTAL	0.3%	85.8%	10.0%	0.1%	3.1%	0.4%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Orange PROJECT: SC3962

ADT7 Villa Park Rd from Hewes St to Cannon St. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	19		11			12:00	140		174		
0:15	13		10			12:15	169		193		
0:30	11		8			12:30	174		199		
0:45	5	48	10	39	87	12:45	138	621	184	750	1371
1:00	4		6			13:00	154		169		
1:15	5		7			13:15	172		182		
1:30	9		2			13:30	144		176		
1:45	3	21	2	17	38	13:45	159	629	181	708	1337
2:00	3		5			14:00	154		210		
2:15	2		3			14:15	164		172		
2:30	5		1			14:30	199		220		
2:45	4	14	8	17	31	14:45	203	720	247	849	1569
3:00	1		4			15:00	219		316		
3:15	1		4			15:15	231		341		
3:30	2		5			15:30	258		377		
3:45	3	7	9	22	29	15:45	251	959	355	1389	2348
4:00	2		3			16:00	291		329		
4:15	4		16			16:15	300		397		
4:30	2		15			16:30	258		338		
4:45	8	16	22	56	72	16:45	258	1107	356	1420	2527
5:00	10		25			17:00	333		368		
5:15	22		42			17:15	284		388		
5:30	25		58			17:30	274		361		
5:45	25	82	59	184	266	17:45	241	1132	306	1423	2555
6:00	44		82			18:00	286		302		
6:15	76		114			18:15	192		223		
6:30	110		148			18:30	244		211		
6:45	137	367	184	528	895	18:45	189	911	186	922	1833
7:00	163		187			19:00	147		140		
7:15	231		239			19:15	161		120		
7:30	270		282			19:30	123		109		
7:45	331	995	396	1104	2099	19:45	147	578	101	470	1048
8:00	323		329			20:00	114		81		
8:15	337		309			20:15	117		72		
8:30	219		294			20:30	122		58		
8:45	203	1082	223	1155	2237	20:45	133	486	73	284	770
9:00	169		202			21:00	119		66		
9:15	138		214			21:15	119		59		
9:30	147		175			21:30	110		55		
9:45	138	592	184	775	1367	21:45	72	420	38	218	638
10:00	161		195			22:00	64		26		
10:15	140		189			22:15	50		40		
10:30	113		166			22:30	45		28		
10:45	128	542	184	734	1276	22:45	34	193	17	111	304
11:00	155		179			23:00	32		17		
11:15	152		181			23:15	19		13		
11:30	157		168			23:30	17		6		
11:45	153	617	199	727	1344	23:45	16	84	17	53	137
Total Vol.		4383		5358	**9741**			7840		8597	**16437**

Daily Totals	EB	WB	**Combined**
	12223	13955	**26178**

	AM			**PM**		
Split %	45.0%	55.0%	**37.2%**	47.7%	52.3%	**62.8%**
Peak Hour	7:30	7:45	**7:30**	16:15	16:45	**16:45**
Volume	1261	1328	**2577**	1149	1473	**2622**
P.H.F.	0.94	0.84	**0.89**	0.86	0.95	**0.94**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS8 Santiago Canyon Rd from Cannon St to Orange Park Blvd

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	11	1	0	3	0	0	0	0	0	0	0	0	15	12:00	3	241	26	3	6	1	1	0	2	0	1	0	0	284
0:15	0	14	1	0	0	0	0	0	0	0	0	0	0	15	12:15	0	254	35	0	10	1	1	0	2	0	1	0	0	304
0:30	0	12	0	0	0	0	0	0	0	0	0	0	0	12	12:30	1	251	26	1	9	3	1	0	0	0	0	0	0	292
0:45	0	5	1	0	0	0	0	0	0	0	0	0	0	6	12:45	4	283	36	2	7	0	1	0	0	0	0	0	0	333
1:00	0	10	0	0	0	0	0	0	0	0	0	0	0	10	13:00	3	261	32	1	13	2	0	0	0	0	0	0	0	312
1:15	0	3	0	0	1	0	0	0	0	0	0	0	0	4	13:15	3	350	42	1	7	1	0	0	0	0	0	0	0	404
1:30	0	6	0	0	0	0	0	0	0	0	0	0	0	6	13:30	2	291	29	1	8	2	0	0	1	0	0	0	0	334
1:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2	13:45	0	279	26	0	7	1	0	0	1	0	0	0	0	314
2:00	1	4	0	0	0	0	0	0	0	0	0	0	0	5	14:00	1	303	41	1	9	1	0	0	1	0	0	0	0	357
2:15	0	3	0	0	0	0	0	0	0	0	0	0	0	3	14:15	3	289	32	0	7	2	1	1	1	0	2	0	0	338
2:30	0	10	0	0	0	0	0	0	0	0	0	0	0	10	14:30	1	325	46	3	18	1	0	1	0	0	0	0	0	395
2:45	0	6	1	0	0	0	0	0	0	0	0	0	0	7	14:45	2	454	41	1	20	3	1	0	0	0	1	0	0	523
3:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4	15:00	2	596	52	0	19	2	1	0	1	0	0	0	0	673
3:15	0	7	0	0	0	0	0	0	0	0	0	0	0	7	15:15	8	552	51	0	22	2	1	0	0	0	3	0	0	639
3:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	15:30	7	642	49	0	25	0	0	0	0	0	0	0	0	723
3:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2	15:45	1	582	56	0	23	2	1	0	2	0	1	0	0	668
4:00	0	8	1	0	0	0	0	0	0	0	0	0	0	9	16:00	1	581	42	0	16	3	1	0	2	0	0	0	0	646
4:15	0	23	0	0	0	0	0	0	0	0	0	0	0	23	16:15	6	660	35	0	8	1	0	0	0	0	0	0	0	710
4:30	0	16	1	0	0	0	0	0	0	0	0	0	0	17	16:30	4	652	31	1	12	3	0	0	0	0	2	0	0	705
4:45	0	32	0	0	0	0	0	0	0	0	0	0	0	32	16:45	1	728	35	0	16	1	0	0	2	0	1	0	1	785
5:00	0	28	1	0	0	0	0	0	0	0	0	0	0	29	17:00	5	769	42	0	9	0	0	0	0	0	0	0	0	825
5:15	0	72	1	0	0	0	0	0	0	0	0	0	0	73	17:15	3	776	36	1	11	0	0	0	0	0	0	0	1	828
5:30	1	79	10	0	2	0	0	0	1	0	0	0	0	93	17:30	3	767	30	0	10	1	0	0	0	0	0	0	0	811
5:45	0	71	5	1	1	1	0	0	1	0	0	0	0	80	17:45	5	645	25	0	6	1	1	0	0	0	1	0	0	684
6:00	0	95	8	0	3	0	0	0	0	0	0	0	0	106	18:00	3	589	28	0	4	0	1	0	0	0	0	0	0	625
6:15	4	140	17	0	5	0	1	0	1	0	0	0	0	168	18:15	1	534	25	0	7	1	0	0	0	0	0	0	0	568
6:30	3	239	22	1	8	1	0	0	1	0	1	0	0	276	18:30	2	397	23	0	3	0	0	0	1	0	0	0	0	426
6:45	1	314	33	0	13	3	2	0	1	0	1	0	0	368	18:45	2	348	26	0	5	0	0	0	0	0	0	0	0	381
7:00	0	426	24	0	14	3	0	0	0	0	1	0	0	468	19:00	2	266	18	0	0	0	0	0	0	0	0	0	0	286
7:15	2	536	44	1	19	0	0	0	1	0	1	0	1	605	19:15	3	237	15	0	2	0	0	0	0	0	0	0	0	257
7:30	1	631	35	0	18	3	1	0	0	0	0	0	1	690	19:30	2	218	8	0	0	0	0	0	0	0	0	0	0	228
7:45	1	623	34	1	21	1	0	0	1	0	2	0	0	684	19:45	0	162	8	0	1	0	0	0	0	0	0	0	0	171
8:00	2	677	42	0	12	3	0	0	1	0	2	0	0	739	20:00	2	179	6	0	1	0	0	0	0	0	0	0	0	188
8:15	1	747	40	3	6	5	0	0	0	0	1	0	0	803	20:15	0	166	3	0	0	0	0	0	0	0	0	0	0	169
8:30	3	570	30	0	20	1	1	0	0	0	0	0	0	625	20:30	0	113	6	0	0	0	0	0	0	0	0	0	0	119
8:45	0	424	34	3	14	2	0	0	3	0	0	0	0	480	20:45	0	124	1	0	1	0	0	0	0	0	0	0	0	126
9:00	2	350	38	0	11	2	0	0	0	0	2	0	0	405	21:00	1	132	4	0	1	0	0	0	0	0	0	0	0	138
9:15	2	268	39	6	15	4	0	0	1	0	0	0	0	335	21:15	1	138	0	0	1	0	0	0	0	0	0	0	0	140
9:30	1	267	41	1	8	1	1	0	0	0	0	0	0	320	21:30	1	120	0	0	1	0	0	0	0	0	0	0	0	122
9:45	1	296	27	1	6	1	3	0	1	0	1	0	0	337	21:45	0	78	2	0	0	0	0	0	0	0	0	0	0	80
10:00	0	310	36	1	5	0	1	0	0	0	0	0	0	353	22:00	1	87	4	0	0	0	0	0	0	0	0	0	0	92
10:15	0	271	32	3	7	2	0	0	0	0	0	0	0	315	22:15	0	47	3	0	0	0	0	0	0	0	0	0	0	50
10:30	0	233	32	3	7	0	3	0	0	0	0	0	0	278	22:30	2	41	1	0	0	0	0	0	0	0	0	0	0	44
10:45	1	198	27	0	8	0	1	0	0	0	1	0	0	236	22:45	0	44	2	0	0	0	0	0	0	0	0	0	0	46
11:00	4	216	36	0	3	0	1	0	0	0	0	0	0	260	23:00	0	43	2	0	0	0	0	0	0	0	0	0	0	45
11:15	0	249	36	1	9	1	1	0	0	0	0	0	0	297	23:15	0	26	0	0	0	0	0	0	0	0	0	0	0	26
11:30	2	316	38	0	2	1	0	1	0	0	0	0	0	360	23:30	1	17	0	0	0	0	0	0	0	0	0	0	0	18
11:45	0	319	47	1	8	1	0	0	0	0	0	0	0	376	23:45	0	22	0	0	0	0	0	0	0	0	0	0	0	22
TOTAL	33	9,151	815	27	249	36	16	1	13	0	13	0	2	10,356	TOTAL	93	15,659	1,081	16	325	35	12	2	16	0	13	0	2	17,254

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	2,916

PM PEAK HOUR	4:45 PM
PM PEAK VOLUME	3,249

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	126	24,810	1,896	43	574	71	28	3	29	0	26	0	4	27,610
% OF TOTAL	0.5%	89.9%	6.9%	0.2%	2.1%	0.3%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Villa Park - Orange PROJECT: SC3962

ADT15 Taft Ave from Center Dr to Santiago Blvd. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	8		1			12:00	71		63		
0:15	4		4			12:15	94		60		
0:30	0		1			12:30	119		85		
0:45	0	12	0	6	18	12:45	162	446	57	265	711
1:00	1		0			13:00	195		107		
1:15	1		0			13:15	146		182		
1:30	1		1			13:30	151		149		
1:45	1	4	0	1	5	13:45	125	617	135	573	1190
2:00	1		2			14:00	78		89		
2:15	0		0			14:15	84		65		
2:30	0		0			14:30	76		66		
2:45	0	1	0	2	3	14:45	80	318	81	301	619
3:00	0		1			15:00	130		88		
3:15	0		4			15:15	180		87		
3:30	0		0			15:30	157		181		
3:45	0	0	0	5	5	15:45	117	584	130	486	1070
4:00	0		2			16:00	99		93		
4:15	0		2			16:15	108		91		
4:30	0		5			16:30	114		94		
4:45	0	0	6	15	15	16:45	161	482	102	380	862
5:00	0		5			17:00	182		103		
5:15	4		8			17:15	160		122		
5:30	4		8			17:30	127		121		
5:45	5	13	10	31	44	17:45	156	625	109	455	1080
6:00	12		13			18:00	119		121		
6:15	34		32			18:15	96		99		
6:30	27		28			18:30	96		86		
6:45	40	113	34	107	220	18:45	89	400	89	395	795
7:00	59		44			19:00	82		90		
7:15	104		76			19:15	50		83		
7:30	135		99			19:30	50		86		
7:45	224	522	127	346	868	19:45	52	234	57	316	550
8:00	309		198			20:00	40		47		
8:15	326		183			20:15	41		31		
8:30	123		147			20:30	26		22		
8:45	101	859	93	621	1480	20:45	24	131	17	117	248
9:00	178		97			21:00	38		17		
9:15	175		126			21:15	28		52		
9:30	82		78			21:30	25		44		
9:45	48	483	56	357	840	21:45	21	112	9	122	234
10:00	46		49			22:00	9		1		
10:15	45		79			22:15	11		8		
10:30	44		62			22:30	13		9		
10:45	71	206	57	247	453	22:45	9	42	4	22	64
11:00	72		70			23:00	9		6		
11:15	55		102			23:15	7		5		
11:30	57		73			23:30	4		2		
11:45	70	254	69	314	568	23:45	4	24	0	13	37
Total Vol.		2467		2052	**4519**			4015		3445	**7460**

	Daily Totals EB	WB	**Combined**
	6482	5497	**11979**

	AM			**PM**		
Split %	54.6%	45.4%	**37.7%**	53.8%	46.2%	**62.3%**
Peak Hour	7:30	7:45	**7:45**	12:45	13:00	**13:00**
Volume	994	655	**1637**	654	573	**1190**
P.H.F.	0.76	0.83	**0.80**	0.84	0.79	**0.91**

cs@aimtd.com Tell. 714 253 7888

Wednesday, April 26, 2023 CITY: Villa Park PROJECT: SC3962

ADT14 Taft Ave from Cannon St to Center Dr.

Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	EB		WB			PM Period	EB		WB		
0:00	5		1			12:00	37		54		
0:15	5		2			12:15	49		52		
0:30	1		1			12:30	39		55		
0:45	0	11	0	4	15	12:45	58	183	52	213	396
1:00	2		0			13:00	62		37		
1:15	0		0			13:15	62		61		
1:30	1		0			13:30	57		57		
1:45	0	3	0	0	3	13:45	61	242	40	195	437
2:00	1		2			14:00	60		48		
2:15	0		0			14:15	51		64		
2:30	0		0			14:30	51		55		
2:45	0	1	0	2	3	14:45	39	201	62	229	430
3:00	0		0			15:00	54		67		
3:15	0		3			15:15	57		65		
3:30	0		0			15:30	100		65		
3:45	0	0	1	4	4	15:45	53	264	63	260	524
4:00	0		1			16:00	69		65		
4:15	1		3			16:15	69		79		
4:30	0		4			16:30	77		68		
4:45	0	1	7	15	16	16:45	58	273	96	308	581
5:00	1		4			17:00	51		79		
5:15	2		5			17:15	81		73		
5:30	2		5			17:30	65		77		
5:45	6	11	7	21	32	17:45	71	268	77	306	574
6:00	11		11			18:00	61		61		
6:15	14		20			18:15	53		58		
6:30	13		17			18:30	65		47		
6:45	14	52	29	77	129	18:45	57	236	38	204	440
7:00	20		27			19:00	48		31		
7:15	27		41			19:15	44		32		
7:30	31		59			19:30	51		35		
7:45	68	146	83	210	356	19:45	32	175	35	133	308
8:00	74		81			20:00	44		24		
8:15	69		76			20:15	30		17		
8:30	52		72			20:30	25		10		
8:45	35	230	65	294	524	20:45	20	119	18	69	188
9:00	37		50			21:00	25		12		
9:15	41		49			21:15	23		14		
9:30	43		47			21:30	24		9		
9:45	37	158	52	198	356	21:45	17	89	4	39	128
10:00	32		53			22:00	10		2		
10:15	30		55			22:15	13		6		
10:30	30		49			22:30	9		7		
10:45	31	123	50	207	330	22:45	11	43	4	19	62
11:00	46		48			23:00	7		2		
11:15	30		53			23:15	5		2		
11:30	36		47			23:30	5		0		
11:45	39	151	57	205	356	23:45	4	21	0	4	25
Total Vol.	887		1237		**2124**		2114		1979		**4093**

	Daily Totals		
	EB	WB	**Combined**
	3001	3216	**6217**

	AM			**PM**		
Split %	41.8%	58.2%	**34.2%**	51.6%	48.4%	**65.8%**
Peak Hour	7:45	7:45	**7:45**	15:30	16:45	**16:30**
Volume	263	312	**575**	291	325	**583**
P.H.F.	0.89	0.94	**0.93**	0.73	0.85	**0.95**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS12 Serrano Ave from Cannon St to Orange Park Blvd

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	21	1	0	0	0	0	0	0	0	0	0	0	22	12:00	0	187	20	1	1	1	1	0	0	0	0	0	0	211
0:15	0	11	0	0	0	0	0	0	0	0	0	0	0	11	12:15	0	216	23	2	7	1	1	0	0	0	0	0	0	250
0:30	0	8	1	0	0	0	0	0	0	0	0	0	0	9	12:30	1	211	29	1	2	1	0	0	0	0	0	0	0	245
0:45	0	5	0	0	0	0	0	0	0	0	0	0	0	5	12:45	1	196	19	1	3	0	0	0	0	0	0	0	0	220
1:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8	13:00	3	189	17	0	5	2	0	0	0	0	0	0	0	216
1:15	0	4	0	0	0	0	0	0	0	0	0	0	0	4	13:15	3	234	24	0	3	0	0	0	0	0	0	0	0	264
1:30	0	7	0	0	0	0	0	0	0	0	0	0	0	7	13:30	1	192	33	0	4	0	1	0	0	0	0	0	0	231
1:45	0	3	0	0	0	0	0	0	0	0	0	0	0	3	13:45	0	191	18	0	6	0	0	0	0	0	0	0	0	215
2:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3	14:00	4	221	29	0	2	0	0	0	0	0	0	0	0	256
2:15	0	4	0	0	0	0	0	0	0	0	0	0	0	4	14:15	0	235	28	0	5	0	0	0	0	0	0	0	0	268
2:30	0	8	1	0	1	0	0	0	0	0	0	0	0	10	14:30	1	233	34	1	7	0	0	0	0	0	0	0	0	276
2:45	0	3	0	0	0	0	0	0	0	0	0	0	0	3	14:45	1	236	28	3	6	0	0	0	0	0	0	0	0	274
3:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3	15:00	0	273	32	0	5	1	0	0	0	0	0	0	0	311
3:15	0	3	3	0	0	0	0	0	0	0	0	0	0	6	15:15	0	316	43	2	3	1	0	0	0	0	0	0	0	365
3:30	0	7	0	0	0	0	0	0	0	0	0	0	0	7	15:30	2	377	44	2	7	0	0	0	0	0	0	0	0	432
3:45	0	4	0	0	0	0	0	0	0	0	0	0	0	4	15:45	1	376	34	5	9	0	0	0	0	0	0	0	0	425
4:00	1	6	1	0	0	0	0	0	0	0	0	0	0	8	16:00	1	438	29	3	8	0	0	0	0	0	0	0	0	479
4:15	0	11	2	0	0	0	0	0	0	0	0	0	0	13	16:15	1	458	41	1	3	1	0	0	0	0	0	0	0	505
4:30	1	17	4	0	0	0	0	0	0	0	0	0	0	22	16:30	3	467	31	0	6	0	0	0	0	0	0	2	0	509
4:45	0	24	1	0	0	0	0	0	0	0	0	0	0	25	16:45	0	477	39	1	7	0	0	0	1	0	1	0	0	526
5:00	0	32	0	0	1	0	0	0	0	0	0	0	0	33	17:00	0	473	33	0	4	0	0	0	0	0	0	0	0	510
5:15	0	39	3	0	2	0	0	0	0	0	0	0	0	44	17:15	0	471	38	0	1	0	0	0	0	0	0	0	0	510
5:30	0	46	2	0	0	0	0	0	0	0	0	0	0	48	17:30	0	448	27	0	4	0	0	0	0	0	0	0	0	479
5:45	0	60	3	0	0	0	0	0	0	0	0	0	0	63	17:45	1	417	35	0	3	0	0	0	0	0	0	0	0	456
6:00	0	94	10	0	0	0	0	0	0	0	0	0	0	104	18:00	0	417	35	0	3	0	0	0	0	0	0	0	0	455
6:15	2	143	6	0	1	0	0	0	0	0	0	0	0	152	18:15	1	371	23	0	5	0	1	0	0	0	0	0	0	401
6:30	1	167	12	3	3	0	0	0	0	0	0	0	0	186	18:30	1	332	12	0	4	0	0	0	0	0	0	0	0	349
6:45	0	198	9	2	3	0	0	0	1	0	0	0	0	213	18:45	2	341	14	0	1	0	0	0	0	0	0	0	0	358
7:00	1	281	8	3	3	0	0	0	0	0	0	0	0	296	19:00	0	225	10	0	1	0	0	0	0	0	0	0	0	236
7:15	1	326	18	1	1	0	0	0	0	0	0	0	0	347	19:15	0	210	11	0	0	0	0	0	0	0	0	0	0	221
7:30	1	342	22	2	3	1	0	0	0	0	0	0	0	371	19:30	0	189	12	0	0	0	0	0	0	0	0	0	0	201
7:45	0	369	32	3	6	0	0	0	0	0	0	0	0	410	19:45	0	191	8	0	3	0	0	0	0	0	0	0	0	202
8:00	3	399	14	2	4	0	0	0	0	0	0	0	0	422	20:00	0	180	4	0	2	0	0	0	0	0	0	0	0	186
8:15	2	350	23	1	7	1	0	0	0	0	0	0	0	384	20:15	0	125	7	0	0	0	0	0	0	0	0	0	0	132
8:30	0	306	19	1	8	0	0	0	0	0	0	0	0	334	20:30	0	125	7	0	2	0	0	0	0	0	0	0	0	134
8:45	1	244	19	2	7	0	0	0	0	0	0	0	0	273	20:45	0	144	8	0	0	0	0	0	0	0	0	0	0	152
9:00	0	197	24	2	4	1	0	0	0	0	0	0	0	228	21:00	0	113	7	0	0	0	0	0	0	0	0	0	0	120
9:15	0	186	23	0	4	0	0	0	0	0	0	0	0	213	21:15	1	121	4	0	0	0	0	0	0	0	0	0	0	126
9:30	2	215	21	0	9	0	0	0	0	0	0	0	0	247	21:30	1	134	1	0	0	0	0	0	0	0	0	0	0	136
9:45	0	190	30	0	6	1	0	0	0	0	0	0	0	227	21:45	0	81	2	0	0	0	0	0	0	0	0	0	0	83
10:00	0	215	30	0	7	0	2	0	0	0	0	0	0	254	22:00	0	59	5	0	0	0	0	0	0	0	0	0	0	64
10:15	1	183	29	0	6	0	0	0	0	0	0	0	0	219	22:15	0	60	4	0	0	0	0	0	0	0	0	0	0	64
10:30	0	169	22	0	6	2	0	0	0	0	0	0	0	199	22:30	0	55	2	0	0	0	0	0	0	0	0	0	0	57
10:45	0	171	27	0	10	0	0	0	0	0	0	0	0	208	22:45	0	32	1	0	0	0	0	0	0	0	0	0	0	33
11:00	3	186	19	0	7	0	1	0	0	0	0	0	0	216	23:00	0	30	2	0	0	0	0	0	0	0	0	0	0	32
11:15	3	194	22	0	9	1	0	0	0	0	0	0	0	229	23:15	0	31	1	0	0	0	0	0	0	0	0	0	0	32
11:30	3	219	26	2	12	0	1	0	0	0	0	0	0	263	23:30	0	13	1	0	0	0	0	0	0	0	0	0	0	14
11:45	0	188	26	2	3	1	0	0	0	0	0	0	0	220	23:45	0	23	2	0	0	0	0	0	0	0	0	0	0	25
TOTAL	26	5,869	513	26	133	8	4	0	1	0	0	0	0	6,580	TOTAL	30	11,134	911	23	132	8	4	0	1	0	3	0	0	12,246

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	1,587

PM PEAK HOUR	4:30 PM
PM PEAK VOLUME	2,055

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	56	17,003	1,424	49	265	16	8	0	2	0	3	0	0	18,826
% OF TOTAL	0.3%	90.3%	7.6%	0.3%	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS1 Santiago Blvd from Meats Ave to Taft Ave

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	15	3	0	0	0	0	0	0	0	0	0	0	18	12:00	0	206	38	1	4	1	0	0	1	0	0	0	0	251
0:15	0	12	0	0	0	0	0	0	0	0	0	0	0	12	12:15	0	245	39	1	4	1	0	0	0	0	0	0	0	290
0:30	0	6	0	0	0	0	0	0	0	0	0	0	0	6	12:30	1	241	42	0	1	0	0	1	0	0	0	0	0	286
0:45	0	7	0	0	0	0	0	0	0	0	0	0	0	7	12:45	0	304	63	1	6	1	0	0	0	0	0	0	0	375
1:00	0	8	2	0	0	0	0	0	0	0	0	0	0	10	13:00	1	274	48	1	1	0	0	0	0	0	0	0	0	325
1:15	0	4	1	0	0	0	0	0	0	0	0	0	0	5	13:15	2	302	38	2	7	0	0	0	0	0	0	0	0	351
1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:30	0	315	34	0	7	0	0	0	0	0	0	0	0	356
1:45	0	9	0	0	1	0	0	0	0	0	0	0	0	10	13:45	0	282	51	0	7	0	0	0	0	0	0	0	0	340
2:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4	14:00	2	219	45	1	3	0	0	0	0	0	0	0	0	270
2:15	0	6	0	0	0	0	0	0	0	0	0	0	0	6	14:15	3	233	44	1	9	1	0	0	0	0	0	0	0	291
2:30	0	4	0	0	0	0	0	0	0	0	0	0	0	4	14:30	1	208	49	1	5	1	0	0	0	0	0	0	0	265
2:45	0	5	2	0	0	0	0	0	0	0	0	0	0	7	14:45	0	272	36	0	9	0	0	0	1	0	0	0	0	318
3:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3	15:00	0	242	55	1	7	0	0	0	0	0	0	0	0	305
3:15	0	2	1	0	0	0	0	0	0	0	0	0	0	3	15:15	0	268	59	0	8	0	0	0	0	0	0	0	0	335
3:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1	15:30	1	346	76	1	8	0	0	0	0	0	0	0	0	432
3:45	0	2	2	0	0	0	0	0	0	0	0	0	0	4	15:45	0	298	57	0	4	0	0	0	0	0	0	0	0	359
4:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5	16:00	0	314	61	1	4	0	0	0	0	0	0	0	0	380
4:15	0	11	3	0	0	0	0	0	0	0	0	0	0	14	16:15	0	318	71	1	6	1	0	0	0	0	0	0	0	397
4:30	0	10	2	0	0	0	0	0	0	0	0	0	0	12	16:30	0	359	56	0	7	1	0	0	0	0	0	0	0	423
4:45	1	15	5	0	1	0	0	0	0	0	0	0	0	22	16:45	0	359	62	0	10	0	0	0	0	0	0	0	0	431
5:00	0	13	7	0	0	0	0	0	0	0	0	0	0	20	17:00	0	379	63	1	5	0	0	0	0	0	0	0	0	448
5:15	0	28	4	1	0	1	0	0	0	0	0	0	0	34	17:15	1	381	63	1	4	1	0	0	0	0	0	0	0	451
5:30	0	31	4	0	0	0	0	0	0	0	0	0	0	35	17:30	0	377	54	0	7	0	0	0	0	0	0	0	0	438
5:45	0	39	17	0	0	0	0	0	0	0	0	0	0	56	17:45	2	379	67	1	5	1	0	0	0	0	0	0	0	455
6:00	0	61	17	1	1	0	0	0	0	0	0	0	0	80	18:00	0	355	43	1	3	0	0	1	0	0	0	0	0	403
6:15	0	70	19	1	2	0	0	0	0	0	0	0	0	92	18:15	2	287	53	0	4	0	0	0	0	0	0	0	0	346
6:30	0	75	27	0	6	0	0	0	1	0	0	0	0	109	18:30	0	265	35	1	3	0	0	1	0	0	0	0	0	305
6:45	0	100	25	0	7	0	0	0	0	0	0	0	0	132	18:45	3	248	37	0	3	0	0	0	0	0	0	0	0	291
7:00	0	152	24	1	6	0	0	0	0	0	0	0	0	183	19:00	1	233	29	1	2	0	0	0	0	0	0	0	0	266
7:15	1	167	30	1	8	0	0	0	0	0	0	0	0	207	19:15	0	207	29	1	2	0	0	0	0	0	0	0	0	239
7:30	0	236	41	0	5	0	0	0	0	0	0	0	0	282	19:30	0	191	27	0	2	0	0	0	0	0	0	0	0	220
7:45	0	295	46	2	2	0	0	0	0	0	0	0	0	345	19:45	0	159	27	0	2	0	0	0	0	0	0	0	0	188
8:00	0	324	58	1	2	1	0	0	0	0	0	0	0	386	20:00	0	131	24	1	2	0	0	0	0	0	0	0	0	158
8:15	0	266	41	0	0	0	0	0	0	0	0	0	0	307	20:15	0	133	16	1	2	0	0	0	0	0	0	0	0	152
8:30	0	243	38	1	5	0	0	0	0	0	0	0	0	287	20:30	0	108	15	1	0	0	0	0	0	0	0	0	0	124
8:45	1	226	38	1	6	2	0	0	0	0	0	0	0	274	20:45	0	103	13	0	0	0	0	0	0	0	0	0	0	116
9:00	2	174	29	1	6	0	0	0	0	0	0	0	0	212	21:00	0	97	13	0	0	0	0	0	0	0	0	0	0	110
9:15	2	232	55	1	5	0	0	0	0	0	0	0	0	295	21:15	0	92	14	1	0	0	0	0	0	0	0	0	0	107
9:30	1	180	36	0	8	0	0	0	1	0	0	0	0	226	21:30	0	87	10	0	0	0	0	0	0	0	0	0	0	97
9:45	1	187	36	0	7	0	0	0	0	0	0	0	0	231	21:45	0	77	7	0	0	0	0	0	0	0	0	0	0	84
10:00	0	171	42	1	1	0	0	0	0	0	0	0	0	215	22:00	0	54	8	0	0	0	0	0	0	0	0	0	0	62
10:15	0	179	42	1	2	0	0	0	0	0	0	0	0	224	22:15	0	62	13	0	0	0	0	0	0	0	0	0	0	75
10:30	0	167	35	0	6	2	0	0	0	0	0	0	0	210	22:30	0	37	4	0	0	0	0	0	0	0	0	0	0	41
10:45	0	183	43	0	1	0	0	0	0	0	0	0	0	227	22:45	0	31	7	0	0	0	0	0	0	0	0	0	0	38
11:00	1	172	46	1	7	0	0	0	0	0	0	0	0	227	23:00	0	29	3	0	0	0	0	0	0	0	0	0	0	32
11:15	1	185	44	1	0	0	0	0	0	0	0	0	0	231	23:15	0	17	4	0	0	0	0	0	0	0	0	0	0	21
11:30	0	175	36	0	7	0	0	0	0	0	0	0	0	218	23:30	1	12	1	0	0	0	0	0	0	0	0	0	0	14
11:45	0	219	37	0	9	0	0	1	0	0	0	0	0	266	23:45	0	19	2	0	0	0	0	0	0	0	0	0	0	21
TOTAL	11	4,676	941	16	111	6	0	1	2	0	0	0	0	5,764	TOTAL	21	10,155	1,705	24	163	9	0	3	2	0	0	0	0	12,082

AM PEAK HOUR	7:45 AM	**PM PEAK HOUR**	5:00 PM
AM PEAK VOLUME	1,325	**PM PEAK VOLUME**	1,792

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	32	14,831	2,646	40	274	15	0	4	4	0	0	0	0	17,846
% OF TOTAL	0.2%	83.1%	14.8%	0.2%	1.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Villa Park - Orange PROJECT: SC3962

ADT2 Santiago Blvd from Taft Ave to Villa Park Rd.

Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	13		10			12:00	136		166		
0:15	10		8			12:15	164		168		
0:30	4		5			12:30	242		157		
0:45	7	34	5	28	62	12:45	244	786	186	677	1463
1:00	10		2			13:00	174		167		
1:15	3		4			13:15	229		232		
1:30	0		0			13:30	190		177		
1:45	7	20	2	8	28	13:45	185	778	229	805	1583
2:00	2		4			14:00	163		163		
2:15	5		1			14:15	187		180		
2:30	0		1			14:30	143		157		
2:45	3	10	6	12	22	14:45	162	655	161	661	1316
3:00	2		1			15:00	222		167		
3:15	2		3			15:15	256		169		
3:30	2		1			15:30	250		225		
3:45	4	10	3	8	18	15:45	220	948	205	766	1714
4:00	4		4			16:00	240		178		
4:15	8		16			16:15	269		168		
4:30	9		8			16:30	265		163		
4:45	10	31	11	39	70	16:45	287	1061	158	667	1728
5:00	11		14			17:00	299		182		
5:15	17		20			17:15	314		223		
5:30	14		46			17:30	325		196		
5:45	41	83	39	119	202	17:45	279	1217	198	799	2016
6:00	38		48			18:00	280		171		
6:15	64		69			18:15	231		165		
6:30	57		70			18:30	202		164		
6:45	73	232	90	277	509	18:45	169	882	140	640	1522
7:00	107		127			19:00	178		156		
7:15	124		145			19:15	120		122		
7:30	203		204			19:30	104		136		
7:45	205	639	247	723	1362	19:45	96	498	102	516	1014
8:00	254		229			20:00	90		100		
8:15	221		208			20:15	95		107		
8:30	179		155			20:30	94		77		
8:45	169	823	145	737	1560	20:45	63	342	72	356	698
9:00	166		133			21:00	79		62		
9:15	180		162			21:15	68		73		
9:30	109		157			21:30	57		64		
9:45	137	592	143	595	1187	21:45	61	265	38	237	502
10:00	115		158			22:00	39		36		
10:15	122		138			22:15	41		40		
10:30	129		123			22:30	24		23		
10:45	153	519	138	557	1076	22:45	19	123	16	115	238
11:00	130		148			23:00	16		23		
11:15	126		132			23:15	7		9		
11:30	119		161			23:30	10		11		
11:45	151	526	138	579	1105	23:45	10	43	8	51	94
Total Vol.	3519		3682		**7201**		7598		6290		**13888**

Daily Totals

NB	SB	Combined
11117	9972	**21089**

	AM			PM		
Split %	48.9%	51.1%	**34.1%**	54.7%	45.3%	**65.9%**
Peak Hour	7:30	7:30	**7:30**	16:45	13:00	**17:00**
Volume	883	888	**1771**	1225	805	**2016**
P.H.F.	0.87	0.90	**0.92**	0.97	0.87	**0.94**

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Wednesday, April 26, 2023 CITY: Villa Park - Orange PROJECT: SC3962

ADT3 N Wanda Rd from E Garfield Ave to E Collins Ave. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	4		17			12:00	125		166		
0:15	8		18			12:15	135		149		
0:30	4		5			12:30	174		183		
0:45	2	18	4	44	62	12:45	189	623	163	661	1284
1:00	7		2			13:00	137		140		
1:15	1		9			13:15	176		180		
1:30	1		1			13:30	130		152		
1:45	3	12	0	12	24	13:45	123	566	202	674	1240
2:00	0		4			14:00	116		134		
2:15	4		6			14:15	127		169		
2:30	2		2			14:30	119		149		
2:45	1	7	1	13	20	14:45	110	472	141	593	1065
3:00	1		4			15:00	141		161		
3:15	1		1			15:15	146		146		
3:30	2		4			15:30	163		190		
3:45	3	7	3	12	19	15:45	115	565	181	678	1243
4:00	5		2			16:00	171		152		
4:15	9		6			16:15	159		165		
4:30	17		4			16:30	167		179		
4:45	13	44	5	17	61	16:45	186	683	163	659	1342
5:00	16		7			17:00	183		184		
5:15	15		8			17:15	199		160		
5:30	28		13			17:30	174		150		
5:45	41	100	12	40	140	17:45	158	714	158	652	1366
6:00	48		35			18:00	150		145		
6:15	61		31			18:15	123		154		
6:30	54		43			18:30	106		142		
6:45	72	235	54	163	398	18:45	111	490	131	572	1062
7:00	89		81			19:00	110		130		
7:15	95		83			19:15	61		107		
7:30	156		150			19:30	61		117		
7:45	212	552	198	512	1064	19:45	63	295	85	439	734
8:00	239		208			20:00	56		82		
8:15	188		148			20:15	59		92		
8:30	151		153			20:30	60		83		
8:45	121	699	129	638	1337	20:45	43	218	79	336	554
9:00	129		116			21:00	43		64		
9:15	139		114			21:15	40		63		
9:30	109		121			21:30	35		61		
9:45	116	493	119	470	963	21:45	33	151	42	230	381
10:00	105		118			22:00	23		41		
10:15	109		114			22:15	17		51		
10:30	119		103			22:30	12		32		
10:45	113	446	128	463	909	22:45	9	61	14	138	199
11:00	120		132			23:00	10		22		
11:15	99		125			23:15	7		11		
11:30	92		137			23:30	5		19		
11:45	124	435	146	540	975	23:45	3	25	10	62	87
Total Vol.		3048		2924	**5972**			4863		5694	**10557**

Daily Totals		
NB	SB	**Combined**
7911	8618	**16529**

	AM			**PM**		
Split %	51.0%	49.0%	**36.1%**	46.1%	53.9%	**63.9%**
Peak Hour	7:30	7:45	**7:30**	16:45	16:15	**16:30**
Volume	795	707	**1499**	742	691	**1421**
P.H.F.	0.83	0.85	**0.84**	0.96	0.94	**0.97**

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Wednesday, April 26, 2023 CITY: Orange PROJECT: SC3962

ADT6 Hewes St from Villa Park Rd to E Spring St. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	3		5			12:00	65		55		
0:15	4		3			12:15	56		53		
0:30	0		2			12:30	73		66		
0:45	1	8	5	15	23	12:45	73	267	72	246	513
1:00	0		1			13:00	73		69		
1:15	1		2			13:15	70		81		
1:30	2		1			13:30	67		64		
1:45	0	3	0	4	7	13:45	65	275	96	310	585
2:00	0		3			14:00	59		73		
2:15	1		0			14:15	63		56		
2:30	2		0			14:30	99		84		
2:45	1	4	1	4	8	14:45	97	318	95	308	626
3:00	2		1			15:00	102		96		
3:15	1		1			15:15	115		90		
3:30	2		0			15:30	118		98		
3:45	3	8	3	5	13	15:45	124	459	117	401	860
4:00	1		2			16:00	113		81		
4:15	1		4			16:15	99		93		
4:30	3		2			16:30	109		89		
4:45	6	11	3	11	22	16:45	120	441	106	369	810
5:00	7		2			17:00	125		84		
5:15	3		5			17:15	128		94		
5:30	7		16			17:30	112		96		
5:45	16	33	6	29	62	17:45	117	482	88	362	844
6:00	17		19			18:00	116		67		
6:15	24		27			18:15	92		73		
6:30	45		42			18:30	85		66		
6:45	52	138	56	144	282	18:45	65	358	72	278	636
7:00	44		71			19:00	53		56		
7:15	69		103			19:15	52		47		
7:30	90		144			19:30	49		50		
7:45	134	337	181	499	836	19:45	43	197	41	194	391
8:00	133		174			20:00	38		35		
8:15	130		162			20:15	22		34		
8:30	74		123			20:30	53		30		
8:45	68	405	75	534	939	20:45	34	147	38	137	284
9:00	66		70			21:00	32		25		
9:15	71		74			21:15	41		31		
9:30	41		55			21:30	32		21		
9:45	44	222	58	257	479	21:45	18	123	22	99	222
10:00	38		67			22:00	14		17		
10:15	55		66			22:15	12		11		
10:30	45		55			22:30	8		15		
10:45	51	189	55	243	432	22:45	12	46	7	50	96
11:00	56		47			23:00	7		7		
11:15	49		66			23:15	4		8		
11:30	49		64			23:30	7		4		
11:45	60	214	47	224	438	23:45	5	23	8	27	50
Total Vol.		1572		1969	**3541**			3136		2781	**5917**

	Daily Totals		
	NB	SB	**Combined**
	4708	4750	**9458**

	AM			**PM**		
Split %	44.4%	55.6%	**37.4%**	53.0%	47.0%	**62.6%**
Peak Hour	7:30	7:30	**7:30**	16:45	15:00	**16:45**
Volume	487	661	**1148**	485	401	**865**
P.H.F.	0.91	0.91	**0.91**	0.98	0.86	**0.96**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS13 Cannon St from Serrano Ave to Via Escola

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	17	1	0	0	0	0	0	0	0	0	0	0	18	12:00	1	196	8	0	2	1	0	0	0	0	0	0	0	208
0:15	0	13	0	0	0	0	0	0	1	0	0	0	0	14	12:15	0	184	14	0	3	0	0	0	0	0	0	0	0	201
0:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	12:30	1	223	26	1	5	0	0	0	0	0	0	0	0	256
0:45	0	5	0	0	0	0	0	0	0	0	0	0	0	5	12:45	2	224	16	0	1	0	0	0	0	0	0	0	0	243
1:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4	13:00	0	215	14	5	9	0	0	0	0	0	0	0	0	243
1:15	0	3	0	0	0	0	0	0	0	0	0	0	0	3	13:15	1	247	18	1	4	0	0	0	0	0	0	0	0	271
1:30	0	3	0	0	0	0	0	0	0	0	0	0	0	3	13:30	1	204	12	1	3	1	0	0	0	0	0	0	0	222
1:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2	13:45	0	215	27	1	3	0	0	0	0	0	0	0	0	246
2:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7	14:00	1	207	28	3	7	0	0	0	0	0	0	0	0	246
2:15	0	2	0	0	0	0	0	0	0	0	0	0	0	2	14:15	0	217	22	0	5	0	0	0	0	0	0	0	0	244
2:30	0	6	1	0	0	0	0	0	0	0	0	0	0	7	14:30	0	208	36	2	6	0	0	0	0	0	0	0	0	252
2:45	0	6	0	0	0	0	0	0	0	0	0	0	0	6	14:45	1	300	18	0	8	1	0	0	0	0	0	0	0	328
3:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3	15:00	3	354	28	1	2	1	0	0	0	0	1	0	0	390
3:15	0	8	0	0	0	0	0	0	0	0	0	0	0	8	15:15	1	307	15	0	3	1	0	0	0	0	0	0	0	327
3:30	0	5	0	0	0	0	0	0	0	0	0	0	0	5	15:30	3	410	23	0	7	0	0	0	0	0	0	0	0	443
3:45	0	6	0	0	0	0	0	0	0	0	0	0	0	6	15:45	0	422	24	0	9	0	0	0	0	0	0	0	0	455
4:00	1	9	0	0	0	0	0	0	0	0	0	0	0	10	16:00	1	418	21	1	9	0	0	0	0	0	0	0	0	450
4:15	0	18	0	0	0	0	0	0	0	0	0	0	0	18	16:15	5	433	19	0	3	0	0	0	0	0	0	0	0	460
4:30	0	17	0	0	0	0	0	0	0	0	0	0	0	17	16:30	2	409	17	0	4	0	0	0	0	0	0	0	0	432
4:45	0	38	0	0	0	0	0	0	0	0	0	0	0	38	16:45	1	492	22	0	2	0	0	0	0	0	0	0	0	517
5:00	0	34	0	0	2	0	0	0	0	0	0	0	0	36	17:00	3	457	12	0	2	0	0	0	0	0	0	0	0	474
5:15	0	54	2	0	1	0	0	0	0	0	0	0	0	57	17:15	3	469	20	0	1	0	0	0	0	0	0	0	0	493
5:30	0	54	5	0	1	0	0	0	0	0	0	0	0	60	17:30	4	526	14	1	5	0	0	0	0	0	0	0	0	550
5:45	0	61	2	0	1	0	0	0	0	0	0	0	0	64	17:45	2	420	17	1	2	0	0	0	0	0	0	0	0	442
6:00	0	79	1	0	0	0	0	0	0	0	0	0	0	80	18:00	1	400	12	0	0	0	0	0	0	0	0	0	0	413
6:15	2	118	5	0	2	0	0	0	0	0	0	0	0	127	18:15	1	374	14	0	1	0	0	0	0	0	0	0	0	390
6:30	1	193	10	0	3	0	0	0	0	0	0	0	0	207	18:30	1	331	5	1	1	1	0	0	0	0	0	0	0	340
6:45	0	266	14	2	7	0	0	0	0	0	0	0	0	289	18:45	1	270	10	0	0	0	0	0	0	0	0	0	0	281
7:00	0	299	9	1	5	0	0	0	0	0	0	0	0	314	19:00	2	209	9	0	0	0	0	0	0	0	0	0	0	220
7:15	1	423	21	0	9	1	0	0	0	0	0	0	0	455	19:15	0	190	12	0	1	0	0	0	0	0	0	0	0	203
7:30	1	498	25	1	8	1	0	0	0	0	0	0	0	534	19:30	1	161	5	0	1	0	0	0	0	0	0	0	0	168
7:45	1	492	28	3	11	0	0	0	0	0	0	0	0	535	19:45	0	131	5	0	2	0	0	0	0	0	0	0	0	138
8:00	0	492	29	2	8	0	0	0	0	0	0	0	0	531	20:00	0	136	4	0	0	0	0	0	0	0	0	0	0	140
8:15	2	481	30	0	11	2	0	0	0	0	0	0	0	526	20:15	0	143	3	0	1	0	0	0	0	0	0	0	0	147
8:30	3	391	19	1	10	0	0	0	0	0	0	0	0	424	20:30	0	110	6	1	0	0	0	0	0	0	0	0	0	117
8:45	0	275	10	1	10	1	0	0	0	0	1	0	0	298	20:45	1	111	3	0	0	0	0	0	0	0	0	0	0	115
9:00	1	278	26	0	3	1	0	0	0	0	1	0	0	310	21:00	1	114	0	0	0	0	0	0	0	0	0	0	0	115
9:15	0	238	29	3	4	0	0	0	0	0	0	0	0	274	21:15	1	106	1	0	1	0	0	0	0	0	0	0	0	109
9:30	1	223	24	1	3	0	0	0	0	0	0	0	0	252	21:30	1	81	3	0	0	0	0	0	0	0	0	0	0	85
9:45	1	225	14	0	9	0	0	0	0	0	0	0	0	249	21:45	0	56	1	0	0	0	0	0	0	0	0	0	0	57
10:00	0	210	26	0	7	0	0	0	0	0	0	0	0	243	22:00	0	70	1	0	0	0	0	0	0	0	0	0	0	71
10:15	0	197	22	1	8	0	0	0	0	0	0	0	0	228	22:15	0	52	1	0	0	0	0	0	0	0	0	0	0	53
10:30	0	196	22	1	3	0	0	0	0	0	0	0	0	222	22:30	1	46	2	0	0	0	0	0	0	0	0	0	0	49
10:45	1	168	25	0	10	0	0	0	0	0	0	0	0	204	22:45	0	26	0	0	0	0	0	0	0	0	0	0	0	26
11:00	2	198	20	0	4	0	0	0	0	0	0	0	0	224	23:00	0	33	1	0	0	0	0	0	0	0	0	0	0	34
11:15	1	185	31	0	7	0	0	0	0	0	0	0	0	224	23:15	0	22	0	0	0	0	0	0	0	0	0	0	0	22
11:30	1	213	16	3	1	0	0	0	0	0	0	0	0	234	23:30	0	18	0	0	0	0	0	0	0	0	0	0	0	18
11:45	0	214	22	2	3	0	0	0	0	0	0	0	0	241	23:45	0	15	0	0	0	0	0	0	0	0	0	0	0	15
TOTAL	20	6,935	489	22	151	6	0	0	1	0	2	0	0	7,626	TOTAL	48	10,962	569	20	113	6	0	0	0	0	1	0	0	11,719

AM PEAK HOUR	7:30 AM
AM PEAK VOLUME	2,126

PM PEAK HOUR	4:45 PM
PM PEAK VOLUME	2,034

CLASS 1	Class 1 — Motorcycles	**CLASS 8**	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	**CLASS 9**	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	**CLASS 10**	6 or More Axles, Single Trailer
CLASS 4	Buses	**CLASS 11**	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	**CLASS 12**	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	**CLASS 13**	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	68	17,897	1,058	42	264	12	0	0	1	0	3	0	0	19,345
% OF TOTAL	0.4%	92.5%	5.5%	0.2%	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 CITY: Orange PROJECT: SC3962

ADT11 Cannon St from Santiago Taft Ave to Serrano Ave. Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	22		12			12:00	176		185		
0:15	9		12			12:15	199		212		
0:30	13		4			12:30	211		230		
0:45	5	49	5	33	82	12:45	218	804	197	824	1628
1:00	5		7			13:00	201		208		
1:15	3		4			13:15	256		211		
1:30	6		4			13:30	177		210		
1:45	2	16	3	18	34	13:45	225	859	196	825	1684
2:00	3		5			14:00	238		200		
2:15	2		4			14:15	238		202		
2:30	6		9			14:30	250		214		
2:45	5	16	2	20	36	14:45	314	1040	236	852	1892
3:00	1		5			15:00	403		234		
3:15	1		7			15:15	424		206		
3:30	3		9			15:30	556		241		
3:45	3	8	7	28	36	15:45	518	1901	272	953	2854
4:00	4		14			16:00	594		267		
4:15	7		22			16:15	606		283		
4:30	5		30			16:30	631		238		
4:45	18	34	37	103	137	16:45	631	2462	326	1114	3576
5:00	17		42			17:00	657		273		
5:15	20		75			17:15	639		302		
5:30	25		77			17:30	656		299		
5:45	28	90	93	287	377	17:45	586	2538	236	1110	3648
6:00	38		128			18:00	545		240		
6:15	59		196			18:15	508		193		
6:30	67		304			18:30	416		187		
6:45	90	254	388	1016	1270	18:45	350	1819	201	821	2640
7:00	91		489			19:00	275		119		
7:15	145		615			19:15	246		144		
7:30	175		660			19:30	187		138		
7:45	227	638	618	2382	3020	19:45	184	892	106	507	1399
8:00	225		602			20:00	169		91		
8:15	256		558			20:15	153		76		
8:30	207		467			20:30	144		65		
8:45	174	862	345	1972	2834	20:45	141	607	76	308	915
9:00	169		293			21:00	124		85		
9:15	166		265			21:15	140		71		
9:30	159		292			21:30	145		46		
9:45	160	654	272	1122	1776	21:45	74	483	48	250	733
10:00	160		287			22:00	76		43		
10:15	174		233			22:15	58		49		
10:30	135		242			22:30	56		30		
10:45	146	615	212	974	1589	22:45	33	223	16	138	361
11:00	174		222			23:00	45		15		
11:15	168		247			23:15	33		19		
11:30	217		222			23:30	18		12		
11:45	225	784	194	885	1669	23:45	21	117	17	63	180
Total Vol.		4020		8840	**12860**			13745		7765	**21510**

	Daily Totals		
	NB	SB	**Combined**
	17765	16605	**34370**

	AM			**PM**		
Split %	31.3%	68.7%	**37.4%**	63.9%	36.1%	**62.6%**
Peak Hour	7:45	7:15	**7:30**	16:45	16:45	**16:45**
Volume	915	2495	**3321**	2583	1200	**3783**
P.H.F.	0.89	0.95	**0.98**	0.98	0.92	**0.99**

cs@aimtd.com Tell. 714 253 7888

A32223

24-HOUR ROADWAY SEGMENT COUNTS (WITH FHWA CLASSIFICATION)

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Wednesday, April 26, 2023 **CITY#** Orange

JOB #: SC3962 CLASS10 Cannon St from Santiago Canyon Rd to Taft Ave

AM	COMBINED														PM	COMBINED													
TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL	Time	1	2	3	4	5	6	7	8	9	10	11	12	13	TOTAL
0:00	0	31	1	0	0	0	0	0	0	0	0	0	0	32	12:00	1	276	22	1	4	0	2	0	0	0	0	0	0	306
0:15	0	12	1	0	0	0	0	0	0	0	0	0	0	13	12:15	0	314	36	1	10	1	1	0	0	0	0	0	0	363
0:30	0	15	1	0	0	0	0	0	0	0	0	0	0	16	12:30	1	354	33	1	3	1	0	0	0	0	0	0	0	393
0:45	0	12	0	0	0	0	0	0	0	0	0	0	0	12	12:45	3	315	31	3	4	0	0	0	0	0	0	0	0	356
1:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9	13:00	2	281	32	4	8	2	0	0	0	0	0	0	0	329
1:15	0	9	0	0	0	0	0	0	0	0	0	0	0	9	13:15	3	389	40	1	4	0	0	0	0	0	0	0	0	437
1:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	13:30	2	312	32	1	5	0	1	0	0	0	0	0	0	353
1:45	0	6	0	0	0	0	0	0	0	0	0	0	0	6	13:45	0	345	36	1	7	0	0	0	0	0	0	0	0	389
2:00	0	7	0	0	0	0	0	0	0	0	0	0	0	7	14:00	3	339	36	2	8	0	0	0	0	0	0	0	0	388
2:15	0	7	0	0	0	0	0	0	0	0	0	0	0	7	14:15	0	344	48	1	6	0	0	0	0	0	0	0	0	399
2:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8	14:30	1	367	51	1	17	0	0	0	0	0	0	0	0	437
2:45	0	11	0	0	0	0	0	0	0	0	0	0	0	11	14:45	2	478	35	2	10	1	0	0	0	0	0	0	0	528
3:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5	15:00	2	585	58	1	6	2	1	0	0	0	0	0	0	655
3:15	0	7	0	0	1	0	0	0	0	0	0	0	0	8	15:15	3	617	54	2	7	0	0	0	0	0	0	0	0	683
3:30	0	11	0	0	0	0	0	0	0	0	0	0	0	11	15:30	3	699	54	1	11	0	0	0	0	0	0	0	0	768
3:45	0	10	0	0	0	0	0	0	0	0	0	0	0	10	15:45	1	682	52	3	12	0	0	0	0	0	0	0	0	750
4:00	1	12	1	0	0	0	0	0	0	0	0	0	0	14	16:00	2	701	43	4	5	0	0	0	0	0	0	0	1	756
4:15	0	31	0	0	0	0	0	0	0	0	0	0	0	31	16:15	5	764	32	0	4	1	0	0	0	0	0	0	0	806
4:30	0	29	1	0	0	0	0	0	0	0	0	0	0	30	16:30	3	754	40	1	4	0	0	0	0	0	2	0	0	804
4:45	0	50	0	0	0	0	0	0	0	0	0	0	0	50	16:45	1	839	38	1	2	0	0	0	1	0	1	0	2	885
5:00	1	46	1	0	0	0	0	0	0	0	0	0	0	48	17:00	2	859	43	0	4	0	0	0	0	0	0	0	0	908
5:15	0	90	2	0	1	0	0	0	0	0	0	0	0	93	17:15	3	794	29	0	6	0	0	0	0	0	0	0	0	832
5:30	0	88	10	0	1	0	0	0	1	0	0	0	0	100	17:30	5	847	35	1	3	0	0	0	0	0	0	0	0	891
5:45	1	106	4	0	1	0	0	0	0	0	0	0	0	112	17:45	3	734	31	1	5	0	0	0	0	0	0	0	0	774
6:00	0	137	8	0	1	0	0	0	0	0	0	0	0	146	18:00	1	698	36	0	2	0	0	0	0	0	0	0	0	737
6:15	3	213	10	0	1	0	0	0	1	0	0	0	0	228	18:15	2	626	42	0	4	1	0	0	0	0	0	0	0	675
6:30	2	330	22	3	4	0	0	0	0	0	0	0	0	361	18:30	0	515	29	2	2	0	0	0	0	0	0	0	0	548
6:45	0	417	29	3	7	0	0	0	1	0	0	0	0	457	18:45	1	444	29	0	1	0	0	0	0	0	0	0	0	475
7:00	0	482	21	2	7	0	0	0	0	0	0	0	0	512	19:00	2	350	22	0	0	0	0	0	0	0	0	0	0	374
7:15	4	656	26	3	9	0	0	0	0	0	1	0	0	699	19:15	1	308	24	0	1	0	0	0	0	0	0	0	0	334
7:30	0	721	28	2	11	0	0	0	0	0	1	0	0	763	19:30	1	252	15	0	1	0	0	0	0	0	0	0	0	269
7:45	1	745	40	3	9	0	0	0	0	0	0	0	0	798	19:45	0	254	10	0	1	0	0	0	0	0	0	0	0	265
8:00	2	716	40	4	8	0	0	0	1	0	0	0	2	773	20:00	0	219	4	0	1	0	0	0	0	0	0	0	0	224
8:15	2	734	42	2	7	3	0	0	0	0	0	0	0	790	20:15	0	201	6	0	1	0	0	0	0	0	0	0	0	208
8:30	3	666	29	1	10	0	0	0	0	0	0	0	0	709	20:30	0	176	11	1	0	0	0	0	0	0	0	0	0	188
8:45	1	454	30	4	6	1	0	0	0	0	1	0	0	497	20:45	0	189	5	0	0	0	0	0	0	0	0	0	0	194
9:00	1	391	36	1	7	0	0	0	0	0	1	0	0	437	21:00	1	172	2	0	0	0	0	0	0	0	0	0	0	175
9:15	0	336	38	3	4	0	0	0	0	0	0	0	0	381	21:15	2	193	2	0	1	0	0	0	0	0	0	0	0	198
9:30	2	356	38	0	9	0	0	0	0	0	0	0	0	405	21:30	1	175	2	0	0	0	0	0	0	0	0	0	0	178
9:45	1	342	32	0	12	2	0	0	0	0	0	0	0	389	21:45	0	114	1	0	0	0	0	0	0	0	0	0	0	115
10:00	0	368	40	0	7	0	2	0	0	0	0	0	0	417	22:00	1	105	5	0	0	0	0	0	0	0	0	0	0	111
10:15	0	337	36	1	7	0	0	0	0	0	0	0	0	381	22:15	0	87	6	0	0	0	0	0	0	0	0	0	0	93
10:30	0	280	32	1	7	0	1	0	0	0	0	0	0	321	22:30	2	74	1	0	0	0	0	0	0	0	0	0	0	77
10:45	2	283	31	0	13	1	0	0	0	0	0	0	0	330	22:45	0	47	1	0	0	0	0	0	0	0	0	0	0	48
11:00	5	309	33	0	7	0	1	0	0	0	0	0	0	355	23:00	0	58	1	0	0	0	0	0	0	0	0	0	0	59
11:15	1	311	35	0	9	0	0	0	0	0	0	0	0	356	23:15	0	45	0	0	0	0	0	0	0	0	0	0	0	45
11:30	2	364	32	6	8	1	1	0	0	0	0	0	0	414	23:30	0	29	0	0	0	0	0	0	0	0	0	0	0	29
11:45	0	329	37	2	11	0	1	0	0	0	0	0	0	380	23:45	0	33	1	0	0	0	0	0	0	0	0	0	0	34
TOTAL	35	10,897	767	41	185	8	6	0	4	0	4	0	2	11,949	TOTAL	66	18,353	1,196	37	170	9	5	0	1	0	3	0	3	19,843

AM PEAK HOUR	7:30 AM	PM PEAK HOUR	4:45 PM
AM PEAK VOLUME	3,124	PM PEAK VOLUME	3,516

CLASS 1	Class 1 — Motorcycles	CLASS 8	3 to 4 Axles, Single Trailer
CLASS 2	Passenger Cars	CLASS 9	5 Axles, Single Trailer
CLASS 3	2 Axles, 4-Tire Single Units	CLASS 10	6 or More Axles, Single Trailer
CLASS 4	Buses	CLASS 11	5 or Less Axles, Multi-Trailers
CLASS 5	2 Axles, 6-Tire Single Units	CLASS 12	6 Axles, Multi-Trailers
CLASS 6	3 Axles, Single Unit	CLASS 13	7 or More Axles, Multi-Trailers
CLASS 7	4 or More Axles, Single Unit		

TOTAL: AM+PM	101	29,250	1,963	78	355	17	11	0	5	0	7	0	5	31,792
% OF TOTAL	0.3%	92.0%	6.2%	0.2%	1.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Wednesday, April 26, 2023 | CITY: Orange | PROJECT: SC3962

ADT9 N Cannon St from Santiago Canyon Rd to E Avenida Palmar.

Suhsduhg#e|#DlpWG#OOF##who1#:47#586#:;;;

AM Period	NB		SB			PM Period	NB		SB		
0:00	2		6			12:00	38		42		
0:15	0		4			12:15	58		52		
0:30	4		0			12:30	52		58		
0:45	1	7	0	10	17	12:45	42	190	36	188	378
1:00	0		2			13:00	33		23		
1:15	1		1			13:15	38		40		
1:30	0		0			13:30	34		43		
1:45	0	1	1	4	5	13:45	53	158	38	144	302
2:00	2		1			14:00	47		42		
2:15	1		1			14:15	35		39		
2:30	0		0			14:30	42		43		
2:45	1	4	1	3	7	14:45	41	165	48	172	337
3:00	0		0			15:00	57		32		
3:15	0		0			15:15	72		53		
3:30	2		1			15:30	72		57		
3:45	2	4	0	1	5	15:45	61	262	43	185	447
4:00	2		4			16:00	77		54		
4:15	2		1			16:15	81		49		
4:30	2		2			16:30	71		55		
4:45	8	14	5	12	26	16:45	101	330	61	219	549
5:00	8		1			17:00	104		53		
5:15	6		2			17:15	78		67		
5:30	9		7			17:30	117		65		
5:45	5	28	7	17	45	17:45	105	404	65	250	654
6:00	8		9			18:00	101		42		
6:15	20		25			18:15	64		37		
6:30	28		47			18:30	47		58		
6:45	29	85	48	129	214	18:45	54	266	35	172	438
7:00	30		73			19:00	39		31		
7:15	37		73			19:15	30		42		
7:30	61		110			19:30	22		31		
7:45	91	219	137	393	612	19:45	30	121	26	130	251
8:00	81		67			20:00	29		23		
8:15	51		69			20:15	26		31		
8:30	40		82			20:30	26		29		
8:45	39	211	52	270	481	20:45	19	100	27	110	210
9:00	45		46			21:00	19		19		
9:15	42		39			21:15	16		26		
9:30	36		46			21:30	11		30		
9:45	34	157	35	166	323	21:45	7	53	17	92	145
10:00	34		32			22:00	14		13		
10:15	31		33			22:15	8		22		
10:30	38		42			22:30	12		8		
10:45	40	143	36	143	286	22:45	3	37	9	52	89
11:00	35		35			23:00	6		7		
11:15	33		34			23:15	4		3		
11:30	30		44			23:30	4		6		
11:45	36	134	50	163	297	23:45	3	17	4	20	37
Total Vol.		1007		1311	**2318**			2103		1734	**3837**

Daily Totals

NB	SB	Combined
3110	3045	**6155**

	AM			PM		
Split %	43.4%	56.6%	**37.7%**	54.8%	45.2%	**62.3%**
Peak Hour	7:30	7:00	**7:30**	17:00	17:00	**17:00**
Volume	284	393	**667**	404	250	**654**
P.H.F.	0.78	0.72	**0.73**	0.89	0.93	**0.90**

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Attachment B: Analysis Results

Attachment B Analysis Results

Existing Roadway Segment LOS

	Segment	Lanes	ADT	Capacity[2]	V/C	LOS
1.	Villa Park Road between Wanda Road and Center Drive	4	25,828	37,500	0.69	B
2.	Villa Park Road between Center Drive and Hewes Street	4	23,840	37,500	0.64	B
3.	Villa Park Road between Hewes Street and Cannon Street	4	26,178	37,500	0.7	B
4.	Santiago Canyon Road east of Cannon Street	4	27,610	37,500	0.74	C
5.	Taft Avenue between Santiago Boulevard and Center Drive	2	11,979	22,000	0.54	A
6.	Taft Avenue between Center Drive and Cannon Street	2	6,217	22,000	0.28	A
7.	Serrano Avenue east of Cannon Road	4	18,826	37,500	0.5	A
8.	Santiago Boulevard north of Taft Avenue	4	17,846	37,500	0.48	A
9.	Wanda Road between Villa Park Road and Taft Avenue	4	21,089	37,500	0.56	A
10.	Wanda Road south of Villa Park Road	3	16,529	25,000	0.66	B
11.	Hewes Street south of Villa Park Road	4	9,458	25,000	0.38	A
12.	Cannon Street north of Serrano Avenue	4	19,345	37,500	0.52	A
13.	Cannon Street between Taft Avenue and Serrano Avenue	4	34,370	37,500	0.92	**E**
14.	Cannon Street between Villa Park Road and Taft Avenue	4	31,792	37,500	0.85	**D**
15.	Cannon Street south of Santiago Canyon Road	4	6,155	25,500	0.25	A

Note(s):

1. **Bold** symbolizes segment operates below OCTA MPAH LOS standards.
2. Capacities for LOS E were referenced for arterial types from the MPAH.

Source: Fehr & Peers, 2023.

Existing Intersection LOS

	Intersection	Control	Methodology	Peak Hour	V/C / Delay	LOS
1.	Wanda Road and Villa Park Road	Signalized	ICU / HCM	AM PM	0.743 / 44 0.731 / 44	C / D C / D
2.	Kathleen Lane and Villa Park Road	TWSC	HCM	AM PM	21 15	C B
3.	Morrow Circle and Villa Park Road	TWSC	HCM	AM PM	**43** **56**	**E** **F**
4.	Prado Woods Drive and Villa Park Road	TWSC	HCM	AM PM	32 **40**	D **E**
5.	Kenwick Drive and Villa Park Road	TWSC	HCM	AM PM	**35** 15	**E** C
6.	Radec Court and Villa Park Road	TWSC	HCM	AM PM	**36** **59**	**E** **F**
7.	Center Drive and Villa Park Road	Signalized	ICU / HCM	AM PM	0.533 / 15 0.511 / 6	A / B A / A
8.	Park Villa Lane and Villa Park Road	TWSC	HCM	AM PM	**39** **48**	**E** **E**
9.	Lemon Street and Villa Park Road	Signalized	ICU / HCM	AM PM	0.390 / 5 0.497 / 5	A / A A / A
10.	Hewes Street and Villa Park Road	Signalized	ICU / HCM	AM PM	0.767 / 46 0.605 / 20	C / D B / B
11.	Linda Vista Street and Villa Park Road	TWSC	HCM	AM PM	**>100** **>100**	**F** **F**
12.	Cannon Street and Santiago Canyon Road	Signalized	ICU / HCM	AM PM	0.694 / 45 0.758 / **61**	B / D C / **E**
13.	Cannon Street and Taft Avenue	Signalized	ICU / HCM	AM PM	0.893 / **63** **0.900** / 55	D / **E** **E** / D
14.	Cannon Street and Serrano Avenue	Signalized	ICU / HCM	AM PM	0.758 / 23 **0.909** / 29	C / C **E** / C
15.	Cannon Street and Loma Street	TWSC	HCM	AM PM	**85** 33	**F** D

Note(s):

1. ">100" is reported for highly congested movements where more than 100 seconds is reported.
2. **Bold** symbolizes segment operates below Jurisdictions' LOS standards.

Source: Fehr & Peers, 2023.

Existing Multimodal LOS

Intersection	Mode	Peak Hour	Delay	LOS
1. Wanda Rod and Villa Park Road	Bike/Pedestrian	AM	52.4/56	D / E
		PM	38.7/60.4	D / E
9. Lemon Street and Villa Park Road	Bike/Pedestrian	AM	5.8/7.7	A / A
		PM	5.7/9.3	A / A
10. Hewes Street and Villa Park Road	Bike/Pedestrian	AM	56.9/56.5	E / E
		PM	60.6/68.1	E / E
12. Cannon Street and Santiago Canyon Road	Bike/Pedestrian	AM	15.6/45.1	B / D
		PM	36.5/49.5	D / D

Source: Fehr & Peers, 2023.

Existing 95th Percentile Queues

Intersection	Movement	Storage (ft)	Peak Hour	Queue (ft)
12. Cannon Street and Santiago Canyon Road	EBL	425	AM	225
			PM	<u>425</u>
	EBT	675	AM	550
			PM	200
	WBL	225	AM	50
			PM	50
	WBT	>1000	AM	275
			PM	750
	WBR	700	AM	0
			PM	500
	NBL	150	AM	**200**
			PM	125
	NBT	500	AM	100
			PM	250
	SBL	550	AM	**600**
			PM	200
	SBT	>1000	AM	450
			PM	200
	SBR	400	AM	300
			PM	150

Notes:
1. Queues were calculated using HCM 7th methodologies and are rounded up to the nearest 25-foot increment.
2. "EB" = eastbound, "WB" = westbound, "NB" = northbound, "SB" = southbound, "L" = left, "T" = through, "R" = right.
3. **Bold** symbolizes movement exceeds available storage capacity.
4. <u>Underlined</u> symbolizes movement is at capacity.

Source: Fehr & Peers, 2023.

Future Year Roadway Segment LOS

	Segment	Lanes	ADT	Capacity[2]	V/C	LOS
1.	Villa Park Road between Wanda Road and Center Drive	4	27,670	37,500	0.74	C
2.	Villa Park Road between Center Drive and Hewes Street	4	25,700	37,500	0.69	B
3.	Villa Park Road between Hewes Street and Cannon Street	4	30,400	37,500	0.81	**D**
4.	Santiago Canyon Road east of Cannon Street	4	30,170	37,500	0.8	**D**
5.	Taft Avenue between Santiago Boulevard and Center Drive	2	11,700	22,000	0.53	A
6.	Taft Avenue between Center Drive and Cannon Street	2	5,530	22,000	0.25	A
7.	Serrano Avenue east of Cannon Road	4	19,270	37,500	0.51	A
8.	Santiago Boulevard north of Taft Avenue	4	18,250	37,500	0.49	A
9.	Wanda Road between Villa Park Road and Taft Avenue	4	21,910	37,500	0.58	A
10.	Wanda Road south of Villa Park Road	4	16,160	25,000	0.65	B
11.	Hewes Street south of Villa Park Road	4	11,770	25,000	0.47	A
12.	Cannon Street north of Serrano Avenue	4	22,660	37,500	0.6	B
13.	Cannon Street between Taft Avenue and Serrano Avenue	5	39,120	46,900	0.83	**D**
14.	Cannon Street between Villa Park Road and Taft Avenue	5	36,890	46,900	0.79	C
15.	Cannon Street south of Santiago Canyon Road	4	7,800	25,500	0.31	A

Note(s):

1. **Bold** symbolizes segment operates below County's LOS standards.
2. Capacities for LOS E were referenced for arterial types from the MPAH.

Source: Fehr & Peers, 2023.

Future Year Intersection LOS

	Intersection	Control	Methodology	Peak Hour	V/C / Delay	LOS
1.	Wanda Rod and Villa Park Road	Signalized	ICU / HCM	AM PM	0.836 / 37 0.774 / 45	D / D C / D
2.	Kathleen Lane and Villa Park Road	TWSC	HCM	AM PM	**64** 15	**F** C
3.	Morrow Circle and Villa Park Road	TWSC	HCM	AM PM	**63** **64**	**F** **F**
4.	Prado Woods Drive and Villa Park Road	TWSC	HCM	AM PM	**50** **79**	**F** **F**
5.	Kenwick Drive and Villa Park Road	TWSC	HCM	AM PM	**63** 15	**F** C
6.	Radec Court and Villa Park Road	TWSC	HCM	AM PM	**60** **>100**	**F** **F**
7.	Center Drive and Villa Park Road	Signalized	ICU / HCM	AM PM	0.585 / 11 0.547 / 7	A / B A / A
8.	Park Villa Lane and Villa Park Road	TWSC	HCM	AM PM	**49** **57**	**E** **F**
9.	Lemon Street and Villa Park Road	Signalized	ICU / HCM	AM PM	0.450 / 5 0.524 / 6	A / A A / A
10.	Hewes Street and Villa Park Road	Signalized	ICU / HCM	AM PM	**0.955 / 70** 0.889 / 25	**E / E** D / C
11.	Linda Vista Street and Villa Park Road	TWSC	HCM	AM PM	**>100** **>100**	**F** **F**
12.	Cannon Street and Santiago Canyon Road	Signalized	ICU / HCM	AM PM	**0.914** / 49 **0.935** / 47	**E** / D **E** / D
13.	Cannon Street and Taft Avenue	Signalized	ICU / HCM	AM PM	**1.064 / >100** 0.783 / 39	**F / F** C / D
14.	Cannon Street and Serrano Avenue	Signalized	ICU / HCM	AM PM	**0.910** / 39 0.696 / 13	**E** / D B / B
15.	Cannon Street and Loma Street	TWSC	HCM	AM PM	**>100** **83**	**F** **F**

Note(s):

1. ">100" is reported for highly congested movements where more than 100 seconds is reported.
2. **Bold** symbolizes segment operates below Jurisdictions' LOS standards.

Source: Fehr & Peers, 2023.

Future Year Multi-modal LOS

Intersection	Mode	Peak Hour	Delay	LOS
1. Wanda Rod and Villa Park Road	Bike/Pedestrian	AM	14.2/73	B / E
		PM	47.8/60.4	D / E
9. Lemon Street and Villa Park Road	Bike/Pedestrian	AM	5.8/8.3	A / A
		PM	6.2/9.6	A / A
10. Hewes Street and Villa Park Road	Bike/Pedestrian	AM	62.7/63.9	E / E
		PM	58.7/65.6	E / E
12. Cannon Street and Santiago Canyon Road	Bike/Pedestrian	AM	22.8/42.2	B / D
		PM	64.3/76.8	E / E

Source: Fehr & Peers, 2023.

Future Year 95th Percentile Queues

Intersection	Movement	Storage (ft)	Peak Hour	Queue (ft)
10. Hewes Street and Villa Park Road	EBT	>1000	AM PM	1,025 475
	WBL	250	AM PM	**1,075** **350**
	WBT	550	AM PM	425 175
	NBL	550	AM PM	450 275
	NBR	550	AM PM	125 225
12. Cannon Street and Santiago Canyon Road	EBL	425	AM PM	175 **675**
	EBT	675	AM PM	375 250
	WBL	225	AM PM	50 50
	WBT	>1000	AM PM	325 925
	WBR	700	AM PM	0 625
	NBL	150	AM PM	**225** 125
	NBT	500	AM PM	125 350
	SBL	550	AM PM	475 250
	SBT	>1000	AM PM	475 275
	SBR	400	AM PM	**1,025** **600**

Notes:
1. Queues were calculated using HCM 7th methodologies and are rounded up to the nearest 25-foot increment.
2. "EB" = eastbound, "WB" = westbound, "NB" = northbound, "SB" = southbound, "L" = left, "T" = through, "R" = right.
3. **Bold** symbolizes movement is at or exceeds available storage capacity.

Source: Fehr & Peers, 2023.

Attachment C: Intersection Level of Service Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	300	959	302	60	983	130	212	453	130	168	342	378
Future Volume (veh/h)	300	959	302	60	983	130	212	453	130	168	342	378
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1634	1634	1634	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	319	1020	198	64	1046	100	226	482	118	179	364	352
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	5	5	5	5	5	5	1	1	1	1	1	1
Cap, veh/h	471	1406	867	114	1113	699	277	710	172	233	426	592
Arrive On Green	0.16	0.45	0.45	0.07	0.36	0.36	0.17	0.28	0.25	0.15	0.25	0.25
Sat Flow, veh/h	3018	3104	1382	1556	3104	1384	1606	2538	617	1606	1687	1424
Grp Volume(v), veh/h	319	1020	198	64	1046	100	226	303	297	179	364	352
Grp Sat Flow(s),veh/h/ln	1509	1552	1382	1556	1552	1384	1606	1602	1553	1606	1687	1424
Q Serve(g_s), s	13.0	34.8	8.1	5.2	42.4	2.7	17.6	21.8	22.3	13.9	26.7	6.5
Cycle Q Clear(g_c), s	13.0	34.8	8.1	5.2	42.4	2.7	17.6	21.8	22.3	13.9	26.7	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	471	1406	867	114	1113	699	277	448	434	233	426	592
V/C Ratio(X)	0.68	0.73	0.23	0.56	0.94	0.14	0.82	0.68	0.68	0.77	0.86	0.59
Avail Cap(c_a), veh/h	485	1406	867	227	1113	699	282	448	434	271	432	598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	29.0	10.6	58.3	40.3	6.7	51.8	41.6	42.4	53.4	46.3	12.4
Incr Delay (d2), s/veh	2.9	3.3	0.6	1.6	15.9	0.4	15.4	3.3	3.7	8.8	14.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	13.1	2.5	2.1	18.1	1.0	8.2	8.9	8.9	6.2	12.8	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.7	32.3	11.2	59.9	56.3	7.1	67.2	44.9	46.1	62.3	60.9	13.5
LnGrp LOS	D	C	B	E	E	A	E	D	D	E	E	B
Approach Vol, veh/h		1537			1210			826			895	
Approach Delay, s/veh		34.2			52.4			51.4			42.5	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.9	49.0	23.6	34.5	10.5	61.4	20.0	38.1
Change Period (Y+Rc), s	5.5	* 5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	18.0	* 44	20.0	29.5	16.0	45.5	19.0	30.5
Max Q Clear Time (g_c+I1), s	15.0	44.4	19.6	28.7	7.2	36.8	15.9	24.3
Green Ext Time (p_c), s	0.2	0.0	0.0	0.2	0.0	2.1	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	44.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	1249	1134	0	1	9
Future Vol, veh/h	8	1249	1134	0	1	9
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	9	1419	1289	0	1	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1294	0	-	0	2022	650
Stage 1	-	-	-	-	1294	-
Stage 2	-	-	-	-	728	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	542	-	-	-	52	417
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	444	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	539	-	-	-	51	415
Mov Cap-2 Maneuver	-	-	-	-	51	-
Stage 1	-	-	-	-	220	-
Stage 2	-	-	-	-	442	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	539	-	-	-	242
HCM Lane V/C Ratio	0.017	-	-	-	0.047
HCM Control Delay (s)	11.8	-	-	-	20.6
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1245	5	2	1130	4	7
Future Vol, veh/h	1245	5	2	1130	4	7
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1415	6	2	1284	5	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1426	0	2066	713
Stage 1	-	-	-	-	1420	-
Stage 2	-	-	-	-	646	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	483	-	48	379
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	481	-	48	377
Mov Cap-2 Maneuver	-	-	-	-	48	-
Stage 1	-	-	-	-	192	-
Stage 2	-	-	-	-	487	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	42.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	108	-	-	481	-
HCM Lane V/C Ratio	0.116	-	-	0.005	-
HCM Control Delay (s)	42.7	-	-	12.5	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1238	1119	3	4	13
Future Vol, veh/h	14	1238	1119	3	4	13
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	16	1423	1286	3	5	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1294	0	-	0	2035	648
Stage 1	-	-	-	-	1291	-
Stage 2	-	-	-	-	744	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	542	-	-	-	51	418
Stage 1	-	-	-	-	226	-
Stage 2	-	-	-	-	436	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	539	-	-	-	49	416
Mov Cap-2 Maneuver	-	-	-	-	49	-
Stage 1	-	-	-	-	218	-
Stage 2	-	-	-	-	434	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	32.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	539	-	-	-	151
HCM Lane V/C Ratio	0.03	-	-	-	0.129
HCM Control Delay (s)	11.9	-	-	-	32.4
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1238	1115	0	3	7
Future Vol, veh/h	4	1238	1115	0	3	7
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	5	1440	1297	0	3	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1302	0	-	0	2032	654
Stage 1	-	-	-	-	1302	-
Stage 2	-	-	-	-	730	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	539	-	-	-	51	414
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	443	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	536	-	-	-	50	412
Mov Cap-2 Maneuver	-	-	-	-	50	-
Stage 1	-	-	-	-	220	-
Stage 2	-	-	-	-	441	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	35.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	536	-	-	-	130
HCM Lane V/C Ratio	0.009	-	-	-	0.089
HCM Control Delay (s)	11.8	-	-	-	35.4
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.3

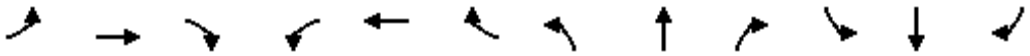
Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1240	1	1	1115	1	2
Future Vol, veh/h	1240	1	1	1115	1	2
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1442	1	1	1297	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1448	0	2098	726
Stage 1	-	-	-	-	1447	-
Stage 2	-	-	-	-	651	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	474	-	46	372
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	486	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	472	-	46	370
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	485	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	36.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	119	-	-	472	-
HCM Lane V/C Ratio	0.028	-	-	0.002	-
HCM Control Delay (s)	36.1	-	-	12.6	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	1067	114	42	921	49	59	102	55	44	119	136
Future Volume (veh/h)	61	1067	114	42	921	49	59	102	55	44	119	136
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1634	1700	1700	1634	1700	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	75	1317	119	52	1137	40	73	126	48	54	147	126
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	5	0	0	5	0	0	0	0	0	0	0
Cap, veh/h	138	1672	758	108	1615	747	293	363	138	387	260	223
Arrive On Green	0.09	0.54	0.54	0.07	0.52	0.52	0.31	0.31	0.27	0.31	0.31	0.31
Sat Flow, veh/h	1619	3104	1408	1619	3104	1435	1119	1169	445	1223	836	717
Grp Volume(v), veh/h	75	1317	119	52	1137	40	73	0	174	54	0	273
Grp Sat Flow(s),veh/h/ln	1619	1552	1408	1619	1552	1435	1119	0	1615	1223	0	1553
Q Serve(g_s), s	2.9	22.3	2.8	2.0	18.2	0.9	3.8	0.0	5.5	2.3	0.0	9.6
Cycle Q Clear(g_c), s	2.9	22.3	2.8	2.0	18.2	0.9	13.5	0.0	5.5	7.9	0.0	9.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.28	1.00		0.46
Lane Grp Cap(c), veh/h	138	1672	758	108	1615	747	293	0	501	387	0	482
V/C Ratio(X)	0.54	0.79	0.16	0.48	0.70	0.05	0.25	0.00	0.35	0.14	0.00	0.57
Avail Cap(c_a), veh/h	541	2046	928	541	2046	946	635	0	995	761	0	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.7	12.1	7.6	29.5	11.9	7.8	24.5	0.0	17.7	20.5	0.0	18.9
Incr Delay (d2), s/veh	1.2	1.7	0.1	1.2	0.8	0.0	0.6	0.0	0.6	0.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	6.2	0.7	0.8	5.0	0.2	1.0	0.0	2.0	0.7	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.0	13.8	7.7	30.7	12.7	7.8	25.2	0.0	18.3	20.7	0.0	20.4
LnGrp LOS	C	B	A	C	B	A	C	A	B	C	A	C
Approach Vol, veh/h		1511			1229			247			327	
Approach Delay, s/veh		14.2			13.3			20.3			20.4	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	37.6		22.5	6.7	36.4		22.5				
Change Period (Y+Rc), s	3.0	5.5		4.5	3.0	5.5		4.5				
Max Green Setting (Gmax), s	20.0	40.0		38.0	20.0	40.0		38.0				
Max Q Clear Time (g_c+I1), s	4.0	24.3		15.5	4.9	20.2		11.6				
Green Ext Time (p_c), s	0.0	7.8		1.8	0.0	7.7		2.8				

Intersection Summary			
HCM 6th Ctrl Delay		14.9	
HCM 6th LOS		B	

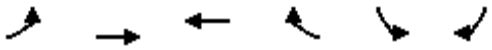
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1160	6	5	1010	2	2
Future Vol, veh/h	1160	6	5	1010	2	2
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	140	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1289	7	6	1122	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1301	0	1867	650
Stage 1	-	-	-	-	1294	-
Stage 2	-	-	-	-	573	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	539	-	66	417
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	533	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	536	-	65	415
Mov Cap-2 Maneuver	-	-	-	-	65	-
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	527	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	38.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	112	-	-	536	-
HCM Lane V/C Ratio	0.04	-	-	0.01	-
HCM Control Delay (s)	38.5	-	-	11.8	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	1093	977	105	113	38
Future Volume (veh/h)	69	1093	977	105	113	38
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1700	1634	1634	1700	1700	1700
Adj Flow Rate, veh/h	78	1242	1110	94	86	89
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	5	5	0	0	0
Cap, veh/h	171	2206	1786	808	284	253
Arrive On Green	0.11	0.71	0.58	0.58	0.18	0.18
Sat Flow, veh/h	1619	3186	3186	1404	1619	1441
Grp Volume(v), veh/h	78	1242	1110	94	86	89
Grp Sat Flow(s),veh/h/ln	1619	1552	1552	1404	1619	1441
Q Serve(g_s), s	1.7	7.3	8.9	1.1	1.7	2.0
Cycle Q Clear(g_c), s	1.7	7.3	8.9	1.1	1.7	2.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	171	2206	1786	808	284	253
V/C Ratio(X)	0.46	0.56	0.62	0.12	0.30	0.35
Avail Cap(c_a), veh/h	940	3556	3556	1608	1610	1433
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.8	2.6	5.3	3.6	13.5	13.7
Incr Delay (d2), s/veh	0.7	0.2	0.4	0.1	0.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.7	0.1	0.6	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.5	2.9	5.6	3.7	14.4	14.9
LnGrp LOS	B	A	A	A	B	B
Approach Vol, veh/h		1320	1204		175	
Approach Delay, s/veh		3.7	5.5		14.6	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	5.1	24.0		8.6		29.1
Change Period (Y+Rc), s	3.0	5.5		4.5		5.5
Max Green Setting (Gmax), s	20.0	40.0		35.0		40.0
Max Q Clear Time (g_c+I1), s	3.7	10.9		4.0		9.3
Green Ext Time (p_c), s	0.0	7.6		0.9		10.6

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	995	211	450	880	202	285
Future Volume (vph)	995	211	450	880	202	285
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3076	1355	1538	3076	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3076	1355	1538	3076	1568	1403
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	1118	237	506	989	227	320
RTOR Reduction (vph)	0	43	0	0	0	270
Lane Group Flow (vph)	1118	194	506	989	227	50
Confl. Peds. (#/hr)		2			1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	49.7	49.7	34.0	89.7	15.5	15.5
Effective Green, g (s)	54.7	54.7	39.0	94.7	20.5	20.5
Actuated g/C Ratio	0.42	0.42	0.30	0.73	0.16	0.16
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1294	570	461	2240	247	221
v/s Ratio Prot	c0.36		c0.33	0.32	c0.14	0.04
v/s Ratio Perm		0.14				
v/c Ratio	0.86	0.34	1.10	0.44	0.92	0.23
Uniform Delay, d1	34.3	25.5	45.5	7.1	53.9	47.8
Progression Factor	1.00	1.00	1.14	0.71	1.00	1.00
Incremental Delay, d2	7.8	1.6	67.1	0.5	35.2	0.2
Delay (s)	42.1	27.1	119.0	5.5	89.2	48.0
Level of Service	D	C	F	A	F	D
Approach Delay (s)	39.5			43.9	65.1	
Approach LOS	D			D	E	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	21.4

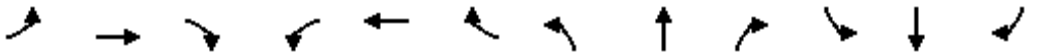
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	1173	39	5	1218	99	9	1	21	27	0	103
Future Vol, veh/h	68	1173	39	5	1218	99	9	1	21	27	0	103
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	100	140	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	5	5	0	0	5	5	0	0	0	3	3	3
Mvmt Flow	74	1275	42	5	1324	108	10	1	23	29	0	112

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1437	0	0	1322	0	0	2100	2875	643	2125	2809	667
Stage 1	-	-	-	-	-	-	1428	1428	-	1339	1339	-
Stage 2	-	-	-	-	-	-	672	1447	-	786	1470	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.5	6.5	6.9	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Follow-up Hdwy	2.25	-	-	2.2	-	-	3.5	4	3.3	3.53	4.03	3.33
Pot Cap-1 Maneuver	453	-	-	529	-	-	30	17	421	~ 28	18	399
Stage 1	-	-	-	-	-	-	144	203	-	160	218	-
Stage 2	-	-	-	-	-	-	416	198	-	349	188	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	451	-	-	526	-	-	19	14	419	~ 22	15	397
Mov Cap-2 Maneuver	-	-	-	-	-	-	19	14	-	~ 22	15	-
Stage 1	-	-	-	-	-	-	120	169	-	133	215	-
Stage 2	-	-	-	-	-	-	296	195	-	274	156	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0	157.7	$ 410.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	52	451	-	-	526	-	-	87
HCM Lane V/C Ratio	0.648	0.164	-	-	0.01	-	-	1.624
HCM Control Delay (s)	157.7	14.5	-	-	11.9	-	-	$ 410.4
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.6	0.6	-	-	0	-	-	11.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	364	766	91	16	469	366	139	109	36	1294	319	714
Future Volume (veh/h)	364	766	91	16	469	366	139	109	36	1294	319	714
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1660	1660	1660	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	375	790	88	16	484	0	143	112	11	1334	329	636
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	5	5	3	3	3	2	2	2	2	2	2
Cap, veh/h	507	863	96	86	621		217	398	39	2151	753	877
Arrive On Green	0.06	0.10	0.10	0.05	0.20	0.00	0.14	0.14	0.10	0.45	0.45	0.45
Sat Flow, veh/h	3018	2811	313	1581	3154	1407	1594	2924	283	4781	1673	1413
Grp Volume(v), veh/h	375	436	442	16	484	0	143	60	63	1334	329	636
Grp Sat Flow(s),veh/h/ln	1509	1552	1572	1581	1577	1407	1594	1590	1618	1594	1673	1413
Q Serve(g_s), s	15.9	36.2	36.2	1.3	18.9	0.0	11.1	4.4	4.6	27.7	17.5	40.4
Cycle Q Clear(g_c), s	15.9	36.2	36.2	1.3	18.9	0.0	11.1	4.4	4.6	27.7	17.5	40.4
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	507	476	482	86	621		217	216	220	2151	753	877
V/C Ratio(X)	0.74	0.92	0.92	0.19	0.78		0.66	0.28	0.29	0.62	0.44	0.73
Avail Cap(c_a), veh/h	662	476	482	208	692		292	291	296	2151	753	877
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.6	56.7	56.8	58.7	49.5	0.0	53.3	50.4	50.8	27.3	24.5	17.1
Incr Delay (d2), s/veh	2.0	21.9	21.8	0.4	4.4	0.0	1.3	0.3	0.3	1.4	1.8	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	17.9	18.1	0.5	7.6	0.0	4.5	1.8	1.9	10.3	7.1	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	78.7	78.5	59.1	53.9	0.0	54.6	50.7	51.1	28.6	26.3	22.3
LnGrp LOS	E	E	E	E	D		D	D	D	C	C	C
Approach Vol, veh/h		1253			500	A		266			2299	
Approach Delay, s/veh		73.2			54.1			52.9			26.6	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.3	27.1		60.7	8.4	42.0		18.9				
Change Period (Y+Rc), s	5.0	5.5		6.0	5.5	* 6.5		5.5				
Max Green Setting (Gmax), s	25.0	24.5		39.0	13.0	* 36		19.5				
Max Q Clear Time (g_c+I1), s	17.9	20.9		42.4	3.3	38.2		13.1				
Green Ext Time (p_c), s	0.4	0.7		0.0	0.0	0.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		44.9
HCM 6th LOS		D

Notes

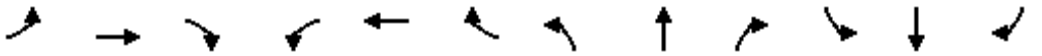
User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
12: Cannon St & Santiago Canyon Road Alt2

02/28/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Future Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	1042	562	75	21	1083	0	83	479	19	521	260	492
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	1	1	1
Cap, veh/h	804	2867	381	93	2573		139	625	25	623	541	1500
Arrive On Green	0.26	1.00	1.00	0.06	0.81	0.00	0.09	0.20	0.16	0.20	0.32	0.32
Sat Flow, veh/h	3092	2815	375	1594	3180	1418	1606	3140	124	3116	1687	2482
Grp Volume(v), veh/h	1042	317	320	21	1083	0	83	244	254	521	260	492
Grp Sat Flow(s),veh/h/ln	1546	1590	1600	1594	1590	1418	1606	1602	1662	1558	1687	1241
Q Serve(g_s), s	31.2	0.0	0.0	1.5	11.8	0.0	6.0	17.3	17.4	19.3	14.9	11.8
Cycle Q Clear(g_c), s	31.2	0.0	0.0	1.5	11.8	0.0	6.0	17.3	17.4	19.3	14.9	11.8
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	804	1619	1629	93	2573		139	319	331	623	541	1500
V/C Ratio(X)	1.30	0.20	0.20	0.23	0.42		0.60	0.76	0.77	0.84	0.48	0.33
Avail Cap(c_a), veh/h	804	1619	1629	139	2573		139	320	332	623	541	1500
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	0.0	0.0	53.9	3.3	0.0	52.8	45.4	45.6	46.1	32.7	11.9
Incr Delay (d2), s/veh	140.8	0.2	0.2	0.5	0.5	0.0	4.8	9.5	9.3	9.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.1	0.1	0.1	0.6	2.3	0.0	2.6	7.6	7.9	8.0	5.9	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	185.2	0.2	0.2	54.3	3.8	0.0	57.6	54.9	54.9	55.2	33.0	12.0
LnGrp LOS	F	A	A	D	A		E	D	D	E	C	B
Approach Vol, veh/h		1679			1104			581			1273	
Approach Delay, s/veh		115.0			4.8			55.3			34.0	
Approach LOS		F			A			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	101.1	11.0	39.9	7.5	127.6	26.0	24.9
Change Period (Y+Rc), s	5.0	* 6.5	5.0	6.0	5.0	6.5	6.0	* 5.5
Max Green Setting (Gmax), s	29.0	* 31	6.0	33.0	6.0	52.5	20.0	* 20
Max Q Clear Time (g_c+I1), s	33.2	13.8	8.0	16.9	3.5	2.0	21.3	19.4
Green Ext Time (p_c), s	0.0	4.3	0.0	1.9	0.0	2.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	59.0
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
12: Cannon St & Santiago Canyon Road Alt3

02/28/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Future Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	1042	562	75	21	1083	0	83	479	19	521	260	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	1	1	1
Cap, veh/h	804	2867	381	93	2573		139	625	25	623	1028	
Arrive On Green	0.26	1.00	1.00	0.06	0.81	0.00	0.09	0.20	0.16	0.20	0.32	0.00
Sat Flow, veh/h	3092	2815	375	1594	3180	1418	1606	3140	124	3116	3205	1429
Grp Volume(v), veh/h	1042	317	320	21	1083	0	83	244	254	521	260	0
Grp Sat Flow(s),veh/h/ln	1546	1590	1600	1594	1590	1418	1606	1602	1662	1558	1602	1429
Q Serve(g_s), s	31.2	0.0	0.0	1.5	11.8	0.0	6.0	17.3	17.4	19.3	7.2	0.0
Cycle Q Clear(g_c), s	31.2	0.0	0.0	1.5	11.8	0.0	6.0	17.3	17.4	19.3	7.2	0.0
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	804	1619	1629	93	2573		139	319	331	623	1028	
V/C Ratio(X)	1.30	0.20	0.20	0.23	0.42		0.60	0.76	0.77	0.84	0.25	
Avail Cap(c_a), veh/h	804	1619	1629	139	2573		139	320	332	623	1028	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.4	0.0	0.0	53.9	3.3	0.0	52.8	45.4	45.6	46.1	30.1	0.0
Incr Delay (d2), s/veh	140.8	0.2	0.2	0.5	0.5	0.0	4.8	9.5	9.3	9.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.1	0.1	0.1	0.6	2.3	0.0	2.6	7.6	7.9	8.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	185.2	0.2	0.2	54.3	3.8	0.0	57.6	54.9	54.9	55.2	30.2	0.0
LnGrp LOS	F	A	A	D	A		E	D	D	E	C	
Approach Vol, veh/h		1679			1104			581			781	
Approach Delay, s/veh		115.0			4.8			55.3			46.9	
Approach LOS		F			A			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	34.0	101.1	11.0	39.9	7.5	127.6	26.0	24.9
Change Period (Y+Rc), s	5.0	* 6.5	5.0	6.0	5.0	6.5	6.0	* 5.5
Max Green Setting (Gmax), s	29.0	* 31	6.0	33.0	6.0	52.5	20.0	* 20
Max Q Clear Time (g_c+I1), s	33.2	13.8	8.0	9.2	3.5	2.0	21.3	19.4
Green Ext Time (p_c), s	0.0	4.3	0.0	0.9	0.0	2.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	64.4
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	2	109	1	2	1	67	771	1	1	2217	230
Future Volume (veh/h)	145	2	109	1	2	1	67	771	1	1	2217	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1700	1700	1700	1700	1700	1673	1700	1700	1673	1700
Adj Flow Rate, veh/h	148	2	97	1	2	1	68	787	1	1	2262	232
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	113	1	302	26	47	16	121	2565	3	44	2152	216
Arrive On Green	0.11	0.14	0.14	0.11	0.14	0.14	0.07	0.79	0.79	0.03	0.74	0.74
Sat Flow, veh/h	530	7	1404	0	345	115	1619	3258	4	1619	2910	292
Grp Volume(v), veh/h	150	0	97	4	0	0	68	384	404	1	1215	1279
Grp Sat Flow(s),veh/h/ln	538	0	1404	461	0	0	1619	1590	1673	1619	1590	1612
Q Serve(g_s), s	0.0	0.0	10.2	0.0	0.0	0.0	7.1	11.9	11.9	0.1	129.4	129.4
Cycle Q Clear(g_c), s	20.0	0.0	10.2	20.0	0.0	0.0	7.1	11.9	11.9	0.1	129.4	129.4
Prop In Lane	0.99		1.00	0.25		0.25	1.00		0.00	1.00		0.18
Lane Grp Cap(c), veh/h	102	0	302	78	0	0	121	1252	1317	44	1176	1192
V/C Ratio(X)	1.47	0.00	0.32	0.05	0.00	0.00	0.56	0.31	0.31	0.02	1.03	1.07
Avail Cap(c_a), veh/h	102	0	302	78	0	0	132	1252	1317	88	1176	1192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	79.8	0.0	58.1	66.6	0.0	0.0	78.2	5.2	5.2	82.9	22.8	22.8
Incr Delay (d2), s/veh	255.2	0.0	0.6	0.3	0.0	0.0	2.0	0.6	0.6	0.1	35.2	47.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	0.0	3.7	0.2	0.0	0.0	3.0	3.7	3.8	0.0	52.6	57.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	335.0	0.0	58.7	66.8	0.0	0.0	80.2	5.9	5.8	83.0	58.0	70.7
LnGrp LOS	F	A	E	E	A	A	F	A	A	F	F	F
Approach Vol, veh/h		247			4			856			2495	
Approach Delay, s/veh		226.5			66.8			11.7			64.5	
Approach LOS		F			E			B			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	144.8		25.0	13.8	136.2		25.0
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	5.0	134.0		20.0	10.0	129.0		20.0
Max Q Clear Time (g_c+I1), s	2.1	13.9		22.0	9.1	131.4		22.0
Green Ext Time (p_c), s	0.0	1.3		0.0	0.0	0.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		63.1
HCM 6th LOS		E

Notes

User approved pedestrian interval to be less than phase max green.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1035	145	561	356	51	1413
Future Volume (veh/h)	1035	145	561	356	51	1413
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	1056	106	572	308	52	1442
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1181	690	1527	1247	142	1806
Arrive On Green	0.38	0.40	0.48	0.48	0.09	0.57
Sat Flow, veh/h	3092	1418	3263	1418	1594	3263
Grp Volume(v), veh/h	1056	106	572	308	52	1442
Grp Sat Flow(s),veh/h/ln	1546	1418	1590	1418	1594	1590
Q Serve(g_s), s	32.1	4.1	11.4	3.4	3.1	35.8
Cycle Q Clear(g_c), s	32.1	4.1	11.4	3.4	3.1	35.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	1181	690	1527	1247	142	1806
V/C Ratio(X)	0.89	0.15	0.37	0.25	0.37	0.80
Avail Cap(c_a), veh/h	1527	849	1527	1247	228	1806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	14.2	16.5	0.9	42.9	17.1
Incr Delay (d2), s/veh	5.0	0.0	0.7	0.5	0.6	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	4.5	3.9	4.4	1.2	12.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.0	14.3	17.2	1.4	43.5	20.9
LnGrp LOS	C	B	B	A	D	C
Approach Vol, veh/h	1162		880			1494
Approach Delay, s/veh	32.2		11.7			21.6
Approach LOS	C		B			C

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.6	49.6		40.8		59.2
Change Period (Y+Rc), s	5.0	6.0		5.3		6.0
Max Green Setting (Gmax), s	10.6	27.0		46.7		42.0
Max Q Clear Time (g_c+I1), s	5.1	13.4		34.1		37.8
Green Ext Time (p_c), s	0.0	2.5		1.4		2.5

Intersection Summary	
HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	45	28	678	1419	43
Future Vol, veh/h	34	45	28	678	1419	43
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	35	46	29	692	1448	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1857	729	1497	0	-	0
Stage 1	1453	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	67	370	454	-	-	-
Stage 1	185	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	62	368	452	-	-	-
Mov Cap-2 Maneuver	62	-	-	-	-	-
Stage 1	172	-	-	-	-	-
Stage 2	646	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	84.5	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	452	-	118	-	-
HCM Lane V/C Ratio	0.063	-	0.683	-	-
HCM Control Delay (s)	13.5	-	84.5	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	3.6	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	839	0	0	2327
Future Vol, veh/h	0	0	839	0	0	2327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	0	912	0	0	2529

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2177	456	0	0	912	0
Stage 1	912	-	-	-	-	-
Stage 2	1265	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	41	557	-	-	755	-
Stage 1	357	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	41	557	-	-	755	-
Mov Cap-2 Maneuver	41	-	-	-	-	-
Stage 1	357	-	-	-	-	-
Stage 2	233	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	755	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	917	2448	0
Future Vol, veh/h	0	0	0	917	2448	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	0	0	997	2661	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3160	1331	2661	0	-	0
Stage 1	2661	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	8	147	160	-	-	-
Stage 1	40	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	8	147	160	-	-	-
Mov Cap-2 Maneuver	8	-	-	-	-	-
Stage 1	40	-	-	-	-	-
Stage 2	581	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	160	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	706	0	0	1464
Future Vol, veh/h	0	0	706	0	0	1464
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	0	767	0	0	1591

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	384	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	620	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	620	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-

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MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Report File: N:\...\01_EXAM.pdf

Scenario 1 Existing AM Peak Hour
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Villa Park Rd & Wanda Rd	Signalized	ICU 2	WB Thru	0.743	-	C
7	Villa Park Rd & Center Dr	Signalized	ICU 2	EB Thru	0.553	-	A
9	Villa Park Rd & Lemon St	Signalized	ICU 2	EB Thru	0.390	-	A
10	Villa Park Rd & Hewes St	Signalized	ICU 2	EB Thru	0.767	-	C
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	SB Right	0.694	-	B
13	Taft Ave & Cannon St	Signalized	ICU 2	SB Right	0.893	-	D
14	Serrano Ave & Cannon St	Signalized	ICU 2	SB Thru	0.758	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: Villa Park Rd & Wanda Rd

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.743

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	175.00	100.00	100.00	225.00	100.00	300.00	150.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	212	453	130	168	342	378	300	959	302	60	983	130
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	453	130	168	342	378	300	959	302	60	983	130
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	113	33	42	86	95	75	240	76	15	246	33
Total Analysis Volume [veh/h]	212	453	130	168	342	378	300	959	302	60	983	130
Pedestrian Volume [ped/h]	3			0			3			10		
Bicycle Volume [bicycles/h]	0			0			2			8		

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Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	4	1	6	6	5	2	2
Auxiliary Signal Groups						1,4			3,6			2,7
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.17	0.17	0.10	0.20	0.13	0.09	0.28	0.05	0.04	0.29	0.00
Intersection LOS	C											
Intersection V/C	0.743											

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Intersection Level Of Service Report
Intersection 7: Villa Park Rd & Center Dr

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.553

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	59	102	55	44	119	136	61	1067	114	42	921	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	102	55	44	119	136	61	1067	114	42	921	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	26	14	11	30	34	15	267	29	11	230	12
Total Analysis Volume [veh/h]	59	102	55	44	119	136	61	1067	114	42	921	49
Pedestrian Volume [ped/h]	1			4			9			1		
Bicycle Volume [bicycles/h]	3			0			1			0		

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Intersection Settings

Cycle Length [s]	111
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.09	0.09	0.03	0.15	0.15	0.04	0.31	0.07	0.02	0.27	0.03
Intersection LOS	A											
Intersection V/C	0.553											

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Intersection Level Of Service Report
Intersection 9: Villa Park Rd & Lemon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.390

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1
Entry Pocket Length [ft]	115.00	100.00	180.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	113	38	69	1093	977	105
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	38	69	1093	977	105
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	10	17	273	244	26
Total Analysis Volume [veh/h]	113	38	69	1093	977	105
Pedestrian Volume [ped/h]	5		5		0	
Bicycle Volume [bicycles/h]	2		2		0	

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Intersection Settings

Cycle Length [s]	108
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	4	0	1	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	Lead	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.04	0.32	0.29	0.06
Intersection LOS	A					
Intersection V/C	0.390					

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Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.767

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	202	0	285	0	1	0	0	995	211	450	880	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	202	0	285	0	1	0	0	995	211	450	880	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	0	71	0	0	0	0	249	53	113	220	0
Total Analysis Volume [veh/h]	202	0	285	0	1	0	0	995	211	450	880	0
Pedestrian Volume [ped/h]	2			0			1			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

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Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

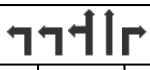
V/C, Movement V/C Ratio	0.12	0.00	0.17	0.00	0.00	0.00	0.00	0.29	0.12	0.26	0.26	0.00
Intersection LOS	C											
Intersection V/C	0.767											

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Intersection Level Of Service Report
Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.694

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	139	109	36	1294	319	714	364	766	91	16	469	366
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	109	36	1294	319	714	364	766	91	16	469	366
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	27	9	324	80	179	91	192	23	4	117	92
Total Analysis Volume [veh/h]	139	109	36	1294	319	714	364	766	91	16	469	366
Pedestrian Volume [ped/h]	0			0			6			0		
Bicycle Volume [bicycles/h]	3			0			0			1		

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Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	4	1	6	0	5	2	0
Auxiliary Signal Groups						1,4						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.04	0.04	0.25	0.19	0.31	0.11	0.25	0.25	0.01	0.14	0.00
Intersection LOS	B											
Intersection V/C	0.694											

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Intersection Level Of Service Report
Intersection 13: Taft Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.893

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	67	771	1	1	2217	230	145	2	109	1	2	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	771	1	1	2217	230	145	2	109	1	2	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	193	0	0	554	58	36	1	27	0	1	0
Total Analysis Volume [veh/h]	67	771	1	1	2217	230	145	2	109	1	2	1
Pedestrian Volume [ped/h]	5			0			5			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

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Intersection Settings

Cycle Length [s]	175
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	4	0	4	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.23	0.23	0.00	0.72	0.72	0.09	0.09	0.02	0.00	0.00	0.00
Intersection LOS	D											
Intersection V/C	0.893											

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Intersection Level Of Service Report
Intersection 14: Serrano Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.758

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	150.00	275.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	561	356	51	1413	1035	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	356	51	1413	1035	145
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	89	13	353	259	36
Total Analysis Volume [veh/h]	561	356	51	1413	1035	145
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

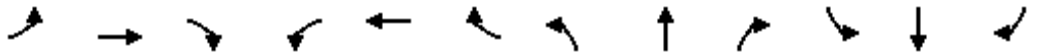
Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Overlap
Signal Group	2	2	1	6	4	4
Auxiliary Signal Groups		2,4				1,4
Lead / Lag	-	-	Lead	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.00	0.03	0.42	0.30	0.06
Intersection LOS	C					
Intersection V/C	0.758					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	376	895	232	59	953	317	150	532	60	114	366	279
Future Volume (veh/h)	376	895	232	59	953	317	150	532	60	114	366	279
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	392	932	140	61	993	293	156	554	57	119	381	240
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	488	1274	729	245	1295	732	195	810	83	170	441	601
Arrive On Green	0.16	0.40	0.40	0.15	0.41	0.41	0.12	0.28	0.25	0.11	0.26	0.26
Sat Flow, veh/h	3092	3180	1399	1594	3180	1418	1594	2904	298	1594	1673	1400
Grp Volume(v), veh/h	392	932	140	61	993	293	156	303	308	119	381	240
Grp Sat Flow(s),veh/h/ln	1546	1590	1399	1594	1590	1418	1594	1590	1612	1594	1673	1400
Q Serve(g_s), s	17.1	34.8	4.1	4.7	37.7	17.6	13.3	23.7	23.9	10.1	30.4	16.6
Cycle Q Clear(g_c), s	17.1	34.8	4.1	4.7	37.7	17.6	13.3	23.7	23.9	10.1	30.4	16.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	488	1274	729	245	1295	732	195	444	450	170	441	601
V/C Ratio(X)	0.80	0.73	0.19	0.25	0.77	0.40	0.80	0.68	0.69	0.70	0.86	0.40
Avail Cap(c_a), veh/h	629	1274	729	245	1295	732	195	444	450	249	512	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	35.6	7.1	52.2	35.8	20.7	59.8	44.9	45.3	60.4	49.1	27.7
Incr Delay (d2), s/veh	4.4	3.7	0.6	0.2	4.4	1.6	19.4	3.5	3.6	1.9	11.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	13.8	1.5	1.9	15.0	6.0	6.4	9.7	9.9	4.2	14.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	39.3	7.7	52.4	40.2	22.3	79.2	48.5	48.9	62.3	60.7	27.9
LnGrp LOS	E	D	A	D	D	C	E	D	D	E	E	C
Approach Vol, veh/h		1464			1347			767			740	
Approach Delay, s/veh		42.2			36.8			54.9			50.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	59.3	18.0	39.1	23.9	59.0	16.0	41.1
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	5.5	* 5.5	4.0	5.5
Max Green Setting (Gmax), s	26.0	41.5	14.0	39.5	14.0	* 54	19.0	34.5
Max Q Clear Time (g_c+I1), s	19.1	39.7	15.3	32.4	6.7	36.8	12.1	25.9
Green Ext Time (p_c), s	0.5	0.7	0.0	1.2	0.0	2.3	0.1	0.9

Intersection Summary	
HCM 6th Ctrl Delay	44.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1065	1347	0	0	2
Future Vol, veh/h	4	1065	1347	0	0	2
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	4	1158	1464	0	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1465	0	-	0	2052	733
Stage 1	-	-	-	-	1465	-
Stage 2	-	-	-	-	587	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	467	-	-	-	49	368
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	524	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	467	-	-	-	48	368
Mov Cap-2 Maneuver	-	-	-	-	48	-
Stage 1	-	-	-	-	180	-
Stage 2	-	-	-	-	523	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	467	-	-	-	368
HCM Lane V/C Ratio	0.009	-	-	-	0.006
HCM Control Delay (s)	12.8	-	-	-	14.8
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1064	1	2	1343	4	1
Future Vol, veh/h	1064	1	2	1343	4	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1157	1	2	1460	4	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1159	0	1892	580
Stage 1	-	-	-	-	1158	-
Stage 2	-	-	-	-	734	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	610	-	63	463
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	609	-	63	463
Mov Cap-2 Maneuver	-	-	-	-	63	-
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	440	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	56
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	76	-	-	609	-
HCM Lane V/C Ratio	0.072	-	-	0.004	-
HCM Control Delay (s)	56	-	-	10.9	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	1047	1341	4	2	4
Future Vol, veh/h	18	1047	1341	4	2	4
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	20	1138	1458	4	2	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1463	0	-	0	2068	730
Stage 1	-	-	-	-	1459	-
Stage 2	-	-	-	-	609	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	468	-	-	-	48	369
Stage 1	-	-	-	-	183	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	468	-	-	-	46	369
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	510	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	39.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	468	-	-	-	110
HCM Lane V/C Ratio	0.042	-	-	-	0.059
HCM Control Delay (s)	13	-	-	-	39.8
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	1043	1337	3	0	8
Future Vol, veh/h	6	1043	1337	3	0	8
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	7	1134	1453	3	0	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1457	0	-	0	2035	728
Stage 1	-	-	-	-	1454	-
Stage 2	-	-	-	-	581	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	470	-	-	-	51	370
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	528	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	470	-	-	-	50	370
Mov Cap-2 Maneuver	-	-	-	-	50	-
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	527	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	470	-	-	-	370
HCM Lane V/C Ratio	0.014	-	-	-	0.024
HCM Control Delay (s)	12.8	-	-	-	15
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

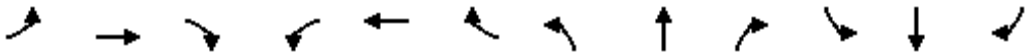
Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1041	2	1	1339	1	0
Future Vol, veh/h	1041	2	1	1339	1	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1119	2	1	1440	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1122	0	1842	561
Stage 1	-	-	-	-	1120	-
Stage 2	-	-	-	-	722	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	630	-	68	476
Stage 1	-	-	-	-	278	-
Stage 2	-	-	-	-	447	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	629	-	68	476
Mov Cap-2 Maneuver	-	-	-	-	68	-
Stage 1	-	-	-	-	278	-
Stage 2	-	-	-	-	446	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	58.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	68	-	-	629	-
HCM Lane V/C Ratio	0.016	-	-	0.002	-
HCM Control Delay (s)	58.8	-	-	10.7	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	950	12	17	1256	85	16	38	16	44	30	68
Future Volume (veh/h)	79	950	12	17	1256	85	16	38	16	44	30	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1673	1700	1700	1673	1700	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	86	1033	11	18	1365	78	17	41	3	48	33	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	170	2158	957	90	2000	906	326	225	16	327	175	58
Arrive On Green	0.11	0.68	0.68	0.06	0.63	0.63	0.14	0.14	0.09	0.14	0.14	0.14
Sat Flow, veh/h	1619	3180	1410	1619	3180	1440	1384	1565	115	1384	1213	404
Grp Volume(v), veh/h	86	1033	11	18	1365	78	17	0	44	48	0	44
Grp Sat Flow(s),veh/h/ln	1619	1590	1410	1619	1590	1440	1384	0	1679	1384	0	1618
Q Serve(g_s), s	2.3	7.0	0.1	0.5	12.6	1.0	0.5	0.0	1.0	1.4	0.0	1.1
Cycle Q Clear(g_c), s	2.3	7.0	0.1	0.5	12.6	1.0	1.6	0.0	1.0	2.5	0.0	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.25
Lane Grp Cap(c), veh/h	170	2158	957	90	2000	906	326	0	242	327	0	233
V/C Ratio(X)	0.51	0.48	0.01	0.20	0.68	0.09	0.05	0.00	0.18	0.15	0.00	0.19
Avail Cap(c_a), veh/h	785	3040	1347	785	3040	1376	1363	0	1501	1365	0	1446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.1	3.5	2.3	20.4	5.4	3.3	17.7	0.0	17.1	18.1	0.0	17.0
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.4	0.4	0.0	0.1	0.0	0.5	0.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.6	0.0	0.2	1.7	0.1	0.1	0.0	0.4	0.4	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.0	3.6	2.4	20.8	5.9	3.3	17.8	0.0	17.6	18.4	0.0	17.6
LnGrp LOS	B	A	A	C	A	A	B	A	B	B	A	B
Approach Vol, veh/h		1130			1461			61			92	
Approach Delay, s/veh		4.9			5.9			17.6			18.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.6	33.0		8.6	5.8	30.7		8.6				
Change Period (Y+Rc), s	3.0	5.5		4.5	3.0	5.5		4.5				
Max Green Setting (Gmax), s	20.0	40.0		38.0	20.0	40.0		38.0				
Max Q Clear Time (g_c+I1), s	2.5	9.0		3.6	4.3	14.6		4.5				
Green Ext Time (p_c), s	0.0	8.1		0.4	0.0	10.6		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		6.1	
HCM 6th LOS		A	

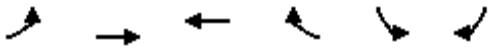
Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1005	5	3	1352	6	2
Future Vol, veh/h	1005	5	3	1352	6	2
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	140	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1069	5	3	1438	6	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1075	0	1795	536
Stage 1	-	-	-	-	1070	-
Stage 2	-	-	-	-	725	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	656	-	73	494
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	446	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	655	-	73	494
Mov Cap-2 Maneuver	-	-	-	-	73	-
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	444	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	47.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	93	-	-	655	-
HCM Lane V/C Ratio	0.092	-	-	0.005	-
HCM Control Delay (s)	47.6	-	-	10.5	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	98	909	1313	102	61	42
Future Volume (veh/h)	98	909	1313	102	61	42
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1700	1673	1673	1700	1700	1700
Adj Flow Rate, veh/h	102	947	1368	91	54	55
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	0	0	0
Cap, veh/h	193	2464	2003	888	203	181
Arrive On Green	0.12	0.77	0.63	0.63	0.13	0.13
Sat Flow, veh/h	1619	3263	3263	1409	1619	1441
Grp Volume(v), veh/h	102	947	1368	91	54	55
Grp Sat Flow(s),veh/h/ln	1619	1590	1590	1409	1619	1441
Q Serve(g_s), s	2.6	4.1	12.1	1.1	1.3	1.5
Cycle Q Clear(g_c), s	2.6	4.1	12.1	1.1	1.3	1.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	193	2464	2003	888	203	181
V/C Ratio(X)	0.53	0.38	0.68	0.10	0.27	0.30
Avail Cap(c_a), veh/h	821	3182	3182	1410	1407	1252
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	1.6	5.2	3.2	17.1	17.2
Incr Delay (d2), s/veh	0.8	0.1	0.4	0.1	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.9	0.1	0.5	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.7	1.7	5.6	3.2	18.1	18.5
LnGrp LOS	B	A	A	A	B	B
Approach Vol, veh/h		1049	1459		109	
Approach Delay, s/veh		3.3	5.5		18.3	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.3	29.5		7.4		35.7
Change Period (Y+Rc), s	3.0	5.5		4.5		5.5
Max Green Setting (Gmax), s	20.0	40.0		35.0		40.0
Max Q Clear Time (g_c+I1), s	4.6	14.1		3.5		6.1
Green Ext Time (p_c), s	0.1	9.9		0.5		7.4

Intersection Summary	
HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	838	132	240	1274	141	312
Future Volume (vph)	838	132	240	1274	141	312
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3167	1398	1583	3167	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3167	1398	1583	3167	1568	1403
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	891	140	255	1355	150	332
RTOR Reduction (vph)	0	23	0	0	0	285
Lane Group Flow (vph)	891	117	255	1355	150	47
Confl. Bikes (#/hr)		3				
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	81.3	81.3	23.7	111.0	15.0	15.0
Effective Green, g (s)	86.3	86.3	28.7	116.0	20.0	20.0
Actuated g/C Ratio	0.62	0.62	0.20	0.83	0.14	0.14
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1952	861	324	2624	224	200
v/s Ratio Prot	0.28		c0.16	c0.43	c0.10	0.03
v/s Ratio Perm		0.08				
v/c Ratio	0.46	0.14	0.79	0.52	0.67	0.24
Uniform Delay, d1	14.3	11.2	52.8	3.6	56.9	53.2
Progression Factor	1.00	1.00	0.86	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3	8.0	0.5	5.8	0.2
Delay (s)	15.1	11.6	53.3	4.1	62.6	53.5
Level of Service	B	B	D	A	E	D
Approach Delay (s)	14.6			11.9	56.3	
Approach LOS	B			B	E	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

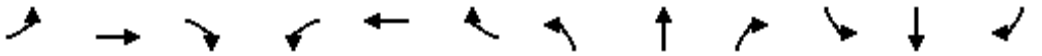
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	1120	22	2	1489	13	6	0	6	9	0	19
Future Vol, veh/h	8	1120	22	2	1489	13	6	0	6	9	0	19
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	100	140	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	0	0	2	2	0	0	0	3	3	3
Mvmt Flow	9	1217	24	2	1618	14	7	0	7	10	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1633	0	0	1242	0	0	2049	2873	610	2250	2883	810
Stage 1	-	-	-	-	-	-	1236	1236	-	1623	1623	-
Stage 2	-	-	-	-	-	-	813	1637	-	627	1260	-
Critical Hdwy	4.14	-	-	4.1	-	-	7.5	6.5	6.9	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Follow-up Hdwy	2.22	-	-	2.2	-	-	3.5	4	3.3	3.53	4.03	3.33
Pot Cap-1 Maneuver	393	-	-	568	-	-	33	17	442	22	16	321
Stage 1	-	-	-	-	-	-	190	250	-	106	158	-
Stage 2	-	-	-	-	-	-	343	160	-	436	238	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	393	-	-	567	-	-	30	17	442	21	16	321
Mov Cap-2 Maneuver	-	-	-	-	-	-	30	17	-	21	16	-
Stage 1	-	-	-	-	-	-	185	244	-	103	157	-
Stage 2	-	-	-	-	-	-	320	159	-	420	232	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	87.8	125.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	56	393	-	-	567	-	-	57
HCM Lane V/C Ratio	0.233	0.022	-	-	0.004	-	-	0.534
HCM Control Delay (s)	87.8	14.4	-	-	11.4	-	-	125.1
HCM Lane LOS	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	2.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	706	356	73	13	996	1477	70	320	10	415	199	438
Future Volume (veh/h)	706	356	73	13	996	1477	70	320	10	415	199	438
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	735	371	68	14	1038	0	73	333	9	376	286	351
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	1	1	1
Cap, veh/h	844	1128	205	268	1016		218	432	12	713	749	714
Arrive On Green	0.09	0.14	0.14	0.17	0.32	0.00	0.14	0.14	0.10	0.22	0.22	0.22
Sat Flow, veh/h	3092	2681	486	1594	3180	1418	1606	3186	86	3213	3373	1409
Grp Volume(v), veh/h	735	218	221	14	1038	0	73	167	175	376	286	351
Grp Sat Flow(s),veh/h/ln	1546	1590	1578	1594	1590	1418	1606	1602	1670	1606	1687	1409
Q Serve(g_s), s	32.9	17.4	17.7	1.0	44.7	0.0	5.8	14.1	14.2	14.4	10.1	23.1
Cycle Q Clear(g_c), s	32.9	17.4	17.7	1.0	44.7	0.0	5.8	14.1	14.2	14.4	10.1	23.1
Prop In Lane	1.00		0.31	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	844	669	664	268	1016		218	217	227	713	749	714
V/C Ratio(X)	0.87	0.33	0.33	0.05	1.02		0.33	0.77	0.77	0.53	0.38	0.49
Avail Cap(c_a), veh/h	881	669	664	268	1016		218	217	227	872	916	784
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	42.4	42.5	48.9	47.6	0.0	54.8	58.4	58.5	48.0	46.3	23.1
Incr Delay (d2), s/veh	8.7	1.3	1.3	0.0	33.9	0.0	0.3	13.9	13.7	0.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.6	7.6	7.7	0.4	21.7	0.0	2.3	6.5	6.8	5.7	4.2	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.0	43.7	43.9	48.9	81.6	0.0	55.1	72.3	72.3	48.2	46.4	23.2
LnGrp LOS	E	D	D	D	F		E	E	E	D	D	C
Approach Vol, veh/h		1174			1052	A		415			1013	
Approach Delay, s/veh		60.2			81.1			69.3			39.1	
Approach LOS		E			F			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	40.3	46.6		33.1	24.9	62.0		20.0				
Change Period (Y+Rc), s	5.0	5.5		6.0	5.5	* 6.5		5.5				
Max Green Setting (Gmax), s	37.0	32.5		34.0	13.0	* 56		14.5				
Max Q Clear Time (g_c+I1), s	34.9	46.7		25.1	3.0	19.7		16.2				
Green Ext Time (p_c), s	0.4	0.0		1.9	0.0	1.4		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		61.4
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	263	0	42	0	1	0	134	2369	0	0	1010	193
Future Volume (veh/h)	263	0	42	0	1	0	134	2369	0	0	1010	193
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1700	1700	1700	1700	1700	1687	1700	1700	1687	1700
Adj Flow Rate, veh/h	268	0	14	0	1	0	137	2417	0	0	1031	188
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	1	0
Cap, veh/h	339	0	457	0	345	0	195	2192	0	92	1693	308
Arrive On Green	0.18	0.00	0.20	0.00	0.20	0.00	0.12	0.68	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1435	0	1418	0	1700	0	1619	3289	0	1619	2697	491
Grp Volume(v), veh/h	268	0	14	0	1	0	137	2417	0	0	612	607
Grp Sat Flow(s),veh/h/ln	1435	0	1418	0	1700	0	1619	1602	0	1619	1602	1585
Q Serve(g_s), s	26.8	0.0	1.0	0.0	0.1	0.0	12.2	102.6	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	26.9	0.0	1.0	0.0	0.1	0.0	12.2	102.6	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.31
Lane Grp Cap(c), veh/h	305	0	457	0	345	0	195	2192	0	92	1006	995
V/C Ratio(X)	0.88	0.00	0.03	0.00	0.00	0.00	0.70	1.10	0.00	0.00	0.61	0.61
Avail Cap(c_a), veh/h	305	0	457	0	345	0	257	2192	0	103	1006	995
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	60.7	0.0	35.0	0.0	47.7	0.0	63.4	23.7	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	23.9	0.0	0.0	0.0	0.0	0.0	3.0	53.8	0.0	0.0	2.7	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.6	0.0	0.4	0.0	0.0	0.0	5.1	49.6	0.0	0.0	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.5	0.0	35.0	0.0	47.7	0.0	66.5	77.5	0.0	0.0	2.7	2.8
LnGrp LOS	F	A	D	A	D	A	E	F	A	A	A	A
Approach Vol, veh/h		282			1			2554			1219	
Approach Delay, s/veh		82.1			47.7			76.9			2.8	
Approach LOS		F			D			E			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	108.0		32.0	19.2	98.8		32.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	5.0	* 1E2		27.0	20.0	87.0		27.0
Max Q Clear Time (g_c+I1), s	0.0	104.6		28.9	14.2	2.0		2.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	2.4		0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	499	63	1244	1388	75	704
Future Volume (veh/h)	499	63	1244	1388	75	704
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	509	19	1269	1351	77	718
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	592	393	2167	1265	135	2436
Arrive On Green	0.19	0.19	0.90	0.92	0.08	0.76
Sat Flow, veh/h	3116	1429	3289	1429	1606	3289
Grp Volume(v), veh/h	509	19	1269	1351	77	718
Grp Sat Flow(s),veh/h/ln	1558	1429	1602	1429	1606	1602
Q Serve(g_s), s	23.7	1.5	12.7	104.2	6.9	10.4
Cycle Q Clear(g_c), s	23.7	1.5	12.7	104.2	6.9	10.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	592	393	2167	1265	135	2436
V/C Ratio(X)	0.86	0.05	0.59	1.07	0.57	0.29
Avail Cap(c_a), veh/h	592	393	2167	1265	203	2436
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.8	39.9	3.1	1.7	66.1	5.6
Incr Delay (d2), s/veh	11.7	0.0	1.2	45.7	1.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	1.4	2.6	51.5	2.9	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	70.5	39.9	4.3	47.4	67.5	5.9
LnGrp LOS	E	D	A	F	E	A
Approach Vol, veh/h	528		2620			795
Approach Delay, s/veh	69.4		26.5			11.8
Approach LOS	E		C			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	13.6	106.4		30.0		120.0
Change Period (Y+Rc), s	5.0	6.0		5.3		6.0
Max Green Setting (Gmax), s	15.0	94.0		24.7		114.0
Max Q Clear Time (g_c+I1), s	8.9	106.2		25.7		12.4
Green Ext Time (p_c), s	0.0	0.0		0.0		3.1

Intersection Summary	
HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	28	38	1269	751	29
Future Vol, veh/h	25	28	38	1269	751	29
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	26	29	40	1336	791	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1540	397	823	0	-	0
Stage 1	792	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	108	608	816	-	-	-
Stage 1	412	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	102	607	815	-	-	-
Mov Cap-2 Maneuver	102	-	-	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	434	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.3	0.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	815	-	182	-	-
HCM Lane V/C Ratio	0.049	-	0.307	-	-
HCM Control Delay (s)	9.6	-	33.3	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	2503	0	0	1052
Future Vol, veh/h	0	0	2503	0	0	1052
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	2721	0	0	1143

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3293	1361	0	0	2721	0
Stage 1	2721	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	7	141	-	-	151	-
Stage 1	37	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	7	141	-	-	151	-
Mov Cap-2 Maneuver	7	-	-	-	-	-
Stage 1	37	-	-	-	-	-
Stage 2	534	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	151	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	2632	1203	0
Future Vol, veh/h	0	0	0	2632	1203	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	2861	1308	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2739	654	1308	0	-	0
Stage 1	1308	-	-	-	-	-
Stage 2	1431	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	17	414	536	-	-	-
Stage 1	221	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	17	414	536	-	-	-
Mov Cap-2 Maneuver	17	-	-	-	-	-
Stage 1	221	-	-	-	-	-
Stage 2	190	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	536	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1307	0	0	779
Future Vol, veh/h	0	0	1307	0	0	779
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	1421	0	0	847

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	711	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	380	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	380	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Report File: N:\...\02_EXPM.pdf

Scenario 2 Exisitng PM Peak Hour
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Villa Park Rd & Wanda Rd	Signalized	ICU 2	WB Thru	0.731	-	C
7	Villa Park Rd & Center Dr	Signalized	ICU 2	WB Thru	0.511	-	A
9	Villa Park Rd & Lemon St	Signalized	ICU 2	WB Thru	0.497	-	A
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Thru	0.605	-	B
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	WB Thru	0.758	-	C
13	Taft Ave & Cannon St	Signalized	ICU 2	NB Thru	0.900	-	E
14	Serrano Ave & Cannon St	Signalized	ICU 2	NB Right	0.909	-	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: Villa Park Rd & Wanda Rd

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.731

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	175.00	100.00	100.00	225.00	100.00	300.00	150.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	150	532	60	114	366	279	376	895	232	59	953	317
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	532	60	114	366	279	376	895	232	59	953	317
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	133	15	29	92	70	94	224	58	15	238	79
Total Analysis Volume [veh/h]	150	532	60	114	366	279	376	895	232	59	953	317
Pedestrian Volume [ped/h]	0			0			0			1		
Bicycle Volume [bicycles/h]	1			0			1			11		

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Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	4	1	6	6	5	2	2
Auxiliary Signal Groups						1,4			3,6			2,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.17	0.17	0.07	0.22	0.05	0.11	0.26	0.05	0.03	0.28	0.12
Intersection LOS	C											
Intersection V/C	0.731											

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Intersection Level Of Service Report
Intersection 7: Villa Park Rd & Center Dr

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.511

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	16	38	16	44	30	68	79	950	12	17	1256	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	38	16	44	30	68	79	950	12	17	1256	85
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	10	4	11	8	17	20	238	3	4	314	21
Total Analysis Volume [veh/h]	16	38	16	44	30	68	79	950	12	17	1256	85
Pedestrian Volume [ped/h]	0			1			0			0		
Bicycle Volume [bicycles/h]	3			0			5			0		

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Intersection Settings

Cycle Length [s]	111
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.03	0.03	0.03	0.06	0.06	0.05	0.28	0.01	0.01	0.37	0.05
Intersection LOS	A											
Intersection V/C	0.511											

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Version 2022 (SP 0-2)

Intersection Level Of Service Report
Intersection 9: Villa Park Rd & Lemon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.497

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1
Entry Pocket Length [ft]	115.00	100.00	180.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	61	42	98	909	1313	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	42	98	909	1313	102
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	11	25	227	328	26
Total Analysis Volume [veh/h]	61	42	98	909	1313	102
Pedestrian Volume [ped/h]	1		1		0	
Bicycle Volume [bicycles/h]	2		2		0	

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Intersection Settings

Cycle Length [s]	108
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	4	0	1	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	Lead	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.06	0.27	0.39	0.06
Intersection LOS	A					
Intersection V/C	0.497					

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Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.605

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	141	0	312	0	6	0	0	838	132	240	1274	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	0	312	0	6	0	0	838	132	240	1274	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	78	0	2	0	0	210	33	60	319	0
Total Analysis Volume [veh/h]	141	0	312	0	6	0	0	838	132	240	1274	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			6			0		

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Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

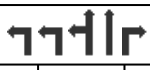
V/C, Movement V/C Ratio	0.08	0.00	0.18	0.00	0.00	0.00	0.00	0.25	0.08	0.14	0.37	0.00
Intersection LOS	B											
Intersection V/C	0.605											

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Version 2022 (SP 0-2)

Intersection Level Of Service Report
Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.758

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	70	320	10	415	199	438	706	356	73	13	996	1477
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	320	10	415	199	438	706	356	73	13	996	1477
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	80	3	104	50	110	177	89	18	3	249	369
Total Analysis Volume [veh/h]	70	320	10	415	199	438	706	356	73	13	996	1477
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	3			3			1			1		

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Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	4	1	6	0	5	2	0
Auxiliary Signal Groups						1,4						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.10	0.10	0.12	0.06	0.05	0.21	0.13	0.13	0.01	0.29	0.00
Intersection LOS	C											
Intersection V/C	0.758											

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Version 2022 (SP 0-2)

Intersection Level Of Service Report
Intersection 13: Taft Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.900

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	134	2369	0	0	1010	193	263	0	42	0	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	2369	0	0	1010	193	263	0	42	0	1	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	592	0	0	253	48	66	0	11	0	0	0
Total Analysis Volume [veh/h]	134	2369	0	0	1010	193	263	0	42	0	1	0
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

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Intersection Settings

Cycle Length [s]	150
Lost time [s]	8.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	4	0	4	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.70	0.00	0.00	0.35	0.35	0.15	0.00	0.00	0.00	0.00	0.00
Intersection LOS	E											
Intersection V/C	0.900											

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Intersection Level Of Service Report
Intersection 14: Serrano Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.909

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	150.00	275.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	1244	1388	75	704	499	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1244	1388	75	704	499	63
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	311	347	19	176	125	16
Total Analysis Volume [veh/h]	1244	1388	75	704	499	63
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Cycle Length [s]	150
Lost time [s]	8.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Overlap
Signal Group	2	2	1	6	4	4
Auxiliary Signal Groups		2,4				1,4
Lead / Lag	-	-	Lead	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.37	0.67	0.04	0.21	0.15	0.00
Intersection LOS	E					
Intersection V/C	0.909					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	980	310	60	1140	160	230	460	130	200	390	380
Future Volume (veh/h)	310	980	310	60	1140	160	230	460	130	200	390	380
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1634	1634	1634	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	326	1032	255	63	1200	112	242	484	117	211	411	360
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	5	5	5	1	1	1	1	1	1
Cap, veh/h	323	2154	1173	108	2037	1138	245	710	170	264	471	560
Arrive On Green	0.11	0.69	0.69	0.07	0.66	0.66	0.15	0.28	0.25	0.16	0.28	0.28
Sat Flow, veh/h	3018	3104	1383	1556	3104	1384	1606	2545	611	1606	1687	1425
Grp Volume(v), veh/h	326	1032	255	63	1200	112	242	303	298	211	411	360
Grp Sat Flow(s),veh/h/ln	1509	1552	1383	1556	1552	1384	1606	1602	1554	1606	1687	1425
Q Serve(g_s), s	13.9	19.8	1.6	5.1	28.2	2.0	19.5	21.9	22.3	16.4	30.2	28.4
Cycle Q Clear(g_c), s	13.9	19.8	1.6	5.1	28.2	2.0	19.5	21.9	22.3	16.4	30.2	28.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	323	2154	1173	108	2037	1138	245	447	433	264	471	560
V/C Ratio(X)	1.01	0.48	0.22	0.58	0.59	0.10	0.99	0.68	0.69	0.80	0.87	0.64
Avail Cap(c_a), veh/h	323	2154	1173	108	2037	1138	245	447	433	271	477	566
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	9.1	6.0	58.7	12.5	2.2	55.0	41.7	42.5	52.3	44.7	38.1
Incr Delay (d2), s/veh	52.7	0.8	0.4	5.4	1.3	0.2	54.2	3.4	3.8	14.1	15.4	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	6.2	2.1	2.1	9.2	0.4	11.5	8.9	8.9	7.6	14.5	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.7	9.9	6.4	64.1	13.8	2.4	109.2	45.1	46.3	66.3	60.1	39.9
LnGrp LOS	F	A	A	E	B	A	F	D	D	E	E	D
Approach Vol, veh/h		1613			1375			843			982	
Approach Delay, s/veh		29.7			15.1			63.9			54.0	
Approach LOS		C			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	88.7	22.5	38.0	10.0	93.7	22.4	38.0
Change Period (Y+Rc), s	4.0	5.5	5.5	* 5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	11.0	50.0	17.0	* 33	6.0	55.0	19.0	31.0
Max Q Clear Time (g_c+I1), s	15.9	30.2	21.5	32.2	7.1	21.8	18.4	24.3
Green Ext Time (p_c), s	0.0	3.2	0.0	0.3	0.0	2.8	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	36.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1300	1310	0	10	10
Future Vol, veh/h	10	1300	1310	0	10	10
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	11	1368	1379	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1384	0	-	0	2090	695
Stage 1	-	-	-	-	1384	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	501	-	-	-	46	389
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	456	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	499	-	-	-	45	387
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	196	-
Stage 2	-	-	-	-	454	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	64.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	499	-	-	-	81
HCM Lane V/C Ratio	0.021	-	-	-	0.26
HCM Control Delay (s)	12.4	-	-	-	64.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1300	10	10	1300	10	10
Future Vol, veh/h	1300	10	10	1300	10	10
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1368	11	11	1368	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1384	0	2079	689
Stage 1	-	-	-	-	1373	-
Stage 2	-	-	-	-	706	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	501	-	47	393
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	456	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	499	-	46	391
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	203	-
Stage 2	-	-	-	-	446	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	63.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	82	-	-	499	-
HCM Lane V/C Ratio	0.257	-	-	0.021	-
HCM Control Delay (s)	63.4	-	-	12.4	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1290	1290	10	10	20
Future Vol, veh/h	20	1290	1290	10	10	20
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	21	1358	1358	11	11	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1374	0	-	0	2084	684
Stage 1	-	-	-	-	1363	-
Stage 2	-	-	-	-	721	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	506	-	-	-	47	396
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	448	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	504	-	-	-	45	394
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	197	-
Stage 2	-	-	-	-	446	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	50.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	504	-	-	-	110
HCM Lane V/C Ratio	0.042	-	-	-	0.287
HCM Control Delay (s)	12.5	-	-	-	50.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1290	1290	0	10	10
Future Vol, veh/h	10	1290	1290	0	10	10
Conflicting Peds, #/hr	5	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	11	1358	1358	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1363	0	-	0	2064	684
Stage 1	-	-	-	-	1363	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	511	-	-	-	48	396
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	509	-	-	-	46	394
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	63.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	509	-	-	-	82
HCM Lane V/C Ratio	0.021	-	-	-	0.257
HCM Control Delay (s)	12.2	-	-	-	63.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

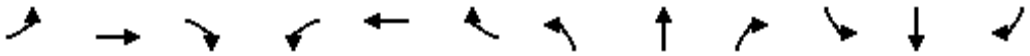
Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1290	10	10	1290	10	10
Future Vol, veh/h	1290	10	10	1290	10	10
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1358	11	11	1358	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1374	0	2064	684
Stage 1	-	-	-	-	1363	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	506	-	48	396
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	504	-	47	394
Mov Cap-2 Maneuver	-	-	-	-	47	-
Stage 1	-	-	-	-	206	-
Stage 2	-	-	-	-	449	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	59.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	86	-	-	504	-
HCM Lane V/C Ratio	0.239	-	-	0.021	-
HCM Control Delay (s)	59.5	-	-	12.3	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1110	120	50	1100	50	60	110	60	50	120	140
Future Volume (veh/h)	70	1110	120	50	1100	50	60	110	60	50	120	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	0.99		0.99	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1634	1700	1700	1634	1700	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	74	1168	104	53	1158	33	63	116	43	53	126	105
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	5	0	0	5	0	0	0	0	0	0	0
Cap, veh/h	143	1676	760	116	1624	751	322	343	127	391	246	205
Arrive On Green	0.09	0.54	0.54	0.07	0.52	0.52	0.29	0.29	0.25	0.29	0.29	0.29
Sat Flow, veh/h	1619	3104	1408	1619	3104	1435	1161	1179	437	1239	848	706
Grp Volume(v), veh/h	74	1168	104	53	1158	33	63	0	159	53	0	231
Grp Sat Flow(s),veh/h/ln	1619	1552	1408	1619	1552	1435	1161	0	1616	1239	0	1554
Q Serve(g_s), s	2.5	15.6	2.1	1.8	16.0	0.6	2.7	0.0	4.4	2.0	0.0	7.0
Cycle Q Clear(g_c), s	2.5	15.6	2.1	1.8	16.0	0.6	9.7	0.0	4.4	6.4	0.0	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.27	1.00		0.45
Lane Grp Cap(c), veh/h	143	1676	760	116	1624	751	322	0	470	391	0	452
V/C Ratio(X)	0.52	0.70	0.14	0.46	0.71	0.04	0.20	0.00	0.34	0.14	0.00	0.51
Avail Cap(c_a), veh/h	630	2382	1080	630	2382	1101	818	0	1160	920	0	1116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.5	9.5	6.4	25.1	10.2	6.5	20.7	0.0	16.0	18.2	0.0	16.6
Incr Delay (d2), s/veh	1.1	0.5	0.1	1.0	0.6	0.0	0.4	0.0	0.6	0.2	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	3.7	0.5	0.6	3.9	0.1	0.7	0.0	1.6	0.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.6	10.1	6.5	26.1	10.8	6.6	21.1	0.0	16.6	18.5	0.0	17.9
LnGrp LOS	C	B	A	C	B	A	C	A	B	B	A	B
Approach Vol, veh/h		1346			1244			222			284	
Approach Delay, s/veh		10.7			11.3			17.9			18.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	32.7		18.5	6.1	31.7		18.5				
Change Period (Y+Rc), s	3.0	5.5		4.5	3.0	5.5		4.5				
Max Green Setting (Gmax), s	20.0	40.0		38.0	20.0	40.0		38.0				
Max Q Clear Time (g_c+I1), s	3.8	17.6		11.7	4.5	18.0		9.0				
Green Ext Time (p_c), s	0.0	8.0		1.7	0.0	8.3		2.4				

Intersection Summary			
HCM 6th Ctrl Delay		12.1	
HCM 6th LOS		B	

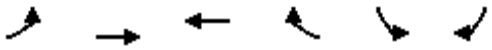
Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1210	10	10	1190	10	10
Future Vol, veh/h	1210	10	10	1190	10	10
Conflicting Peds, #/hr	0	5	5	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	140	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1274	11	11	1253	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1290	0	1928	642
Stage 1	-	-	-	-	1279	-
Stage 2	-	-	-	-	649	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	544	-	60	422
Stage 1	-	-	-	-	229	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	541	-	59	420
Mov Cap-2 Maneuver	-	-	-	-	59	-
Stage 1	-	-	-	-	228	-
Stage 2	-	-	-	-	477	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	48.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	103	-	-	541	-
HCM Lane V/C Ratio	0.204	-	-	0.019	-
HCM Control Delay (s)	48.7	-	-	11.8	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	1150	1160	110	120	40
Future Volume (veh/h)	70	1150	1160	110	120	40
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1700	1634	1634	1700	1700	1700
Adj Flow Rate, veh/h	74	1211	1221	96	84	87
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	5	5	0	0	0
Cap, veh/h	161	2256	1862	842	271	241
Arrive On Green	0.10	0.73	0.60	0.60	0.17	0.17
Sat Flow, veh/h	1619	3186	3186	1404	1619	1441
Grp Volume(v), veh/h	74	1211	1221	96	84	87
Grp Sat Flow(s),veh/h/ln	1619	1552	1552	1404	1619	1441
Q Serve(g_s), s	1.7	7.1	10.5	1.2	1.8	2.2
Cycle Q Clear(g_c), s	1.7	7.1	10.5	1.2	1.8	2.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	161	2256	1862	842	271	241
V/C Ratio(X)	0.46	0.54	0.66	0.11	0.31	0.36
Avail Cap(c_a), veh/h	876	3312	3312	1498	1499	1334
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.2	2.5	5.3	3.5	14.8	14.9
Incr Delay (d2), s/veh	0.8	0.2	0.4	0.1	0.9	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	0.8	0.1	0.6	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.9	2.7	5.7	3.5	15.7	16.2
LnGrp LOS	B	A	A	A	B	B
Approach Vol, veh/h		1285	1317		171	
Approach Delay, s/veh		3.6	5.6		16.0	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	5.1	26.6		8.8		31.7
Change Period (Y+Rc), s	3.0	5.5		4.5		5.5
Max Green Setting (Gmax), s	20.0	40.0		35.0		40.0
Max Q Clear Time (g_c+I1), s	3.7	12.5		4.2		9.1
Green Ext Time (p_c), s	0.0	8.6		0.8		10.2

Intersection Summary	
HCM 6th Ctrl Delay	5.3
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1050	220	700	1060	210	310
Future Volume (vph)	1050	220	700	1060	210	310
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3076	1354	1538	3076	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3076	1354	1538	3076	1568	1403
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1105	232	737	1116	221	326
RTOR Reduction (vph)	0	39	0	0	0	291
Lane Group Flow (vph)	1105	193	737	1116	221	35
Confl. Peds. (#/hr)		2			1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	46.7	46.7	56.0	108.7	10.5	10.5
Effective Green, g (s)	51.7	51.7	61.0	113.7	15.5	15.5
Actuated g/C Ratio	0.36	0.36	0.42	0.78	0.11	0.11
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1096	482	647	2412	167	149
v/s Ratio Prot	c0.36		c0.48	0.36	c0.14	0.02
v/s Ratio Perm		0.14				
v/c Ratio	1.01	0.40	1.14	0.46	1.32	0.23
Uniform Delay, d1	46.6	35.0	42.0	5.3	64.8	59.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.2	2.5	80.3	0.6	181.0	0.3
Delay (s)	75.9	37.5	122.3	5.9	245.7	59.6
Level of Service	E	D	F	A	F	E
Approach Delay (s)	69.2			52.2	134.8	
Approach LOS	E			D	F	

Intersection Summary			
HCM 2000 Control Delay	70.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	20.3

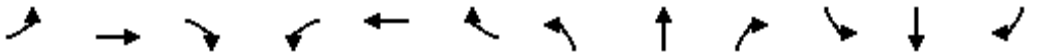
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	1250	40	10	1640	100	10	10	30	30	0	110
Future Vol, veh/h	70	1250	40	10	1640	100	10	10	30	30	0	110
Conflicting Peds, #/hr	5	0	5	5	0	5	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	100	140	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	5	0	0	5	5	0	0	0	3	3	3
Mvmt Flow	74	1316	42	11	1726	105	11	11	32	32	0	116

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1836	0	0	1363	0	0	2354	3327	663	2565	3264	868
Stage 1	-	-	-	-	-	-	1469	1469	-	1753	1753	-
Stage 2	-	-	-	-	-	-	885	1858	-	812	1511	-
Critical Hdwy	4.2	-	-	4.1	-	-	7.5	6.5	6.9	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Follow-up Hdwy	2.25	-	-	2.2	-	-	3.5	4	3.3	3.53	4.03	3.33
Pot Cap-1 Maneuver	316	-	-	511	-	-	19	~ 8	409	~ 13	9	294
Stage 1	-	-	-	-	-	-	136	194	-	88	136	-
Stage 2	-	-	-	-	-	-	310	125	-	337	180	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	314	-	-	509	-	-	~ 9	~ 6	407	-	7	293
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 9	~ 6	-	-	7	-
Stage 1	-	-	-	-	-	-	103	147	-	67	132	-
Stage 2	-	-	-	-	-	-	183	122	-	221	137	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.1	$ 1309.1	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	18	314	-	-	509	-	-	-
HCM Lane V/C Ratio	2.924	0.235	-	-	0.021	-	-	-
HCM Control Delay (s)	$ 1309.1	19.9	-	-	12.2	-	-	-
HCM Lane LOS	F	C	-	-	B	-	-	-
HCM 95th %tile Q(veh)	7.1	0.9	-	-	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	810	100	20	560	500	150	190	40	1300	480	1040
Future Volume (veh/h)	400	810	100	20	560	500	150	190	40	1300	480	1040
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1660	1660	1660	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	412	835	96	21	577	0	155	196	23	1366	459	1013
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	5	5	3	3	3	2	2	2	2	2	2
Cap, veh/h	596	994	114	106	724		167	301	35	2003	701	880
Arrive On Green	0.20	0.35	0.31	0.07	0.23	0.00	0.10	0.10	0.05	0.42	0.42	0.42
Sat Flow, veh/h	3018	2800	322	1581	3154	1407	1594	2865	332	4781	1673	1412
Grp Volume(v), veh/h	412	463	468	21	577	0	155	108	111	1366	459	1013
Grp Sat Flow(s),veh/h/ln	1509	1552	1570	1581	1577	1407	1594	1590	1607	1594	1673	1412
Q Serve(g_s), s	12.7	27.4	27.5	1.3	17.2	0.0	9.6	6.5	6.7	23.2	22.0	41.9
Cycle Q Clear(g_c), s	12.7	27.4	27.5	1.3	17.2	0.0	9.6	6.5	6.7	23.2	22.0	41.9
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	596	551	557	106	724		167	167	169	2003	701	880
V/C Ratio(X)	0.69	0.84	0.84	0.20	0.80		0.93	0.64	0.66	0.68	0.65	1.15
Avail Cap(c_a), veh/h	860	594	601	150	724		167	167	169	2003	701	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	29.6	30.1	44.1	36.3	0.0	44.4	43.0	43.5	23.6	23.3	18.9
Incr Delay (d2), s/veh	0.5	9.0	9.0	0.3	5.7	0.0	47.8	6.5	7.4	1.9	4.7	81.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	10.7	11.0	0.5	6.8	0.0	5.9	2.8	3.0	8.4	8.9	36.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.8	38.7	39.1	44.4	42.1	0.0	92.2	49.5	50.9	25.5	28.0	99.9
LnGrp LOS	D	D	D	D	D		F	D	D	C	C	F
Approach Vol, veh/h		1343			598	A		374			2838	
Approach Delay, s/veh		38.6			42.2			67.6			52.5	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.2	24.0		43.8	7.7	37.5		11.0				
Change Period (Y+Rc), s	5.0	5.5		6.0	5.5	* 6.5		5.5				
Max Green Setting (Gmax), s	25.0	14.8		32.7	5.0	* 34		5.5				
Max Q Clear Time (g_c+I1), s	15.7	19.2		43.9	3.3	29.5		11.6				
Green Ext Time (p_c), s	0.6	0.0		0.0	0.0	1.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			48.7									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	10	110	10	10	10	70	1010	10	10	2700	230
Future Volume (veh/h)	150	10	110	10	10	10	70	1010	10	10	2700	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1700	1700	1700	1700	1700	1673	1700	1700	1673	1700
Adj Flow Rate, veh/h	153	10	69	10	10	3	71	1031	10	10	2755	233
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	168	8	348	30	24	4	111	3359	33	74	2087	174
Arrive On Green	0.15	0.18	0.18	0.15	0.18	0.18	0.07	0.72	0.73	0.05	0.70	0.70
Sat Flow, veh/h	729	48	1408	0	139	21	1619	4666	45	1619	2965	247
Grp Volume(v), veh/h	163	0	69	23	0	0	71	673	368	10	1456	1532
Grp Sat Flow(s),veh/h/ln	776	0	1408	160	0	0	1619	1523	1665	1619	1590	1622
Q Serve(g_s), s	0.0	0.0	6.8	0.0	0.0	0.0	7.5	13.9	13.9	1.0	123.2	123.2
Cycle Q Clear(g_c), s	27.0	0.0	6.8	27.0	0.0	0.0	7.5	13.9	13.9	1.0	123.2	123.2
Prop In Lane	0.94		1.00	0.43		0.13	1.00		0.03	1.00		0.15
Lane Grp Cap(c), veh/h	160	0	348	54	0	0	111	2193	1199	74	1119	1142
V/C Ratio(X)	1.02	0.00	0.20	0.42	0.00	0.00	0.64	0.31	0.31	0.14	1.30	1.34
Avail Cap(c_a), veh/h	160	0	348	54	0	0	111	2193	1199	83	1119	1142
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.7	0.0	52.3	62.8	0.0	0.0	79.4	8.8	8.8	80.2	25.9	25.9
Incr Delay (d2), s/veh	76.9	0.0	0.3	5.2	0.0	0.0	9.2	0.4	0.7	0.3	141.9	159.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	0.0	2.5	1.0	0.0	0.0	3.4	4.4	5.0	0.4	85.1	92.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	152.5	0.0	52.6	68.0	0.0	0.0	88.6	9.2	9.5	80.5	167.8	185.8
LnGrp LOS	F	A	D	E	A	A	F	A	A	F	F	F
Approach Vol, veh/h		232			23			1112			2998	
Approach Delay, s/veh		122.8			68.0			14.3			176.7	
Approach LOS		F			E			B			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	40.0	133.0		32.0	13.0	130.0		32.0
Change Period (Y+Rc), s	6.0	* 6		5.0	5.0	6.0		5.0
Max Green Setting (Gmax), s	5.0	* 1.3E2		27.0	8.0	124.0		27.0
Max Q Clear Time (g_c+I1), s	13.0	15.9		29.0	9.5	125.2		29.0
Green Ext Time (p_c), s	0.0	2.1		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	131.9
HCM 6th LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1170	150	800	370	60	1770
Future Volume (veh/h)	1170	150	800	370	60	1770
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	1194	102	816	325	61	1806
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1187	689	1498	2167	142	1800
Arrive On Green	0.38	0.40	0.47	0.47	0.09	0.57
Sat Flow, veh/h	3092	1418	3263	2496	1594	3263
Grp Volume(v), veh/h	1194	102	816	325	61	1806
Grp Sat Flow(s),veh/h/ln	1546	1418	1590	1248	1594	1590
Q Serve(g_s), s	38.4	4.0	18.3	2.0	3.6	56.6
Cycle Q Clear(g_c), s	38.4	4.0	18.3	2.0	3.6	56.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	1187	689	1498	2167	142	1800
V/C Ratio(X)	1.01	0.15	0.54	0.15	0.43	1.00
Avail Cap(c_a), veh/h	1187	689	1498	2167	159	1800
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	14.2	18.8	1.0	43.1	21.7
Incr Delay (d2), s/veh	27.5	0.0	1.4	0.1	0.8	22.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.8	4.3	6.4	2.1	1.4	23.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.3	14.3	20.2	1.1	43.9	43.8
LnGrp LOS	F	B	C	A	D	F
Approach Vol, veh/h	1296		1141			1867
Approach Delay, s/veh	54.8		14.8			43.8
Approach LOS	D		B			D

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.9	49.1		41.0		59.0
Change Period (Y+Rc), s	5.0	6.0		5.3		6.0
Max Green Setting (Gmax), s	6.3	42.0		35.7		53.0
Max Q Clear Time (g_c+I1), s	5.6	20.3		40.4		58.6
Green Ext Time (p_c), s	0.0	4.2		0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	39.4
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	16.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	60	30	920	1770	60
Future Vol, veh/h	40	60	30	920	1770	60
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	2	2	0
Mvmt Flow	41	61	31	939	1806	61

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2343	908	1872	0	-	0
Stage 1	1811	-	-	-	-	-
Stage 2	532	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 31	282	326	-	-	-
Stage 1	118	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 28	281	324	-	-	-
Mov Cap-2 Maneuver	~ 28	-	-	-	-	-
Stage 1	106	-	-	-	-	-
Stage 2	556	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 474.9	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	324	-	61	-	-
HCM Lane V/C Ratio	0.094	-	1.673	-	-
HCM Control Delay (s)	17.3	-	$ 474.9	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.3	-	9.3	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1090	0	0	2820
Future Vol, veh/h	0	0	1090	0	0	2820
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	0	1185	0	0	3065

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2718	593	0	0	1185	0
Stage 1	1185	-	-	-	-	-
Stage 2	1533	-	-	-	-	-
Critical Hdwy	6.25	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.65	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	26	388	-	-	324	-
Stage 1	193	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	26	388	-	-	324	-
Mov Cap-2 Maneuver	26	-	-	-	-	-
Stage 1	193	-	-	-	-	-
Stage 2	164	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	324	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	1170	2940	0
Future Vol, veh/h	0	0	0	1170	2940	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	0	0	0	1272	3196	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3705	1598	3196	0	-	0
Stage 1	3196	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	6	97	98	-	-	-
Stage 1	19	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	6	97	98	-	-	-
Mov Cap-2 Maneuver	6	-	-	-	-	-
Stage 1	19	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	98	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	950	0	0	1830
Future Vol, veh/h	0	0	950	0	0	1830
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	0	0	1033	0	0	1989

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	517	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	509	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	509	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-

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MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Report File: N:\...\03_FYNoImprovementAM.pdf

Scenario 3 Future AM Peak Hour
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Villa Park Rd & Wanda Rd	Signalized	ICU 2	WB Thru	0.836	-	D
7	Villa Park Rd & Center Dr	Signalized	ICU 2	EB Thru	0.585	-	A
9	Villa Park Rd & Lemon St	Signalized	ICU 2	WB Thru	0.450	-	A
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Left	0.955	-	E
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	SB Right	0.914	-	E
13	Taft Ave & Cannon St	Signalized	ICU 2	SB Thru	1.064	-	F
14	Serrano Ave & Cannon St	Signalized	ICU 2	SB Thru	0.910	-	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: Villa Park Rd & Wanda Rd

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.836

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	175.00	100.00	100.00	225.00	100.00	300.00	150.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	230	460	130	200	390	380	310	980	310	60	1140	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	460	130	200	390	380	310	980	310	60	1140	160
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	115	33	50	98	95	78	245	78	15	285	40
Total Analysis Volume [veh/h]	230	460	130	200	390	380	310	980	310	60	1140	160
Pedestrian Volume [ped/h]	3			0			3			10		
Bicycle Volume [bicycles/h]	0			0			2			8		

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Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	4	1	6	6	5	2	2
Auxiliary Signal Groups						1,4			3,6			2,7
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.17	0.17	0.12	0.23	0.13	0.09	0.29	0.05	0.04	0.34	0.00
Intersection LOS	D											
Intersection V/C	0.836											

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Intersection Level Of Service Report
Intersection 7: Villa Park Rd & Center Dr

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.585

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	60	110	60	50	120	140	70	1110	120	50	1100	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	110	60	50	120	140	70	1110	120	50	1100	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	28	15	13	30	35	18	278	30	13	275	13
Total Analysis Volume [veh/h]	60	110	60	50	120	140	70	1110	120	50	1100	50
Pedestrian Volume [ped/h]	1			4			9			1		
Bicycle Volume [bicycles/h]	3			0			1			0		

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Intersection Settings

Cycle Length [s]	111
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.10	0.10	0.03	0.15	0.15	0.04	0.33	0.07	0.03	0.32	0.03
Intersection LOS	A											
Intersection V/C	0.585											

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Intersection Level Of Service Report
Intersection 9: Villa Park Rd & Lemon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.450

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1
Entry Pocket Length [ft]	115.00	100.00	180.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	120	40	70	1150	1160	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	40	70	1150	1160	110
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	10	18	288	290	28
Total Analysis Volume [veh/h]	120	40	70	1150	1160	110
Pedestrian Volume [ped/h]	5		5		0	
Bicycle Volume [bicycles/h]	2		2		0	

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Intersection Settings

Cycle Length [s]	108
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	4	0	1	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	Lead	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.04	0.34	0.34	0.06
Intersection LOS	A					
Intersection V/C	0.450					

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Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.955

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	0	78	0	0	0	0	263	55	175	265	0
Total Analysis Volume [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Pedestrian Volume [ped/h]	2			0			1			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

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Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

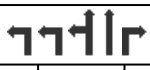
V/C, Movement V/C Ratio	0.12	0.00	0.18	0.00	0.00	0.00	0.00	0.31	0.13	0.41	0.31	0.00
Intersection LOS	E											
Intersection V/C	0.955											

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Intersection Level Of Service Report
Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.914

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	48	10	325	120	260	100	203	25	5	140	125
Total Analysis Volume [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Pedestrian Volume [ped/h]	0			0			6			0		
Bicycle Volume [bicycles/h]	3			0			0			1		

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Intersection Settings

Cycle Length [s]	130
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	4	1	6	0	5	2	0
Auxiliary Signal Groups						1,4						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.07	0.07	0.25	0.26	0.49	0.12	0.27	0.27	0.01	0.16	0.00
Intersection LOS	E											
Intersection V/C	0.914											

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Version 2022 (SP 0-2)

Intersection Level Of Service Report
Intersection 13: Taft Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.064

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	70	1010	10	10	2700	230	150	10	110	10	10	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	1010	10	10	2700	230	150	10	110	10	10	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	253	3	3	675	58	38	3	28	3	3	3
Total Analysis Volume [veh/h]	70	1010	10	10	2700	230	150	10	110	10	10	10
Pedestrian Volume [ped/h]	5			0			5			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

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Intersection Settings

Cycle Length [s]	175
Lost time [s]	9.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	4	0	4	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lead	-	-	Lag	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.20	0.20	0.01	0.86	0.86	0.09	0.09	0.02	0.01	0.02	0.02
Intersection LOS	F											
Intersection V/C	1.064											

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Version 2022 (SP 0-2)

Intersection Level Of Service Report
Intersection 14: Serrano Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.910

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	150.00	275.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	800	370	60	1770	1170	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	800	370	60	1770	1170	150
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	200	93	15	443	293	38
Total Analysis Volume [veh/h]	800	370	60	1770	1170	150
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Overlap
Signal Group	2	2	1	6	4	4
Auxiliary Signal Groups		2,4				1,4
Lead / Lag	-	-	Lead	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.00	0.04	0.52	0.34	0.05
Intersection LOS	E					
Intersection V/C	0.910					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	430	1080	250	60	1010	330	150	540	60	150	380	290
Future Volume (veh/h)	430	1080	250	60	1010	330	150	540	60	150	380	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	448	1125	180	62	1052	298	156	562	57	156	396	263
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	556	1467	824	146	1186	713	206	785	79	204	450	639
Arrive On Green	0.18	0.46	0.46	0.09	0.37	0.37	0.13	0.27	0.24	0.13	0.27	0.27
Sat Flow, veh/h	3092	3180	1400	1594	3180	1418	1594	2908	294	1594	1673	1400
Grp Volume(v), veh/h	448	1125	180	62	1052	298	156	307	312	156	396	263
Grp Sat Flow(s),veh/h/ln	1546	1590	1400	1594	1590	1418	1594	1590	1612	1594	1673	1400
Q Serve(g_s), s	19.5	41.3	5.5	5.1	43.4	9.7	13.2	24.4	24.6	13.2	31.7	3.6
Cycle Q Clear(g_c), s	19.5	41.3	5.5	5.1	43.4	9.7	13.2	24.4	24.6	13.2	31.7	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	556	1467	824	146	1186	713	206	429	435	204	450	639
V/C Ratio(X)	0.81	0.77	0.22	0.43	0.89	0.42	0.76	0.71	0.72	0.77	0.88	0.41
Avail Cap(c_a), veh/h	556	1467	824	146	1186	713	206	449	455	204	470	656
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	31.4	6.2	60.1	41.1	8.6	58.8	46.2	46.6	59.0	49.1	12.6
Incr Delay (d2), s/veh	7.9	3.9	0.6	0.7	10.0	1.8	13.4	4.2	4.3	14.4	16.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	16.1	2.1	2.1	18.2	2.9	6.0	10.0	10.3	6.1	15.2	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	35.3	6.8	60.9	51.1	10.4	72.2	50.4	50.9	73.5	65.2	12.7
LnGrp LOS	E	D	A	E	D	B	E	D	D	E	E	B
Approach Vol, veh/h		1753			1412			775			815	
Approach Delay, s/veh		39.4			43.0			55.0			49.9	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.7	54.5	19.0	39.8	13.7	67.5	19.0	39.8
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	21.0	49.0	15.0	36.0	8.0	62.0	15.0	36.0
Max Q Clear Time (g_c+I1), s	21.5	45.4	15.2	33.7	7.1	43.3	15.2	26.6
Green Ext Time (p_c), s	0.0	1.3	0.0	0.6	0.0	2.9	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	44.8
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1280	1420	0	0	10
Future Vol, veh/h	10	1280	1420	0	0	10
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	70	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	11	1347	1495	0	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1496	0	-	0	2192	749
Stage 1	-	-	-	-	1496	-
Stage 2	-	-	-	-	696	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	454	-	-	-	40	359
Stage 1	-	-	-	-	175	-
Stage 2	-	-	-	-	461	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	454	-	-	-	39	359
Mov Cap-2 Maneuver	-	-	-	-	39	-
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	461	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	454	-	-	-	359
HCM Lane V/C Ratio	0.023	-	-	-	0.029
HCM Control Delay (s)	13.1	-	-	-	15.3
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1270	10	10	1410	10	10
Future Vol, veh/h	1270	10	10	1410	10	10
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1337	11	11	1484	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1349	0	2102	670
Stage 1	-	-	-	-	1338	-
Stage 2	-	-	-	-	764	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	517	-	46	404
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	426	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	517	-	45	404
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	64.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	81	-	-	517	-
HCM Lane V/C Ratio	0.26	-	-	0.02	-
HCM Control Delay (s)	64.4	-	-	12.1	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	1260	1410	10	10	10
Future Vol, veh/h	20	1260	1410	10	10	10
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	21	1326	1484	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1496	0	-	0	2190	743
Stage 1	-	-	-	-	1485	-
Stage 2	-	-	-	-	705	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	454	-	-	-	40	362
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	456	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	454	-	-	-	38	362
Mov Cap-2 Maneuver	-	-	-	-	38	-
Stage 1	-	-	-	-	170	-
Stage 2	-	-	-	-	456	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	78.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	454	-	-	-	69
HCM Lane V/C Ratio	0.046	-	-	-	0.305
HCM Control Delay (s)	13.3	-	-	-	78.6
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1260	1410	10	0	10
Future Vol, veh/h	10	1260	1410	10	0	10
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	11	1326	1484	11	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1496	0	-	0	2170	743
Stage 1	-	-	-	-	1485	-
Stage 2	-	-	-	-	685	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	454	-	-	-	41	362
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	467	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	454	-	-	-	40	362
Mov Cap-2 Maneuver	-	-	-	-	40	-
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	467	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	454	-	-	-	362
HCM Lane V/C Ratio	0.023	-	-	-	0.029
HCM Control Delay (s)	13.1	-	-	-	15.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

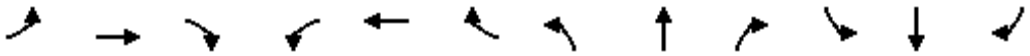
Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1250	10	10	1410	10	0
Future Vol, veh/h	1250	10	10	1410	10	0
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1316	11	11	1484	11	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1328	0	2081	659
Stage 1	-	-	-	-	1317	-
Stage 2	-	-	-	-	764	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	527	-	47	411
Stage 1	-	-	-	-	219	-
Stage 2	-	-	-	-	426	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	526	-	46	411
Mov Cap-2 Maneuver	-	-	-	-	46	-
Stage 1	-	-	-	-	219	-
Stage 2	-	-	-	-	417	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	105.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	46	-	-	526	-
HCM Lane V/C Ratio	0.229	-	-	0.02	-
HCM Control Delay (s)	105.1	-	-	12	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1140	20	20	1320	90	20	40	20	50	30	80
Future Volume (veh/h)	90	1140	20	20	1320	90	20	40	20	50	30	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1673	1700	1700	1673	1700	1700	1700	1700	1700	1700	1700
Adj Flow Rate, veh/h	95	1200	16	21	1389	75	21	42	3	53	32	13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	0	2	0	0	0	0	0	0	0
Cap, veh/h	180	2145	951	93	1973	893	328	230	16	329	168	68
Arrive On Green	0.11	0.67	0.67	0.06	0.62	0.62	0.15	0.15	0.09	0.15	0.15	0.15
Sat Flow, veh/h	1619	3180	1409	1619	3180	1440	1383	1568	112	1383	1142	464
Grp Volume(v), veh/h	95	1200	16	21	1389	75	21	0	45	53	0	45
Grp Sat Flow(s),veh/h/ln	1619	1590	1409	1619	1590	1440	1383	0	1680	1383	0	1606
Q Serve(g_s), s	2.5	8.9	0.2	0.6	13.3	0.9	0.6	0.0	1.1	1.6	0.0	1.1
Cycle Q Clear(g_c), s	2.5	8.9	0.2	0.6	13.3	0.9	1.7	0.0	1.1	2.7	0.0	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.29
Lane Grp Cap(c), veh/h	180	2145	951	93	1973	893	328	0	246	329	0	236
V/C Ratio(X)	0.53	0.56	0.02	0.23	0.70	0.08	0.06	0.00	0.18	0.16	0.00	0.19
Avail Cap(c_a), veh/h	211	2749	1218	175	2678	1213	1052	0	1126	1053	0	1076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	3.9	2.4	20.4	5.8	3.4	17.7	0.0	17.0	18.1	0.0	17.0
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.5	0.5	0.0	0.1	0.0	0.5	0.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.8	0.0	0.2	1.9	0.1	0.2	0.0	0.4	0.5	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	4.1	2.4	20.9	6.3	3.5	17.9	0.0	17.5	18.5	0.0	17.5
LnGrp LOS	B	A	A	C	A	A	B	A	B	B	A	B
Approach Vol, veh/h		1311			1485			66			98	
Approach Delay, s/veh		5.2			6.4			17.6			18.0	
Approach LOS		A			A			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.7	32.9		8.8	6.1	30.4		8.8				
Change Period (Y+Rc), s	3.0	5.5		4.5	3.0	5.5		4.5				
Max Green Setting (Gmax), s	3.0	36.0		28.0	4.0	35.0		28.0				
Max Q Clear Time (g_c+I1), s	2.6	10.9		3.7	4.5	15.3		4.7				
Green Ext Time (p_c), s	0.0	9.2		0.3	0.0	9.6		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		6.5	
HCM 6th LOS		A	

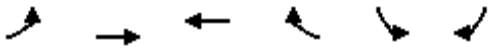
Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1200	10	10	1420	10	10
Future Vol, veh/h	1200	10	10	1420	10	10
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	140	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1263	11	11	1495	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1275	0	2034	633
Stage 1	-	-	-	-	1264	-
Stage 2	-	-	-	-	770	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	551	-	51	427
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	423	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	550	-	50	427
Mov Cap-2 Maneuver	-	-	-	-	50	-
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	415	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	56.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	90	-	-	550	-
HCM Lane V/C Ratio	0.234	-	-	0.019	-
HCM Control Delay (s)	56.8	-	-	11.7	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	100	1110	1380	110	70	50
Future Volume (veh/h)	100	1110	1380	110	70	50
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.98	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1700	1673	1673	1700	1700	1700
Adj Flow Rate, veh/h	104	1156	1438	91	62	63
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	0	0	0
Cap, veh/h	192	2456	2000	886	213	190
Arrive On Green	0.12	0.77	0.63	0.63	0.13	0.13
Sat Flow, veh/h	1619	3263	3263	1409	1619	1441
Grp Volume(v), veh/h	104	1156	1438	91	62	63
Grp Sat Flow(s),veh/h/ln	1619	1590	1590	1409	1619	1441
Q Serve(g_s), s	2.7	5.8	13.7	1.1	1.5	1.8
Cycle Q Clear(g_c), s	2.7	5.8	13.7	1.1	1.5	1.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	192	2456	2000	886	213	190
V/C Ratio(X)	0.54	0.47	0.72	0.10	0.29	0.33
Avail Cap(c_a), veh/h	213	3207	2710	1201	1102	981
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	1.8	5.6	3.3	17.6	17.7
Incr Delay (d2), s/veh	0.9	0.1	0.6	0.1	1.1	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.3	0.1	0.6	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.5	2.0	6.2	3.3	18.6	19.1
LnGrp LOS	B	A	A	A	B	B
Approach Vol, veh/h		1260	1529		125	
Approach Delay, s/veh		3.4	6.1		18.9	
Approach LOS		A	A		B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	6.4	30.5		7.9		36.9
Change Period (Y+Rc), s	3.0	5.5		4.5		5.5
Max Green Setting (Gmax), s	4.0	35.0		28.0		42.0
Max Q Clear Time (g_c+I1), s	4.7	15.7		3.8		7.8
Green Ext Time (p_c), s	0.0	9.3		0.5		9.8

Intersection Summary	
HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1040	140	310	1340	150	600
Future Volume (vph)	1040	140	310	1340	150	600
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3167	1398	1583	3167	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3167	1398	1583	3167	1568	1403
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1095	147	326	1411	158	632
RTOR Reduction (vph)	0	19	0	0	0	555
Lane Group Flow (vph)	1095	128	326	1411	158	77
Confl. Bikes (#/hr)		3				
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	70.5	70.5	33.0	109.5	11.5	11.5
Effective Green, g (s)	75.5	75.5	38.0	114.5	16.5	16.5
Actuated g/C Ratio	0.56	0.56	0.28	0.85	0.12	0.12
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1771	781	445	2686	191	171
v/s Ratio Prot	c0.35		c0.21	0.45	c0.10	0.06
v/s Ratio Perm		0.09				
v/c Ratio	0.62	0.16	0.73	0.53	0.83	0.45
Uniform Delay, d1	20.0	14.4	43.9	2.8	57.9	55.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.5	6.1	0.7	23.4	0.7
Delay (s)	21.7	14.9	50.0	3.5	81.3	55.7
Level of Service	C	B	D	A	F	E
Approach Delay (s)	20.9			12.3	60.9	
Approach LOS	C			B	E	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	5.7

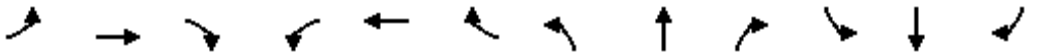
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	1600	30	10	1620	20	10	0	10	10	0	20
Future Vol, veh/h	10	1600	30	10	1620	20	10	0	10	10	0	20
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	115	-	100	140	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	0	0	2	2	0	0	0	3	3	3
Mvmt Flow	11	1684	32	11	1705	21	11	0	11	11	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1727	0	0	1717	0	0	2582	3456	843	2592	3467	854
Stage 1	-	-	-	-	-	-	1707	1707	-	1728	1728	-
Stage 2	-	-	-	-	-	-	875	1749	-	864	1739	-
Critical Hdwy	4.14	-	-	4.1	-	-	7.5	6.5	6.9	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.56	5.56	-
Follow-up Hdwy	2.22	-	-	2.2	-	-	3.5	4	3.3	3.53	4.03	3.33
Pot Cap-1 Maneuver	362	-	-	374	-	-	13	7	311	12	6	300
Stage 1	-	-	-	-	-	-	97	148	-	91	140	-
Stage 2	-	-	-	-	-	-	315	141	-	313	138	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	362	-	-	374	-	-	12	7	311	11	6	300
Mov Cap-2 Maneuver	-	-	-	-	-	-	12	7	-	11	6	-
Stage 1	-	-	-	-	-	-	94	143	-	88	136	-
Stage 2	-	-	-	-	-	-	284	137	-	293	134	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	$ 397.1	$ 356.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	23	362	-	-	374	-	-	31
HCM Lane V/C Ratio	0.915	0.029	-	-	0.028	-	-	1.019
HCM Control Delay (s)	$ 397.1	15.2	-	-	14.9	-	-	$ 356.1
HCM Lane LOS	F	C	-	-	B	-	-	F
HCM 95th %tile Q(veh)	2.7	0.1	-	-	0.1	-	-	3.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Future Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	1042	562	77	21	1083	0	83	479	19	456	351	466
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	1	1	1
Cap, veh/h	1078	2115	289	79	1424		285	557	22	632	663	796
Arrive On Green	0.35	0.75	0.74	0.05	0.45	0.00	0.18	0.18	0.15	0.20	0.20	0.20
Sat Flow, veh/h	3092	2805	383	1594	3180	1418	1606	3140	124	3213	3373	1409
Grp Volume(v), veh/h	1042	318	321	21	1083	0	83	244	254	456	351	466
Grp Sat Flow(s),veh/h/ln	1546	1590	1598	1594	1590	1418	1606	1602	1662	1606	1687	1409
Q Serve(g_s), s	49.7	9.2	9.4	1.9	42.8	0.0	6.7	22.2	22.3	19.9	14.0	29.5
Cycle Q Clear(g_c), s	49.7	9.2	9.4	1.9	42.8	0.0	6.7	22.2	22.3	19.9	14.0	29.5
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	1078	1199	1205	79	1424		285	284	295	632	663	796
V/C Ratio(X)	0.97	0.27	0.27	0.27	0.76		0.29	0.86	0.86	0.72	0.53	0.59
Avail Cap(c_a), veh/h	1078	1199	1205	101	1424		285	284	295	632	663	796
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.0	5.7	5.8	68.7	34.7	0.0	53.5	59.9	60.1	56.4	54.0	21.7
Incr Delay (d2), s/veh	19.6	0.5	0.5	0.7	3.9	0.0	0.2	21.3	21.2	3.5	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.3	2.7	2.8	0.8	16.5	0.0	2.7	10.6	11.0	8.3	5.9	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.6	6.2	6.3	69.3	38.5	0.0	53.7	81.2	81.2	59.9	54.4	22.4
LnGrp LOS	E	A	A	E	D		D	F	F	E	D	C
Approach Vol, veh/h		1681			1104	A		581			1273	
Approach Delay, s/veh		44.3			39.1			77.3			44.7	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	55.0	71.0		31.0	7.9	118.1		28.0				
Change Period (Y+Rc), s	5.0	* 6.5		6.0	5.0	6.5		5.5				
Max Green Setting (Gmax), s	50.0	* 31		25.0	5.0	74.5		22.5				
Max Q Clear Time (g_c+I1), s	51.7	44.8		31.5	3.9	11.4		24.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	2.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		47.3	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	10	50	10	10	10	140	2840	10	10	1220	200
Future Volume (veh/h)	270	10	50	10	10	10	140	2840	10	10	1220	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1700	1700	1700	1700	1700	1700	1700	1687	1700	1700	1687	1700
Adj Flow Rate, veh/h	276	10	20	10	10	3	143	2898	10	10	1245	196
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	1	0
Cap, veh/h	225	6	521	34	28	4	203	3117	11	62	1594	249
Arrive On Green	0.22	0.24	0.24	0.22	0.24	0.24	0.13	0.66	0.66	0.08	1.00	1.00
Sat Flow, veh/h	732	27	1419	0	114	17	1619	4737	16	1619	2767	433
Grp Volume(v), veh/h	286	0	20	23	0	0	143	1877	1031	10	717	724
Grp Sat Flow(s),veh/h/ln	758	0	1419	131	0	0	1619	1535	1684	1619	1602	1597
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	12.7	80.7	81.1	0.9	0.0	0.0
Cycle Q Clear(g_c), s	32.9	0.0	0.0	32.9	0.0	0.0	12.7	80.7	81.1	0.9	0.0	0.0
Prop In Lane	0.97		1.00	0.43		0.13	1.00		0.01	1.00		0.27
Lane Grp Cap(c), veh/h	213	0	521	63	0	0	203	2020	1108	62	923	920
V/C Ratio(X)	1.34	0.00	0.04	0.36	0.00	0.00	0.70	0.93	0.93	0.16	0.78	0.79
Avail Cap(c_a), veh/h	213	0	521	63	0	0	214	2020	1108	97	923	920
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	0.0	30.6	47.5	0.0	0.0	62.9	22.6	22.6	67.1	0.0	0.0
Incr Delay (d2), s/veh	181.1	0.0	0.0	3.5	0.0	0.0	7.8	9.1	14.8	0.5	6.4	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.2	0.0	0.5	0.8	0.0	0.0	5.6	28.4	33.0	0.4	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	241.8	0.0	30.7	50.9	0.0	0.0	70.8	31.7	37.4	67.5	6.4	6.7
LnGrp LOS	F	A	C	D	A	A	E	C	D	E	A	A
Approach Vol, veh/h		306			23			3051			1451	
Approach Delay, s/veh		228.0			50.9			35.5			7.0	
Approach LOS		F			D			D			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	105.3		38.0	21.0	91.0		38.0
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	* 6		5.0
Max Green Setting (Gmax), s	5.0	96.0		33.0	16.0	* 85		33.0
Max Q Clear Time (g_c+I1), s	2.9	83.1		34.9	14.7	2.0		34.9
Green Ext Time (p_c), s	0.0	7.2		0.0	0.0	3.1		0.0

Intersection Summary	
HCM 6th Ctrl Delay	39.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	540	80	1540	1580	80	890
Future Volume (veh/h)	540	80	1540	1580	80	890
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	551	63	1571	1557	82	908
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	661	512	1880	2057	232	2364
Arrive On Green	0.21	0.21	0.98	1.00	0.14	0.74
Sat Flow, veh/h	3116	1429	3289	2516	1606	3289
Grp Volume(v), veh/h	551	63	1571	1557	82	908
Grp Sat Flow(s),veh/h/ln	1558	1429	1602	1258	1606	1602
Q Serve(g_s), s	25.4	0.0	8.2	90.8	6.9	15.6
Cycle Q Clear(g_c), s	25.4	0.0	8.2	90.8	6.9	15.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	661	512	1880	2057	232	2364
V/C Ratio(X)	0.83	0.12	0.84	0.76	0.35	0.38
Avail Cap(c_a), veh/h	883	613	1880	2057	232	2364
HCM Platoon Ratio	1.00	1.00	1.67	1.67	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.5	32.3	0.7	0.0	57.9	7.2
Incr Delay (d2), s/veh	4.0	0.0	4.6	2.7	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	2.6	1.7	0.8	2.8	4.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	60.5	32.4	5.3	2.7	58.2	7.7
LnGrp LOS	E	C	A	A	E	A
Approach Vol, veh/h	614		3128			990
Approach Delay, s/veh	57.6		4.0			11.9
Approach LOS	E		A			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	23.7	93.0		33.3		116.7
Change Period (Y+Rc), s	6.0	* 6		5.3		6.0
Max Green Setting (Gmax), s	8.0	* 87		38.7		100.0
Max Q Clear Time (g_c+I1), s	10.2	92.8		27.4		17.6
Green Ext Time (p_c), s	0.0	0.0		0.7		4.2

Intersection Summary	
HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	30	40	1580	940	30
Future Vol, veh/h	30	30	40	1580	940	30
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	200	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	32	32	42	1663	989	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1906	496	1022	0	-	0
Stage 1	990	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	62	525	687	-	-	-
Stage 1	325	-	-	-	-	-
Stage 2	355	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	58	525	686	-	-	-
Mov Cap-2 Maneuver	58	-	-	-	-	-
Stage 1	305	-	-	-	-	-
Stage 2	355	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	82.7	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	686	-	104	-	-
HCM Lane V/C Ratio	0.061	-	0.607	-	-
HCM Control Delay (s)	10.6	-	82.7	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	2.9	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	2990	0	0	1280
Future Vol, veh/h	0	0	2990	0	0	1280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	3250	0	0	1391

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3946	1625	0	0	3250	0
Stage 1	3250	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Critical Hdwy	6.25	7.1	-	-	5.3	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.65	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	4	80	-	-	29	-
Stage 1	9	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	4	80	-	-	29	-
Mov Cap-2 Maneuver	4	-	-	-	-	-
Stage 1	9	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	29	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	3120	1430	0
Future Vol, veh/h	0	0	0	3120	1430	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	0	3391	1554	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2910	777	1554	0	-	0
Stage 1	1554	-	-	-	-	-
Stage 2	1356	-	-	-	-	-
Critical Hdwy	6.25	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-
Follow-up Hdwy	3.65	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	20	344	432	-	-	-
Stage 1	160	-	-	-	-	-
Stage 2	189	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	20	344	432	-	-	-
Mov Cap-2 Maneuver	20	-	-	-	-	-
Stage 1	160	-	-	-	-	-
Stage 2	189	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	432	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1620	0	0	970
Future Vol, veh/h	0	0	1620	0	0	970
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	125	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	1761	0	0	1054

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	881	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	294	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	294	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	-

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Version 2022 (SP 0-2)

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro — Scenario 4 Future PM Peak Hour
Report File: N:\...\04_FYNoImprovementPM.pdf — 7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Villa Park Rd & Wanda Rd	Signalized	ICU 2	EB Thru	0.774	-	C
7	Villa Park Rd & Center Dr	Signalized	ICU 2	WB Thru	0.547	-	A
9	Villa Park Rd & Lemon St	Signalized	ICU 2	WB Thru	0.524	-	A
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Thru	0.889	-	D
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	WB Thru	0.935	-	E
13	Taft Ave & Cannon St	Signalized	ICU 2	NB Thru	0.783	-	C
14	Serrano Ave & Cannon St	Signalized	ICU 2	NB Thru	0.696	-	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 1: Villa Park Rd & Wanda Rd

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.774

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	175.00	100.00	100.00	225.00	100.00	300.00	150.00	100.00	175.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	150	540	60	150	380	290	430	1080	250	60	1010	330
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	540	60	150	380	290	430	1080	250	60	1010	330
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	135	15	38	95	73	108	270	63	15	253	83
Total Analysis Volume [veh/h]	150	540	60	150	380	290	430	1080	250	60	1010	330
Pedestrian Volume [ped/h]	0			0			0			1		
Bicycle Volume [bicycles/h]	1			0			1			11		

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Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	4	1	6	6	5	2	2
Auxiliary Signal Groups						1,4			3,6			2,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.18	0.18	0.09	0.22	0.04	0.13	0.32	0.06	0.04	0.30	0.11
Intersection LOS	C											
Intersection V/C	0.774											

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Intersection Level Of Service Report
Intersection 7: Villa Park Rd & Center Dr

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.547

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	100.00	140.00	100.00	100.00	160.00	100.00	100.00	150.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	20	40	20	50	30	80	90	1140	20	20	1320	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	40	20	50	30	80	90	1140	20	20	1320	90
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	10	5	13	8	20	23	285	5	5	330	23
Total Analysis Volume [veh/h]	20	40	20	50	30	80	90	1140	20	20	1320	90
Pedestrian Volume [ped/h]	0			1			0			0		
Bicycle Volume [bicycles/h]	3			0			5			0		

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Intersection Settings

Cycle Length [s]	111
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.04	0.04	0.03	0.06	0.06	0.05	0.34	0.01	0.01	0.39	0.05
Intersection LOS	A											
Intersection V/C	0.547											

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Intersection Level Of Service Report
Intersection 9: Villa Park Rd & Lemon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.524

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	0	1
Entry Pocket Length [ft]	115.00	100.00	180.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

Volumes

Name						
Base Volume Input [veh/h]	70	50	100	1110	1380	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	50	100	1110	1380	110
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	13	25	278	345	28
Total Analysis Volume [veh/h]	70	50	100	1110	1380	110
Pedestrian Volume [ped/h]	1		1		0	
Bicycle Volume [bicycles/h]	2		2		0	

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Intersection Settings

Cycle Length [s]	108
Lost time [s]	5.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	4	0	1	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	Lead	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.04	0.06	0.33	0.41	0.06
Intersection LOS	A					
Intersection V/C	0.524					

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Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.889

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	0	150	0	2	0	0	260	35	78	335	0
Total Analysis Volume [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			6			0		

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Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

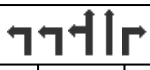
V/C, Movement V/C Ratio	0.09	0.00	0.35	0.00	0.00	0.00	0.00	0.31	0.08	0.18	0.39	0.00
Intersection LOS	D											
Intersection V/C	0.889											

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Intersection Level Of Service Report
Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.935

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	115	5	125	63	133	250	135	20	5	260	383
Total Analysis Volume [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	3			3			1			1		

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Intersection Settings

Cycle Length [s]	140
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	4	1	6	0	5	2	0
Auxiliary Signal Groups						1,4						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.14	0.14	0.15	0.07	0.02	0.29	0.18	0.18	0.01	0.31	0.00
Intersection LOS	E											
Intersection V/C	0.935											

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Intersection Level Of Service Report
Intersection 13: Taft Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.783

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	225.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	140	2840	10	10	1220	200	270	10	50	10	10	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	2840	10	10	1220	200	270	10	50	10	10	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	710	3	3	305	50	68	3	13	3	3	3
Total Analysis Volume [veh/h]	140	2840	10	10	1220	200	270	10	50	10	10	10
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	2			0			2			0		

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Intersection Settings

Cycle Length [s]	150
Lost time [s]	8.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	0	1	6	0	0	4	4	0	4	0
Auxiliary Signal Groups									4,5			
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.56	0.56	0.01	0.42	0.42	0.16	0.16	0.00	0.01	0.02	0.02
Intersection LOS	C											
Intersection V/C	0.783											

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Intersection Level Of Service Report
Intersection 14: Serrano Ave & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.696

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	150.00	275.00	100.00	350.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name						
Base Volume Input [veh/h]	1540	1580	80	890	540	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1540	1580	80	890	540	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	385	395	20	223	135	20
Total Analysis Volume [veh/h]	1540	1580	80	890	540	80
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

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Version 2022 (SP 0-2)

Intersection Settings

Cycle Length [s]	150
Lost time [s]	8.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Split	Overlap
Signal Group	2	2	1	6	4	4
Auxiliary Signal Groups		2,4				1,4
Lead / Lag	-	-	Lag	-	Lag	-

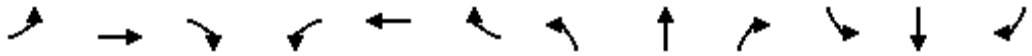
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.45	0.31	0.05	0.26	0.16	0.00
Intersection LOS	B					
Intersection V/C	0.696					



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1050	220	700	1060	210	310
Future Volume (vph)	1050	220	700	1060	210	310
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	0.97	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3076	1354	2984	3076	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3076	1354	2984	3076	1568	1403
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1105	232	737	1116	221	326
RTOR Reduction (vph)	0	36	0	0	0	287
Lane Group Flow (vph)	1105	196	737	1116	221	39
Confl. Peds. (#/hr)		2			1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	5%	5%	5%	5%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	64.5	64.5	36.2	106.7	12.5	12.5
Effective Green, g (s)	69.5	69.5	41.2	111.7	17.5	17.5
Actuated g/C Ratio	0.48	0.48	0.28	0.77	0.12	0.12
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	1474	648	847	2369	189	169
v/s Ratio Prot	c0.36		c0.25	0.36	c0.14	0.03
v/s Ratio Perm		0.14				
v/c Ratio	0.75	0.30	0.87	0.47	1.17	0.23
Uniform Delay, d1	30.7	23.0	49.4	6.0	63.8	57.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	1.2	9.7	0.7	118.5	0.3
Delay (s)	34.2	24.2	59.0	6.7	182.2	57.9
Level of Service	C	C	E	A	F	E
Approach Delay (s)	32.5			27.5	108.2	
Approach LOS	C			C	F	

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



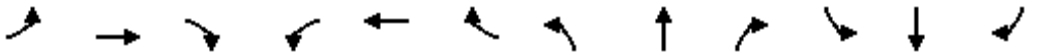
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1250	40	10	1640	100	10	10	30	30	0	110
Future Volume (veh/h)	70	1250	40	10	1640	100	10	10	30	30	0	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1700	1700	1634	1634	1700	1700	1700	1660	1660	1660
Adj Flow Rate, veh/h	74	1316	42	11	1726	105	11	11	32	32	0	116
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	0	0	5	5	0	0	0	3	3	3
Cap, veh/h	91	1847	835	110	2661	162	64	57	113	70	11	135
Arrive On Green	0.06	0.60	0.60	0.09	0.82	0.82	0.12	0.12	0.12	0.12	0.00	0.12
Sat Flow, veh/h	1556	3104	1404	1619	4298	261	167	468	924	215	90	1107
Grp Volume(v), veh/h	74	1316	42	11	1193	638	54	0	0	148	0	0
Grp Sat Flow(s),veh/h/ln	1556	1552	1404	1619	1487	1585	1559	0	0	1412	0	0
Q Serve(g_s), s	4.7	29.8	1.2	0.6	15.2	15.3	0.0	0.0	0.0	6.8	0.0	0.0
Cycle Q Clear(g_c), s	4.7	29.8	1.2	0.6	15.2	15.3	3.2	0.0	0.0	10.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.16	0.20		0.59	0.22		0.78
Lane Grp Cap(c), veh/h	91	1847	835	110	1841	982	234	0	0	216	0	0
V/C Ratio(X)	0.81	0.71	0.05	0.10	0.65	0.65	0.23	0.00	0.00	0.69	0.00	0.00
Avail Cap(c_a), veh/h	171	1847	835	110	1841	982	282	0	0	262	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.71	0.71	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	46.5	14.2	8.5	42.7	4.7	4.7	39.9	0.0	0.0	43.0	0.0	0.0
Incr Delay (d2), s/veh	15.3	2.4	0.1	0.3	1.3	2.4	0.2	0.0	0.0	3.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	9.1	0.3	0.2	2.6	3.1	1.2	0.0	0.0	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.8	16.6	8.6	42.9	6.0	7.1	40.1	0.0	0.0	46.5	0.0	0.0
LnGrp LOS	E	B	A	D	A	A	D	A	A	D	A	A
Approach Vol, veh/h		1432			1842			54			148	
Approach Delay, s/veh		18.7			6.6			40.1			46.5	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.3	67.0		18.7	11.9	69.4		18.7				
Change Period (Y+Rc), s	7.5	* 7.5		6.5	6.0	7.5		6.5				
Max Green Setting (Gmax), s	5.0	* 60		15.5	11.0	53.5		15.5				
Max Q Clear Time (g_c+I1), s	2.6	31.8		5.2	6.7	17.3		12.3				
Green Ext Time (p_c), s	0.0	10.4		0.1	0.0	16.2		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	13.8
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	810	100	20	560	500	150	190	40	1300	480	1040
Future Volume (veh/h)	400	810	100	20	560	500	150	190	40	1300	480	1040
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1634	1634	1634	1660	1660	1660	1673	1673	1673	1673	1673	1673
Adj Flow Rate, veh/h	412	835	95	21	577	0	155	196	23	1340	495	916
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	5	5	3	3	3	2	2	2	2	2	2
Cap, veh/h	574	863	98	106	775		239	377	44	1440	757	1601
Arrive On Green	0.19	0.31	0.31	0.07	0.17	0.00	0.15	0.13	0.08	0.47	0.45	0.45
Sat Flow, veh/h	3018	2804	319	1581	4532	1407	1594	2866	332	3092	1673	2486
Grp Volume(v), veh/h	412	462	468	21	577	0	155	108	111	1340	495	916
Grp Sat Flow(s),veh/h/ln	1509	1552	1571	1581	1511	1407	1594	1590	1608	1546	1673	1243
Q Serve(g_s), s	12.8	29.4	29.4	1.3	12.1	0.0	9.2	6.3	6.5	40.9	23.0	7.0
Cycle Q Clear(g_c), s	12.8	29.4	29.4	1.3	12.1	0.0	9.2	6.3	6.5	40.9	23.0	7.0
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	574	478	484	106	775		239	209	211	1440	757	1601
V/C Ratio(X)	0.72	0.97	0.97	0.20	0.74		0.65	0.51	0.53	0.93	0.65	0.57
Avail Cap(c_a), veh/h	574	478	484	150	775		349	209	211	1500	757	1601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	34.1	34.1	44.1	39.4	0.0	40.0	40.5	41.0	25.2	21.3	2.7
Incr Delay (d2), s/veh	3.7	32.5	32.3	0.3	3.5	0.0	1.1	1.0	1.2	10.1	4.4	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	14.5	14.6	0.5	4.5	0.0	3.6	2.5	2.6	15.4	9.1	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.7	66.7	66.4	44.4	42.9	0.0	41.1	41.4	42.3	35.3	25.7	4.2
LnGrp LOS	D	E	E	D	D		D	D	D	D	C	A
Approach Vol, veh/h		1342			598	A		374			2751	
Approach Delay, s/veh		58.9			42.9			41.5			23.2	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	18.0	16.1	47.2	7.2	32.3	49.1	14.2
Change Period (Y+Rc), s	6.5	* 5.5	5.0	6.0	5.0	6.5	5.0	* 6
Max Green Setting (Gmax), s	15.0	* 13	18.0	33.0	5.0	21.5	46.0	* 5.5
Max Q Clear Time (g_c+I1), s	15.8	14.1	11.2	25.0	3.3	31.4	42.9	8.5
Green Ext Time (p_c), s	0.0	0.0	0.1	2.9	0.0	0.0	1.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	36.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Scenario 17 Future AM Peak Hour - Recommendations
Report File: N:\...\05_FYBAM.pdf
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Thru	0.733	-	C
11	Villa Park Rd & Linda Vista St	Signalized	ICU 2	EB Thru	0.495	-	A
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	SB Left	0.768	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.733

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	0	78	0	0	0	0	263	55	175	265	0
Total Analysis Volume [veh/h]	210	0	310	0	1	0	0	1050	220	700	1060	0
Pedestrian Volume [ped/h]	2			0			1			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

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Intersection Settings

Cycle Length [s]	145
Lost time [s]	7.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.00	0.18	0.00	0.00	0.00	0.00	0.31	0.13	0.21	0.31	0.00
Intersection LOS	C											
Intersection V/C	0.733											

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Version 2022 (SP 0-2)

Intersection Level Of Service Report
Intersection 11: Villa Park Rd & Linda Vista St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.495

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	115.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	10	10	30	30	0	110	70	1250	40	10	1640	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	10	30	30	0	110	70	1250	40	10	1640	100
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	3	8	8	0	28	18	313	10	3	410	25
Total Analysis Volume [veh/h]	10	10	30	30	0	110	70	1250	40	10	1640	100
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.03	0.03	0.02	0.00	0.08	0.04	0.37	0.02	0.01	0.34	0.34
Intersection LOS	A											
Intersection V/C	0.495											

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Intersection Level Of Service Report
Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.768

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	48	10	325	120	260	100	203	25	5	140	125
Total Analysis Volume [veh/h]	150	190	40	1300	480	1040	400	810	100	20	560	500
Pedestrian Volume [ped/h]	0			0			6			0		
Bicycle Volume [bicycles/h]	3			0			0			1		

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Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	3	8	0	7	4	4	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.07	0.07	0.38	0.28	0.31	0.12	0.27	0.27	0.01	0.11	0.00
Intersection LOS	C											
Intersection V/C	0.768											

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1040	140	310	1340	150	600
Future Volume (vph)	1040	140	310	1340	150	600
Ideal Flow (vphpl)	1700	1700	1700	1700	1700	1700
Total Lost time (s)	2.5	2.5	1.0	2.5	1.5	1.5
Lane Util. Factor	0.95	1.00	0.97	0.95	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3167	1398	3072	3167	1568	1403
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3167	1398	3072	3167	1568	1403
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1095	147	326	1411	158	632
RTOR Reduction (vph)	0	20	0	0	0	550
Lane Group Flow (vph)	1095	127	326	1411	158	82
Confl. Bikes (#/hr)		3				
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%
Turn Type	NA	Perm	Prot	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2				
Actuated Green, G (s)	68.4	68.4	8.0	82.4	8.6	8.6
Effective Green, g (s)	73.4	73.4	13.0	87.4	13.6	13.6
Actuated g/C Ratio	0.70	0.70	0.12	0.83	0.13	0.13
Clearance Time (s)	7.5	7.5	6.0	7.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	2.0	2.0
Lane Grp Cap (vph)	2213	977	380	2636	203	181
v/s Ratio Prot	0.35		c0.11	c0.45	c0.10	0.06
v/s Ratio Perm		0.09				
v/c Ratio	0.49	0.13	0.86	0.54	0.78	0.45
Uniform Delay, d1	7.3	5.2	45.1	2.7	44.2	42.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3	17.1	0.8	15.6	0.7
Delay (s)	8.1	5.5	62.2	3.4	59.9	42.9
Level of Service	A	A	E	A	E	D
Approach Delay (s)	7.8			14.5	46.3	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

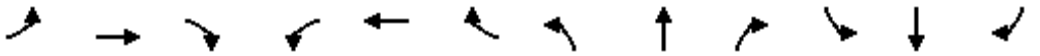
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1600	30	10	1620	20	10	0	10	10	0	20
Future Volume (veh/h)	10	1600	30	10	1620	20	10	0	10	10	0	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1700	1700	1673	1673	1700	1700	1700	1660	1660	1660
Adj Flow Rate, veh/h	11	1684	32	11	1705	21	11	0	11	11	0	21
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	0	0	2	2	0	0	0	3	3	3
Cap, veh/h	232	2435	1080	21	2887	36	74	12	41	58	9	51
Arrive On Green	0.15	0.77	0.77	0.03	1.00	1.00	0.05	0.00	0.05	0.05	0.00	0.05
Sat Flow, veh/h	1594	3180	1410	1619	4650	57	529	216	745	321	170	938
Grp Volume(v), veh/h	11	1684	32	11	1117	609	22	0	0	32	0	0
Grp Sat Flow(s),veh/h/ln	1594	1590	1410	1619	1523	1662	1490	0	0	1430	0	0
Q Serve(g_s), s	0.7	31.6	0.7	0.8	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Cycle Q Clear(g_c), s	0.7	31.6	0.7	0.8	0.0	0.0	1.6	0.0	0.0	2.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.50		0.50	0.34		0.66
Lane Grp Cap(c), veh/h	232	2435	1080	21	1891	1032	125	0	0	117	0	0
V/C Ratio(X)	0.05	0.69	0.03	0.53	0.59	0.59	0.18	0.00	0.00	0.27	0.00	0.00
Avail Cap(c_a), veh/h	232	2435	1080	67	1891	1032	291	0	0	280	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.53	0.53	0.53	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	44.1	7.0	3.4	58.1	0.0	0.0	54.4	0.0	0.0	54.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.6	0.1	10.7	0.7	1.3	0.2	0.0	0.0	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	7.8	0.1	0.4	0.2	0.4	0.6	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	8.6	3.4	68.8	0.7	1.3	54.7	0.0	0.0	55.3	0.0	0.0
LnGrp LOS	D	A	A	E	A	A	D	A	A	E	A	A
Approach Vol, veh/h		1727			1737			22			32	
Approach Delay, s/veh		8.8			1.4			54.7			55.3	
Approach LOS		A			A			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	99.4		13.1	24.9	82.0		13.1				
Change Period (Y+Rc), s	6.0	7.5		6.5	7.5	* 7.5		6.5				
Max Green Setting (Gmax), s	5.0	74.5		20.5	5.0	* 75		20.5				
Max Q Clear Time (g_c+I1), s	2.8	33.6		3.6	2.7	2.0		4.5				
Green Ext Time (p_c), s	0.0	17.3		0.0	0.0	17.2		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			5.8									
HCM 6th LOS			A									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Future Volume (veh/h)	1000	540	80	20	1040	1530	80	460	20	500	250	530
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1673	1673	1673	1673	1673	1673	1687	1687	1687	1687	1687	1687
Adj Flow Rate, veh/h	1042	562	75	21	1083	0	83	479	19	521	260	492
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	1	1	1
Cap, veh/h	1145	1595	212	93	1129		153	497	20	493	388	1552
Arrive On Green	0.37	0.57	0.56	0.06	0.25	0.00	0.09	0.16	0.12	0.16	0.23	0.23
Sat Flow, veh/h	3092	2815	375	1594	4569	1418	1606	3140	124	3116	1687	2480
Grp Volume(v), veh/h	1042	317	320	21	1083	0	83	244	254	521	260	492
Grp Sat Flow(s),veh/h/ln	1546	1590	1600	1594	1523	1418	1606	1602	1662	1558	1687	1240
Q Serve(g_s), s	38.4	12.9	13.0	1.5	28.1	0.0	5.9	18.1	18.2	19.0	16.8	11.3
Cycle Q Clear(g_c), s	38.4	12.9	13.0	1.5	28.1	0.0	5.9	18.1	18.2	19.0	16.8	11.3
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	1145	901	906	93	1129		153	254	263	493	388	1552
V/C Ratio(X)	0.91	0.35	0.35	0.23	0.96		0.54	0.96	0.97	1.06	0.67	0.32
Avail Cap(c_a), veh/h	1397	901	906	126	1129		153	254	263	493	388	1552
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	14.1	14.1	53.9	44.6	0.0	51.8	50.1	50.3	50.5	42.1	10.8
Incr Delay (d2), s/veh	7.2	1.1	1.1	0.5	18.6	0.0	2.2	45.5	45.4	56.1	3.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.7	4.5	4.6	0.6	12.0	0.0	2.4	10.3	10.7	11.0	7.2	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.1	15.2	15.2	54.3	63.2	0.0	54.1	95.6	95.8	106.6	45.7	10.8
LnGrp LOS	D	B	B	D	E		D	F	F	F	D	B
Approach Vol, veh/h		1679			1104	A		581			1273	
Approach Delay, s/veh		32.5			63.0			89.8			57.1	
Approach LOS		C			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.2	31.8	12.0	29.0	7.5	71.5	21.0	20.0
Change Period (Y+Rc), s	5.0	* 6.5	5.0	6.0	5.0	6.5	6.0	* 5.5
Max Green Setting (Gmax), s	52.0	* 18	7.0	22.0	5.0	63.5	15.0	* 15
Max Q Clear Time (g_c+I1), s	40.4	30.1	7.9	18.8	3.5	15.0	21.0	20.2
Green Ext Time (p_c), s	1.8	0.0	0.0	0.8	0.0	2.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	53.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

MPAH Amendment Study - Villa Park Rd

Vistro File: N:\...\Villa Park_v6.vistro
Scenario 18 Future PM Peak Hour - Recommendation

Report File: N:\...\05_FYBPM.pdf
7/21/2023

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
10	Villa Park Rd & Hewes St	Signalized	ICU 2	WB Thru	0.791	-	C
11	Villa Park Rd & Linda Vista St	Signalized	ICU 2	EB Thru	0.526	-	A
12	Santiago Canyon Rd & Cannon St	Signalized	ICU 2	EB Left	0.828	-	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

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Intersection Level Of Service Report
Intersection 10: Villa Park Rd & Hewes St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.791

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	215.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	0	150	0	2	0	0	260	35	78	335	0
Total Analysis Volume [veh/h]	150	0	600	0	6	0	0	1040	140	310	1340	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			6			0		

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Version 2022 (SP 0-2)

Intersection Settings

Cycle Length [s]	105
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	4	0	0	0	8	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.35	0.00	0.00	0.00	0.00	0.31	0.08	0.09	0.39	0.00
Intersection LOS	C											
Intersection V/C	0.791											

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Version 2022 (SP 0-2)

Intersection Level Of Service Report
Intersection 11: Villa Park Rd & Linda Vista St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.526

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	115.00	100.00	100.00	140.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name												
Base Volume Input [veh/h]	10	0	10	10	0	20	10	1600	30	10	1620	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	0	10	10	0	20	10	1600	30	10	1620	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	3	3	0	5	3	400	8	3	405	5
Total Analysis Volume [veh/h]	10	0	10	10	0	20	10	1600	30	10	1620	20
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Version 2022 (SP 0-2)

Intersection Settings

Cycle Length [s]	120
Lost time [s]	6.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lag	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.01	0.00	0.02	0.01	0.47	0.02	0.01	0.32	0.32
Intersection LOS	A											
Intersection V/C	0.526											

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Version 2022 (SP 0-2)

Intersection Level Of Service Report
Intersection 12: Santiago Canyon Rd & Cannon St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 2	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.828

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	2	0	1	2	0	0	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	375.00	100.00	250.00	325.00	100.00	100.00	150.00	100.00	450.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	115	5	125	63	133	250	135	20	5	260	383
Total Analysis Volume [veh/h]	80	460	20	500	250	530	1000	540	80	20	1040	1530
Pedestrian Volume [ped/h]	1			0			1			0		
Bicycle Volume [bicycles/h]	3			3			1			1		

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Version 2022 (SP 0-2)

Intersection Settings

Cycle Length [s]	120
Lost time [s]	6.00

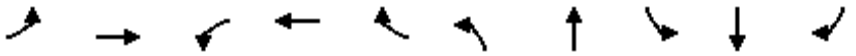
Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	3	8	0	7	4	4	1	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.14	0.14	0.15	0.15	0.16	0.29	0.18	0.18	0.01	0.20	0.00
Intersection LOS	D											
Intersection V/C	0.828											

Attachment D: Intersection Queueing Analysis Worksheets

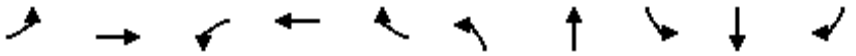


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	375	884	16	484	377	143	149	894	769	736
v/c Ratio	0.66	0.83	0.11	0.75	0.27	0.60	0.31	0.82	0.69	0.79
Control Delay	46.1	53.4	53.0	56.5	0.5	61.4	39.3	43.7	38.1	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	53.4	53.0	56.5	0.5	61.4	39.3	43.7	38.1	14.5
Queue Length 50th (ft)	168	395	13	200	0	113	46	409	326	161
Queue Length 95th (ft)	m214	#526	35	262	0	180	77	#600	441	288
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	654	1059	206	687	1403	289	581	1095	1120	970
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.83	0.08	0.70	0.27	0.49	0.26	0.82	0.69	0.76

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	735	447	14	1038	1539	73	343	315	324	456
v/c Ratio	0.88	0.25	0.10	0.92	1.09	0.34	0.79	0.62	0.62	0.59
Control Delay	50.7	11.3	57.8	56.4	56.3	59.7	72.4	57.4	57.1	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.7	11.3	57.8	56.4	56.3	59.7	72.4	57.4	57.1	11.1
Queue Length 50th (ft)	325	91	12	476	~231	61	160	157	161	110
Queue Length 95th (ft)	408	189	34	#741	#495	113	#227	194	198	137
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	875	1809	193	1133	1417	217	433	746	771	791
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.25	0.07	0.92	1.09	0.34	0.79	0.42	0.42	0.58

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

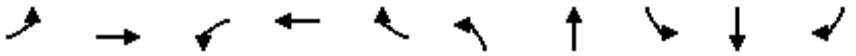


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1105	232	737	1116	221	326
v/c Ratio	0.94	0.42	1.14	0.45	1.32	0.74
Control Delay	55.7	29.6	119.0	7.1	228.7	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	29.6	119.0	7.1	228.7	16.9
Queue Length 50th (ft)	475	106	~810	86	~269	0
Queue Length 95th (ft)	#1009	#307	#1059	405	#441	105
Internal Link Dist (ft)	2348			454	338	
Turn Bay Length (ft)		100	215			
Base Capacity (vph)	1181	556	647	2496	167	441
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.42	1.14	0.45	1.32	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	412	938	21	577	515	155	237	911	924	1072
v/c Ratio	0.48	0.70	0.14	0.95	0.37	0.93	0.70	0.91	0.90	1.08
Control Delay	32.0	26.5	44.0	67.7	0.7	100.6	51.3	44.4	42.7	66.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	26.5	44.0	67.7	0.7	100.6	51.3	44.4	42.7	66.3
Queue Length 50th (ft)	111	223	13	193	0	100	71	316	318	~361
Queue Length 95th (ft)	158	354	36	#302	0	#223	#119	#455	#455	#1009
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	850	1347	148	605	1403	166	340	1002	1030	990
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.70	0.14	0.95	0.37	0.93	0.70	0.91	0.90	1.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

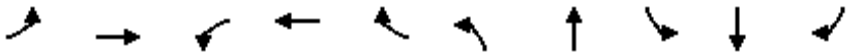
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1095	147	326	1411	158	632
v/c Ratio	0.62	0.18	0.73	0.53	0.83	0.87
Control Delay	23.1	12.2	53.4	3.6	90.1	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	12.2	53.4	3.6	90.1	17.9
Queue Length 50th (ft)	329	42	259	135	137	0
Queue Length 95th (ft)	464	92	337	163	#261	#205
Internal Link Dist (ft)	2348			454	338	
Turn Bay Length (ft)		100	215			
Base Capacity (vph)	1772	799	551	2686	191	726
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.18	0.59	0.53	0.83	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1042	646	21	1083	1594	83	500	386	395	552
v/c Ratio	0.97	0.38	0.21	1.43	1.12	0.29	0.89	0.76	0.75	0.61
Control Delay	69.6	20.2	72.0	239.3	72.4	56.9	78.2	40.8	40.2	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.6	20.2	72.0	239.3	72.4	56.9	78.2	40.8	40.2	20.2
Queue Length 50th (ft)	517	194	20	~770	~359	71	253	176	180	452
Queue Length 95th (ft)	#665	243	50	#909	#623	125	#350	m247	m251	593
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	1071	1719	100	760	1417	283	565	540	559	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.38	0.21	1.43	1.12	0.29	0.88	0.71	0.71	0.61

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

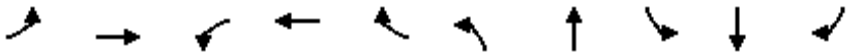


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1105	232	737	1116	221	326
v/c Ratio	0.71	0.32	0.87	0.45	1.17	0.72
Control Delay	32.1	19.3	61.2	7.8	172.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.1	19.3	61.2	7.8	172.0	15.4
Queue Length 50th (ft)	368	77	339	99	~248	0
Queue Length 95th (ft)	#823	220	422	420	#420	103
Internal Link Dist (ft)	2348			454	338	
Turn Bay Length (ft)		100	215			
Base Capacity (vph)	1558	720	864	2454	189	455
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.32	0.85	0.45	1.17	0.72

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	412	938	21	577	515	155	237	1340	495	1072
v/c Ratio	0.74	0.96	0.14	0.75	0.37	0.56	0.62	0.92	0.71	0.62
Control Delay	47.5	55.4	44.0	46.3	0.7	44.9	46.6	35.9	32.3	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	55.4	44.0	46.3	0.7	44.9	46.6	35.9	32.3	4.6
Queue Length 50th (ft)	128	281	13	129	0	91	71	387	259	36
Queue Length 95th (ft)	181	#500	36	171	0	149	#119	#540	#447	75
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	566	977	148	770	1403	346	385	1489	697	1734
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.96	0.14	0.75	0.37	0.45	0.62	0.90	0.71	0.62

Intersection Summary

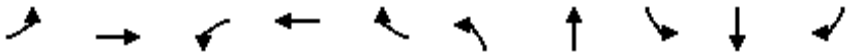
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1095	147	326	1411	158	632
v/c Ratio	0.49	0.15	0.86	0.54	0.78	0.86
Control Delay	8.2	3.3	67.3	3.5	70.4	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	3.3	67.3	3.5	70.4	17.2
Queue Length 50th (ft)	156	16	112	108	104	0
Queue Length 95th (ft)	199	35	#188	136	#210	#191
Internal Link Dist (ft)	2348			454	338	
Turn Bay Length (ft)		100	215			
Base Capacity (vph)	2213	996	380	2636	203	731
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.15	0.86	0.54	0.78	0.86

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1042	646	21	1083	1594	83	500	521	260	552
v/c Ratio	0.84	0.34	0.17	1.04	1.12	0.56	0.99	1.06	0.64	0.32
Control Delay	38.8	12.6	55.0	83.6	72.6	67.1	88.0	106.0	50.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	12.6	55.0	83.6	72.6	67.1	88.0	106.0	50.2	5.4
Queue Length 50th (ft)	362	107	15	~343	~285	62	204	~228	187	57
Queue Length 95th (ft)	421	177	42	#488	#551	117	#321	#339	283	74
Internal Link Dist (ft)		700		272			165		561	
Turn Bay Length (ft)	325		150			80		375		250
Base Capacity (vph)	1387	1880	125	1043	1417	151	505	491	407	1859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.34	0.17	1.04	1.12	0.55	0.99	1.06	0.64	0.30

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Attachment E: Traffic Signal Warrants

FEHR & PEERS

Intersection	2	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kathleen Ln	Peak Hour	AM

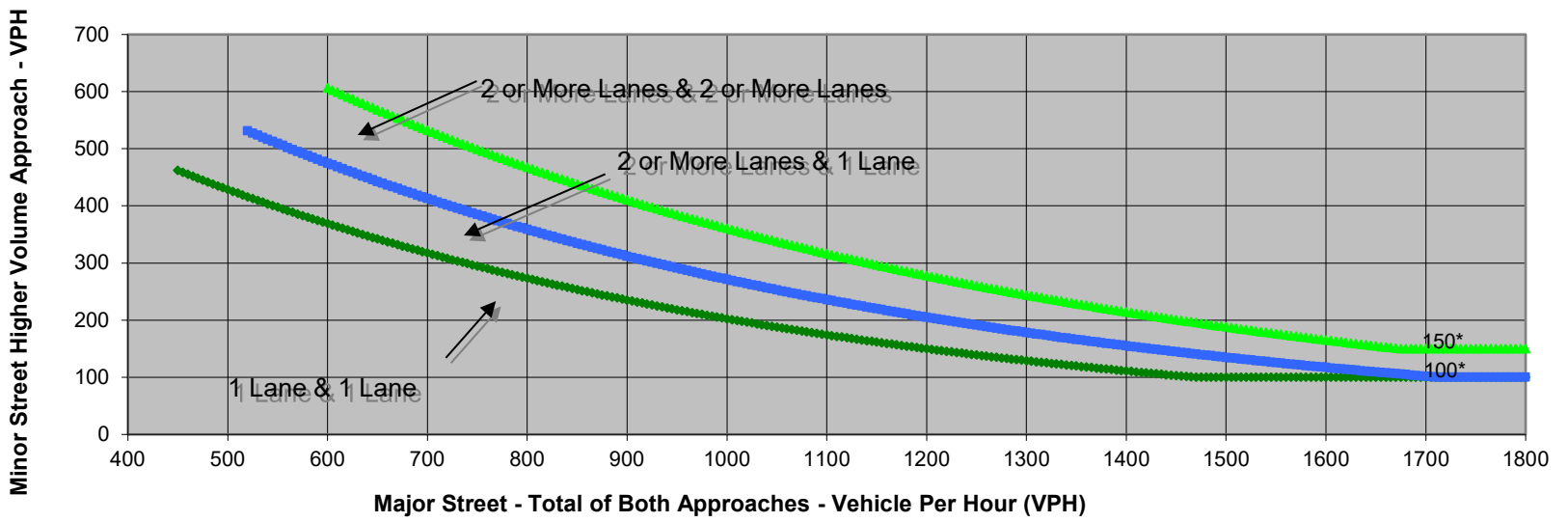
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	1	8	0
Through	0	0	1249	1134
Right	0	9	0	0
Total	0	10	1,257	1,134

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	E Trenton Ave	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,391**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	3	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Morrow Cir	Peak Hour	AM

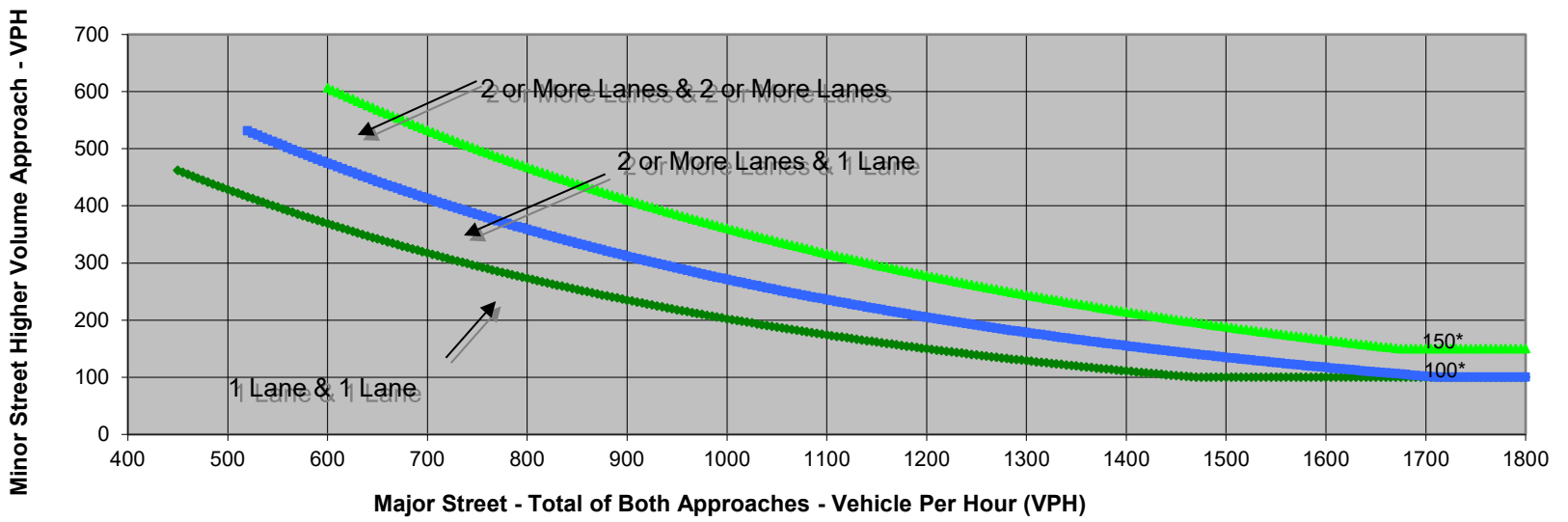
Turn Movement Volumes

	NB	SB	EB	WB
Left	4	0	0	2
Through	0	0	1245	1130
Right	7	0	5	0
Total	11	0	1,250	1,132

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Morrow Cir	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,382**	**11**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	4	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Prado Woods Dr	Peak Hour	AM

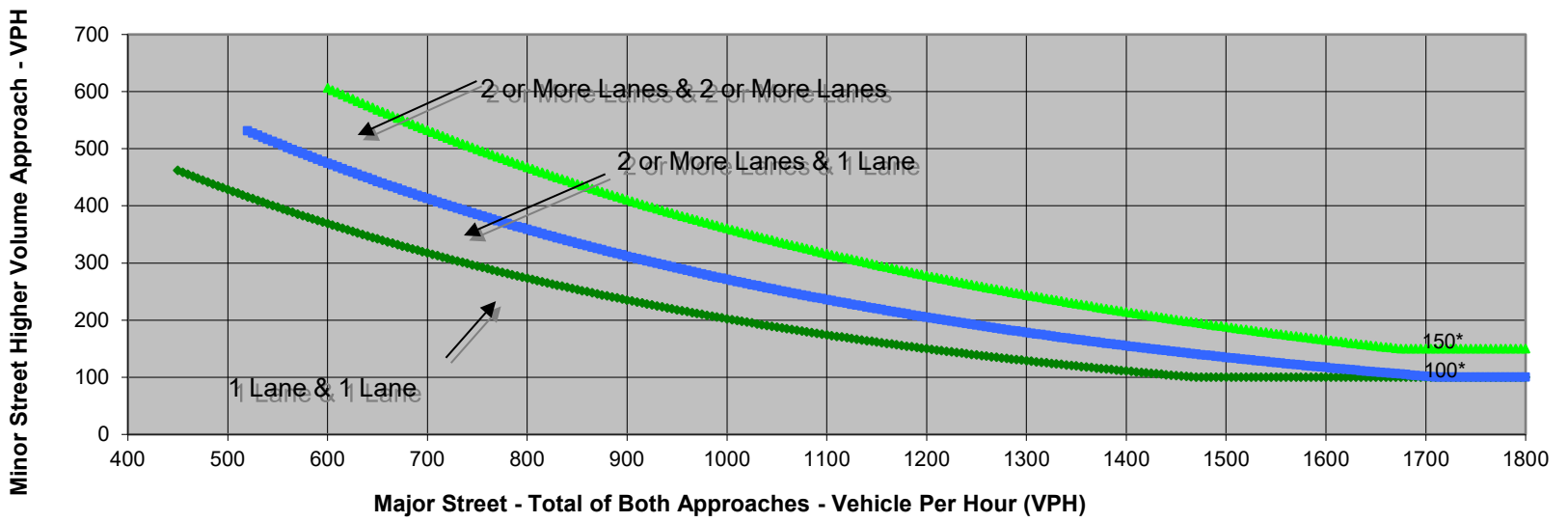
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	4	14	0
Through	0	0	1238	1119
Right	0	13	0	3
Total	0	17	1,252	1,122

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Prado Woods Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,374**	**17**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	5	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kenwick Dr	Peak Hour	AM

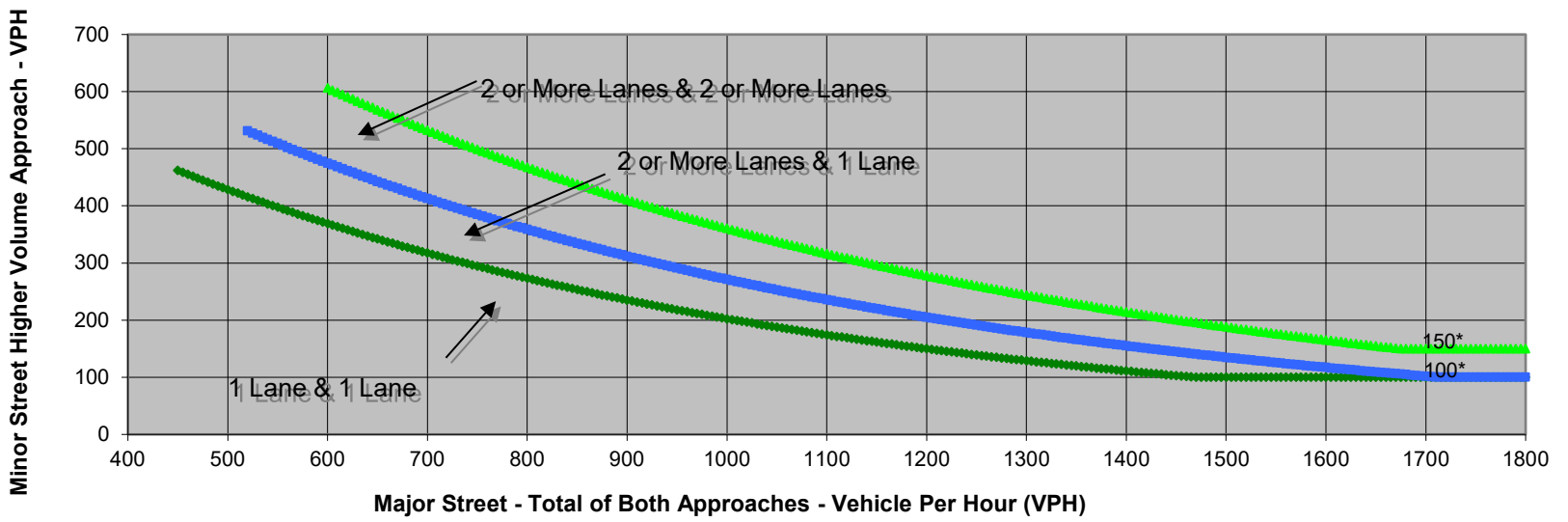
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	3	4	0
Through	0	0	1238	1115
Right	0	7	0	0
Total	0	10	1,242	1,115

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Kenwick Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,357**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	6	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Radec Ct	Peak Hour	AM

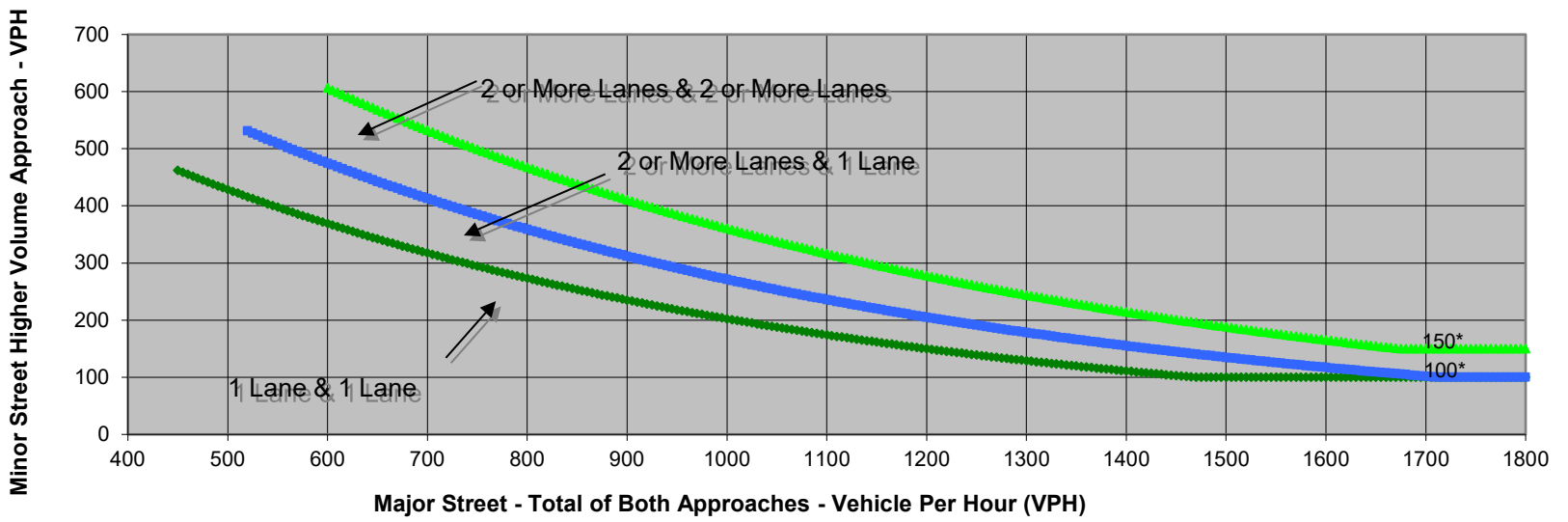
Turn Movement Volumes

	NB	SB	EB	WB
Left	1	0	0	1
Through	0	0	1240	1115
Right	2	0	1	0
Total	3	0	1,241	1,116

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Radec Ct	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,357**	**3**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	8	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Park Villa Ln	Peak Hour	AM

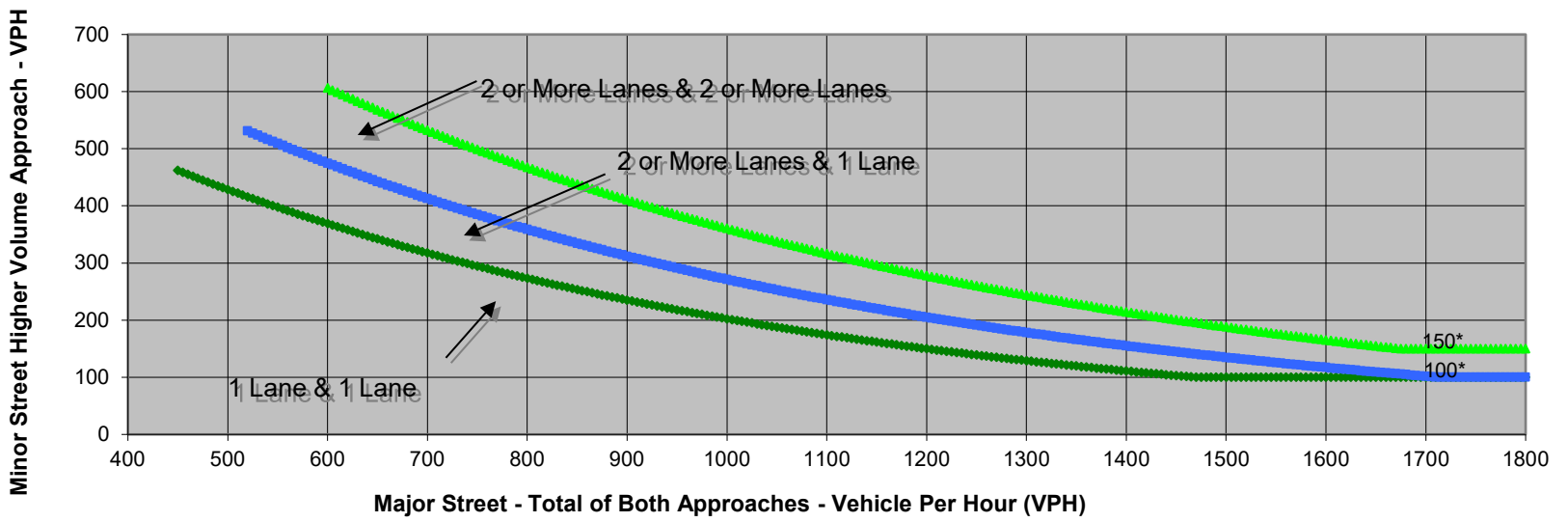
Turn Movement Volumes

	NB	SB	EB	WB
Left	2	0	0	5
Through	0	0	1160	1010
Right	2	0	6	0
Total	4	0	1,166	1,015

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Park Villa Ln	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,181**	**4**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	11	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	N Linda Vista St	Peak Hour	AM

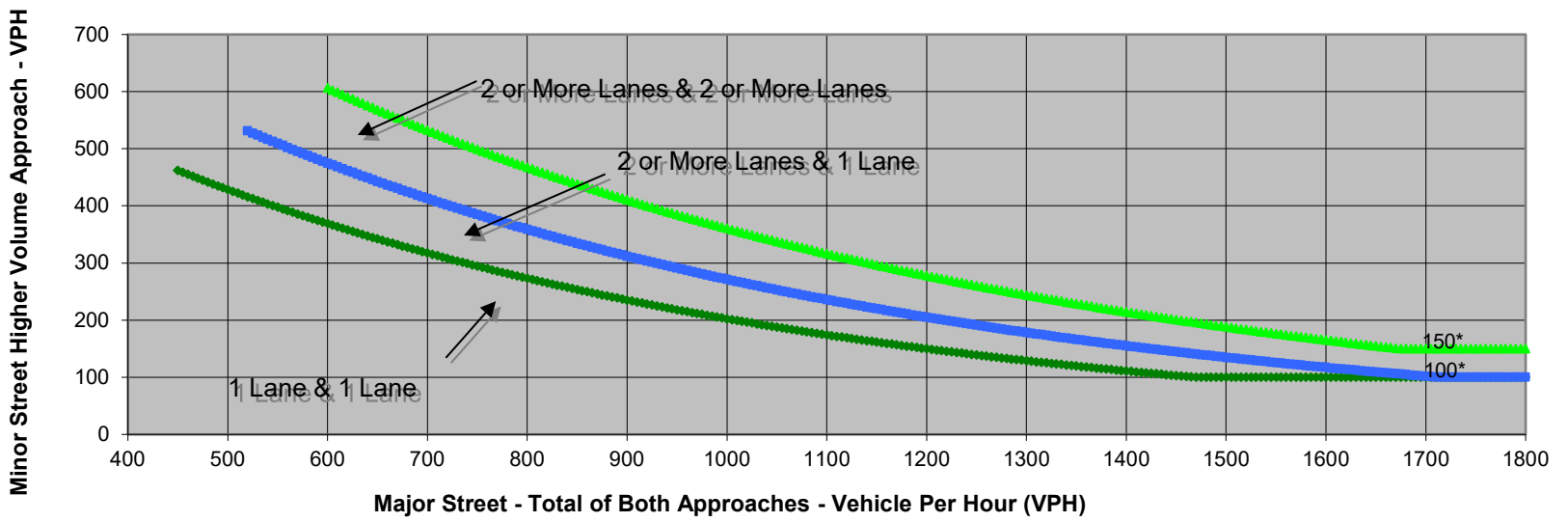
Turn Movement Volumes

	NB	SB	EB	WB
Left	9	27	68	5
Through	1	0	1173	1218
Right	21	103	39	99
Total	31	130	1,280	1,322

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street Villa Park Rd	Minor Street N Linda Vista St	Warrant Met
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,602**	**130**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	15	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Loma St	Scenario	Future Year (2045) Conditions
Minor Street	Cannon St	Peak Hour	AM

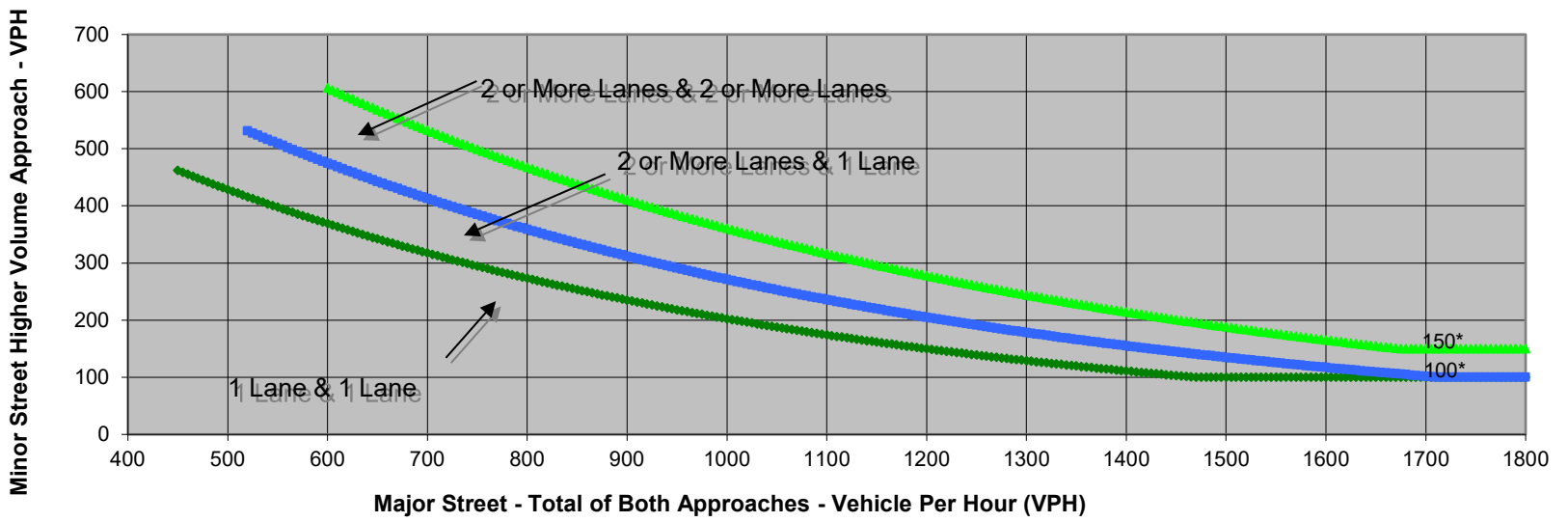
Turn Movement Volumes

	NB	SB	EB	WB
Left	28	0	34	0
Through	678	1419	0	0
Right	0	43	45	0
Total	706	1,462	79	0

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Mesa Dr	Cannon St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,168**	**79**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	2	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kathleen Ln	Peak Hour	PM

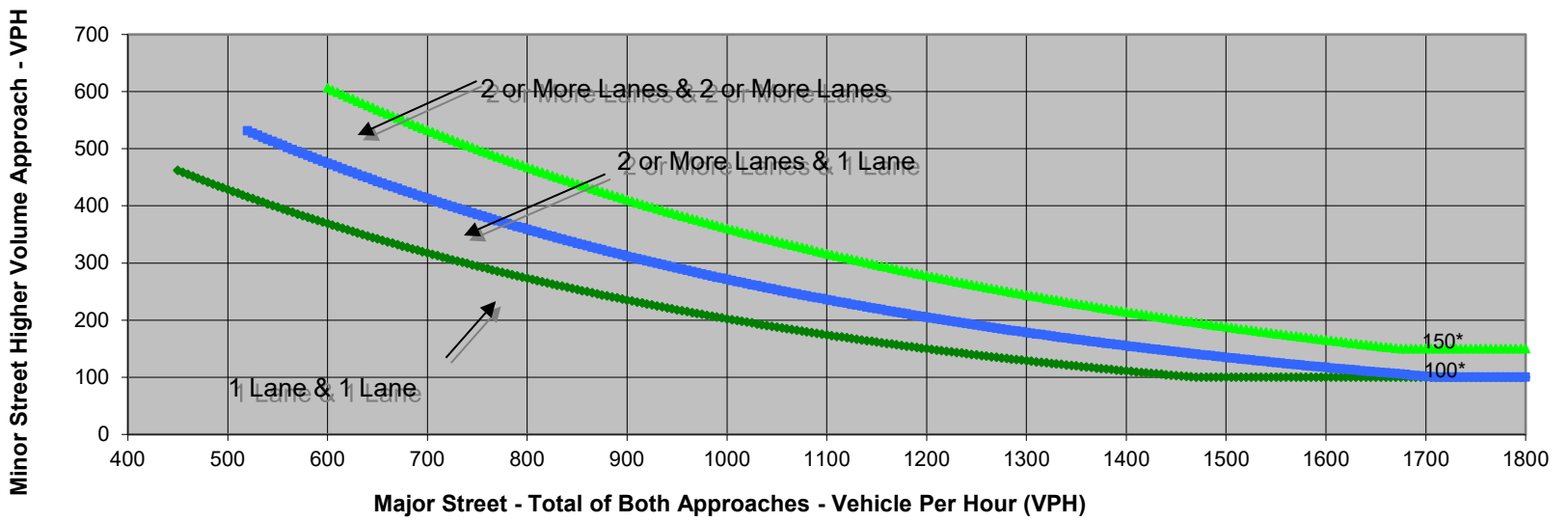
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	4	0
Through	0	0	1065	1347
Right	0	2	0	0
Total	0	2	1,069	1,347

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	**Minor Street**	**Warrant Met**
	Villa Park Rd	E Trenton Ave	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,416**	**2**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	3	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Morrow Cir	Peak Hour	PM

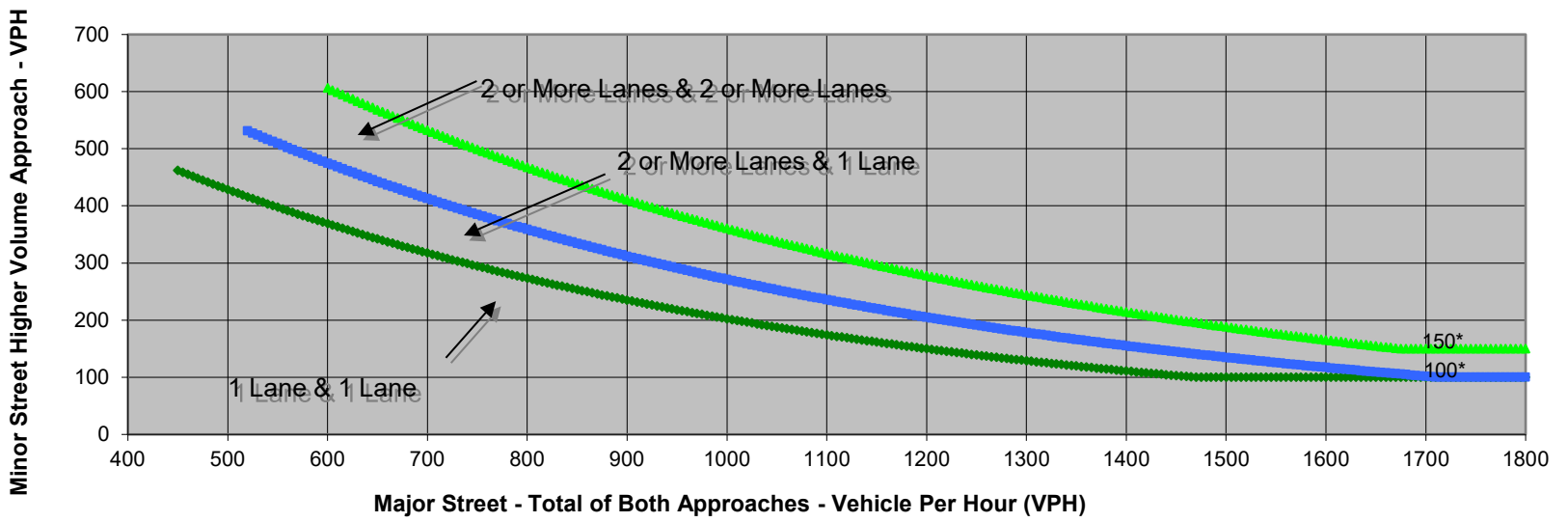
Turn Movement Volumes

	NB	SB	EB	WB
Left	4	0	0	2
Through	0	0	1064	1343
Right	1	0	1	0
Total	5	0	1,065	1,345

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Morrow Cir	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,410**	**5**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	4	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Prado Woods Dr	Peak Hour	PM

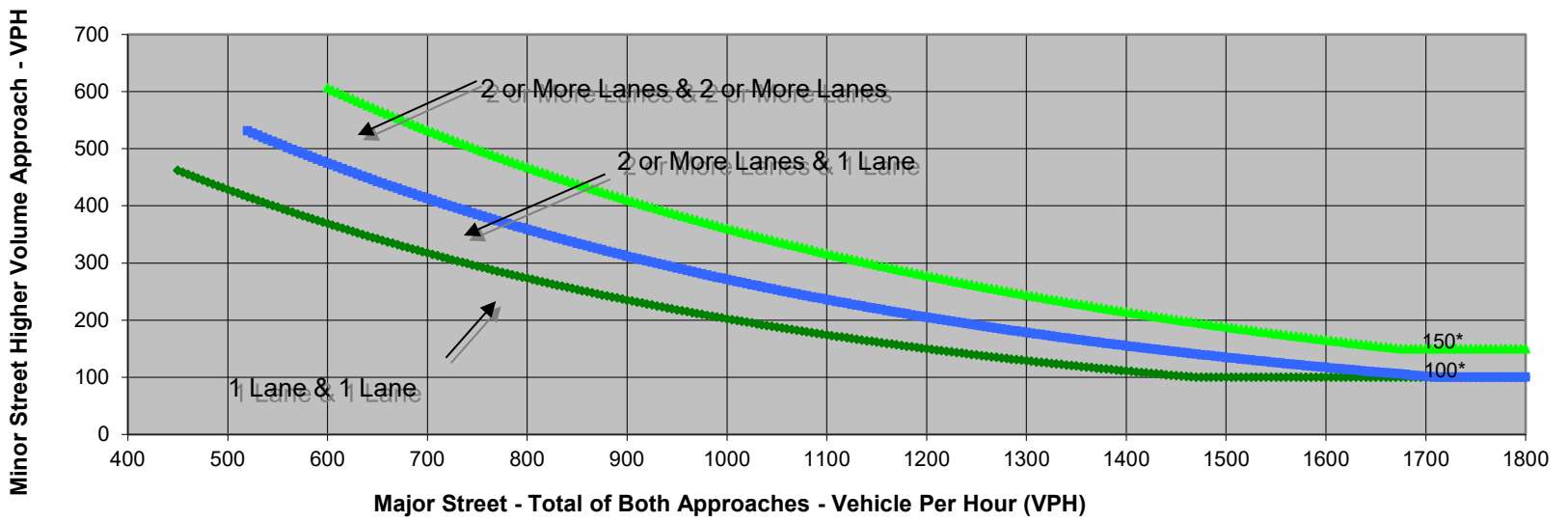
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	2	18	0
Through	0	0	1047	1341
Right	0	4	0	4
Total	0	6	1,065	1,345

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Prado Woods Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,410**	**6**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR EX PEERS

Intersection	5	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kenwick Dr	Peak Hour	PM

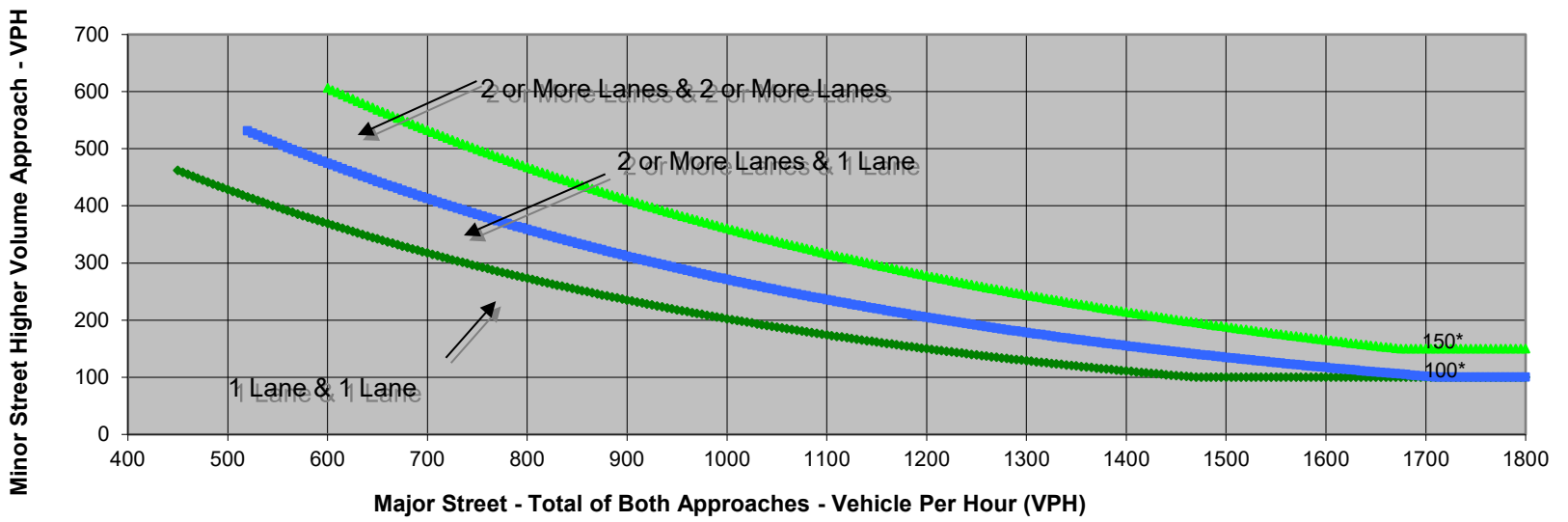
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	6	0
Through	0	0	1043	1337
Right	0	8	0	3
Total	0	8	1,049	1,340

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Kenwick Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,389**	**8**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	6	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Radec Ct	Peak Hour	PM

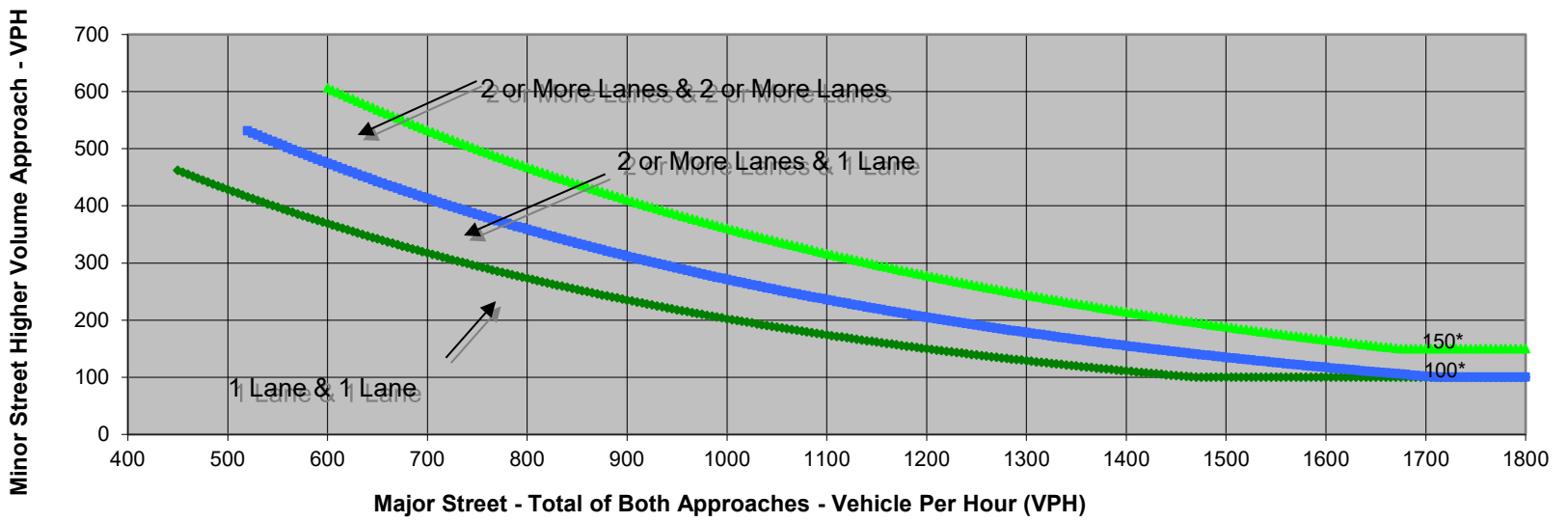
Turn Movement Volumes

	NB	SB	EB	WB
Left	1	0	0	1
Through	0	0	1041	1339
Right	0	0	2	0
Total	1	0	1,043	1,340

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Radec Ct	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,383**	**1**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	8	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Park Villa Ln	Peak Hour	PM

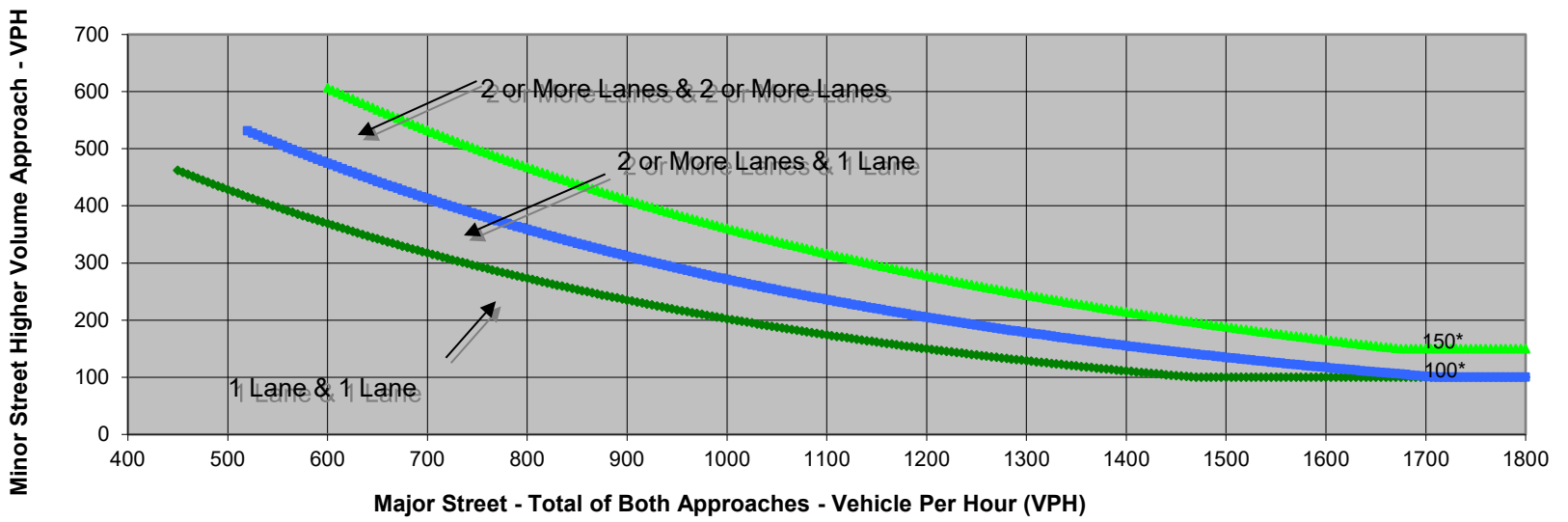
Turn Movement Volumes

	NB	SB	EB	WB
Left	6	0	0	3
Through	0	0	1005	1352
Right	2	0	5	0
Total	8	0	1,010	1,355

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Park Villa Ln	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,365**	**8**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	11	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	N Linda Vista St	Peak Hour	PM

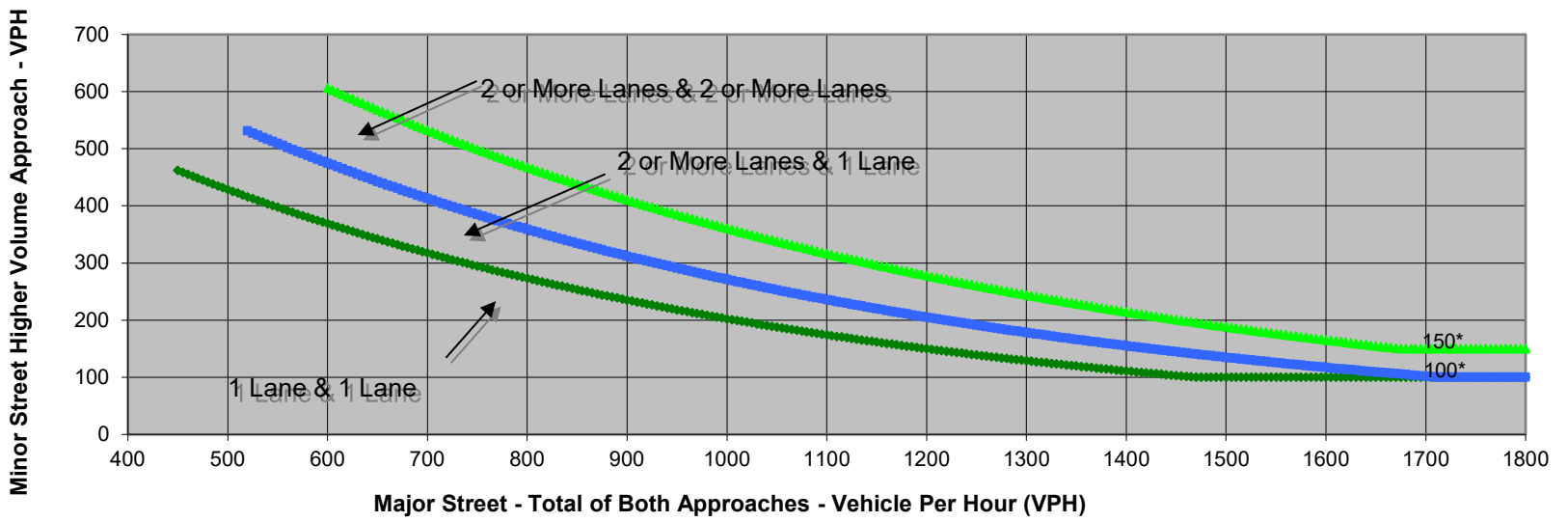
Turn Movement Volumes

	NB	SB	EB	WB
Left	6	9	8	2
Through	0	0	1120	1489
Right	6	19	22	13
Total	12	28	1,150	1,504

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	N Linda Vista St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,654**	**28**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	15	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Loma St	Scenario	Future Year (2045) Conditions
Minor Street	Cannon St	Peak Hour	PM

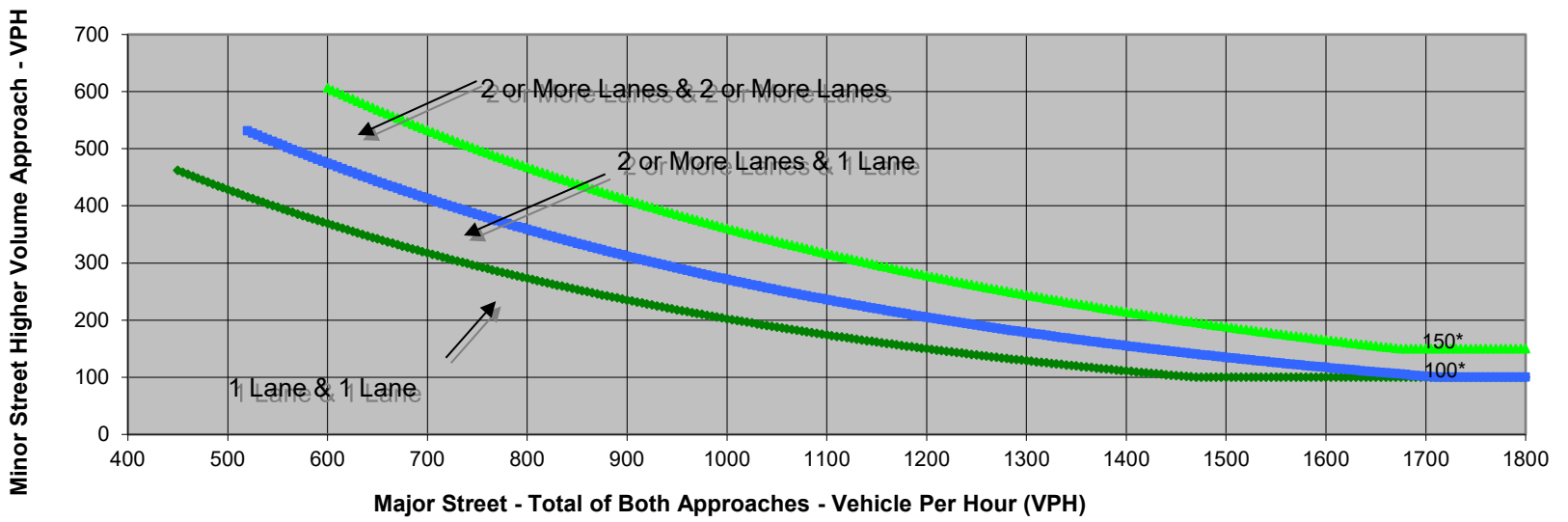
Turn Movement Volumes

	NB	SB	EB	WB
Left	38	0	25	0
Through	1269	751	0	0
Right	0	29	28	0
Total	1,307	780	53	0

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Mesa Dr	Cannon St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,087**	**53**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	2	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kathleen Ln	Peak Hour	AM

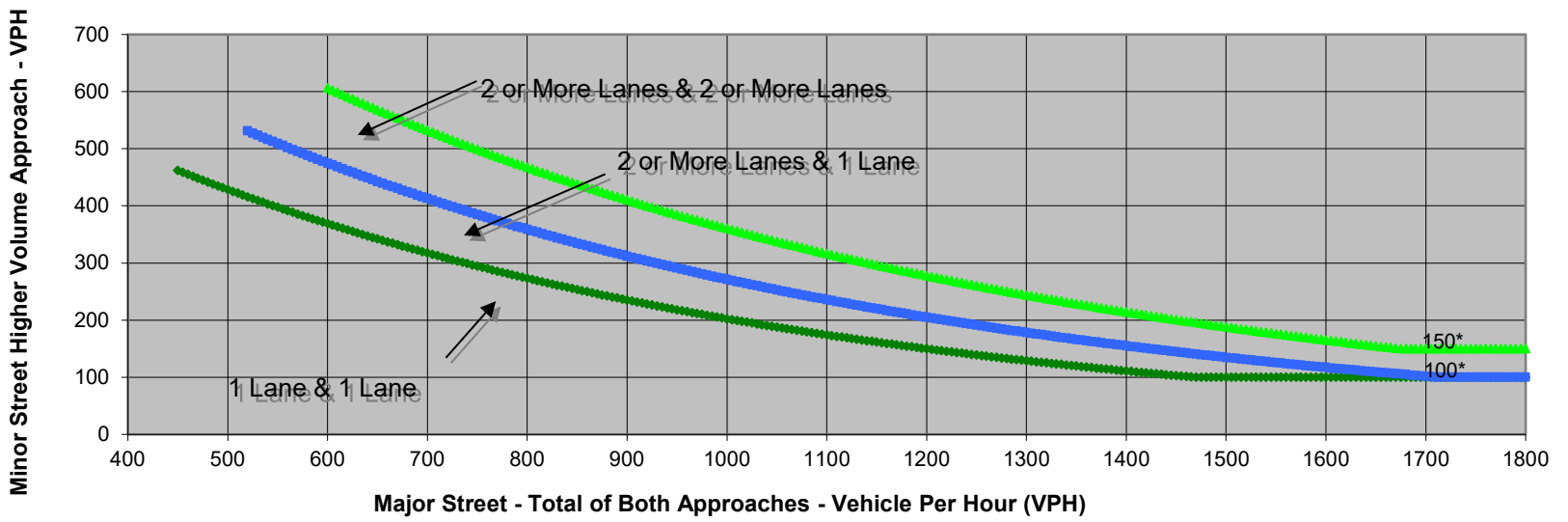
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	10	0
Through	0	0	1300	1310
Right	0	10	0	0
Total	0	20	1,310	1,310

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street Villa Park Rd	**Minor Street** E Trenton Ave	**Warrant Met**
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,620**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	3	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Morrow Cir	Peak Hour	AM

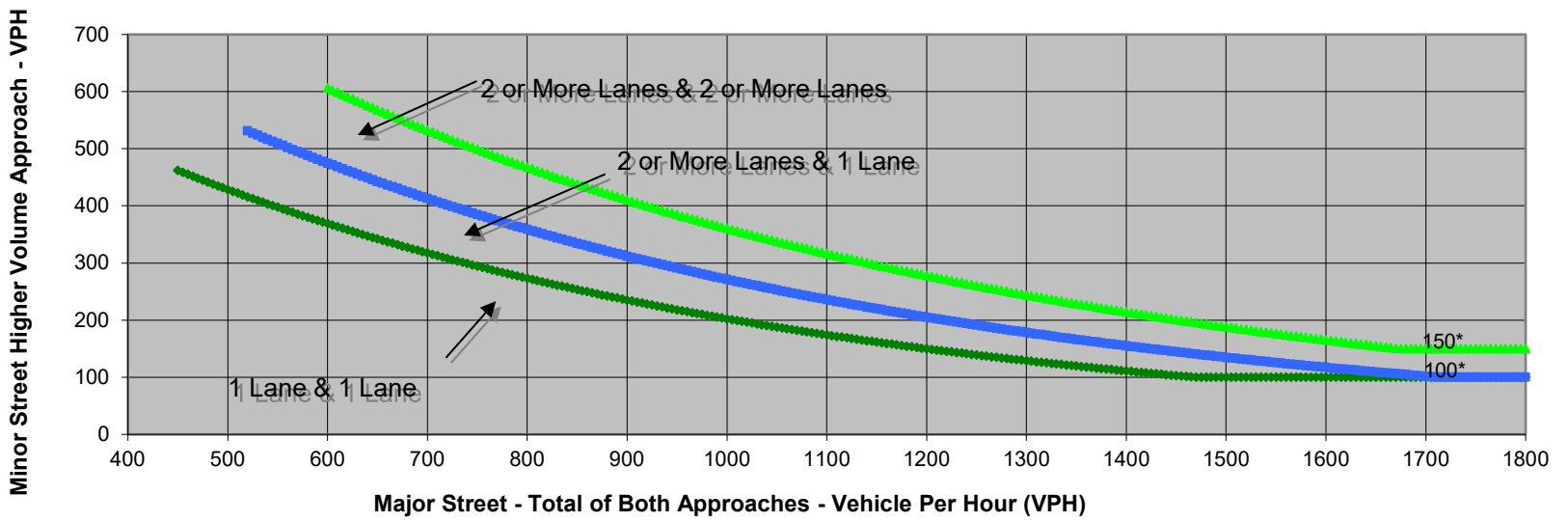
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1300	1300
Right	10	0	10	0
Total	20	0	1,310	1,310

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Morrow Cir	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,620**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	4	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Prado Woods Dr	Peak Hour	AM

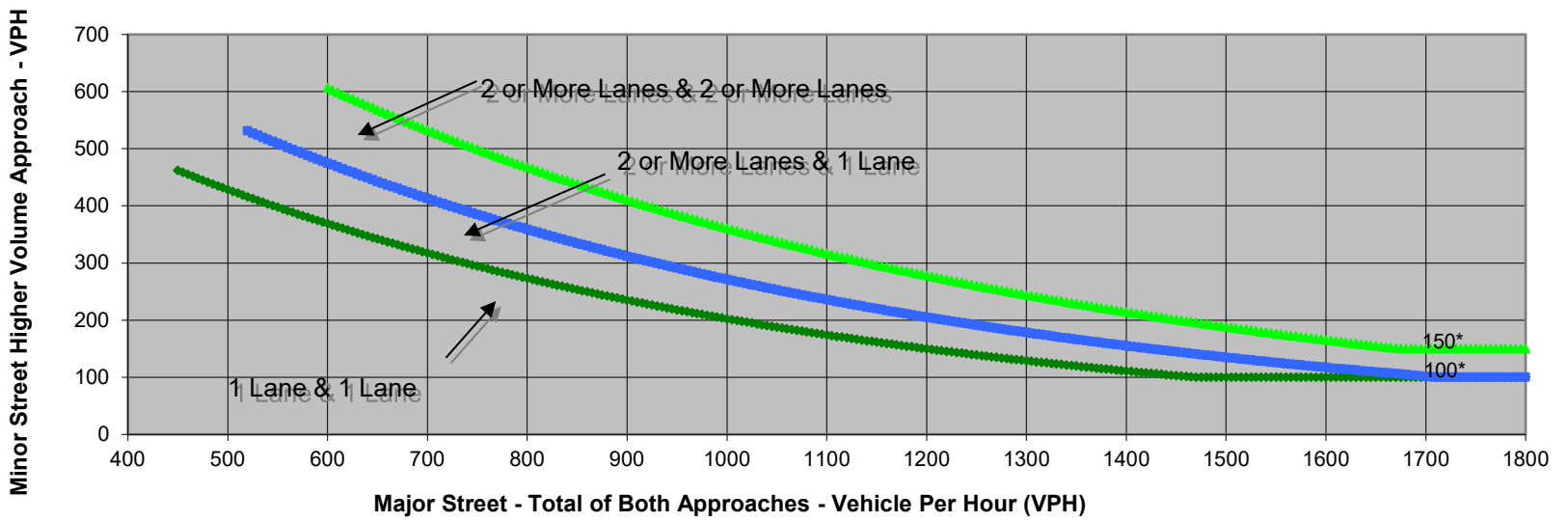
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	20	0
Through	0	0	1290	1290
Right	0	20	0	10
Total	0	30	1,310	1,300

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street Villa Park Rd	**Minor Street** Prado Woods Dr	**Warrant Met**
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,610**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	5	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kenwick Dr	Peak Hour	AM

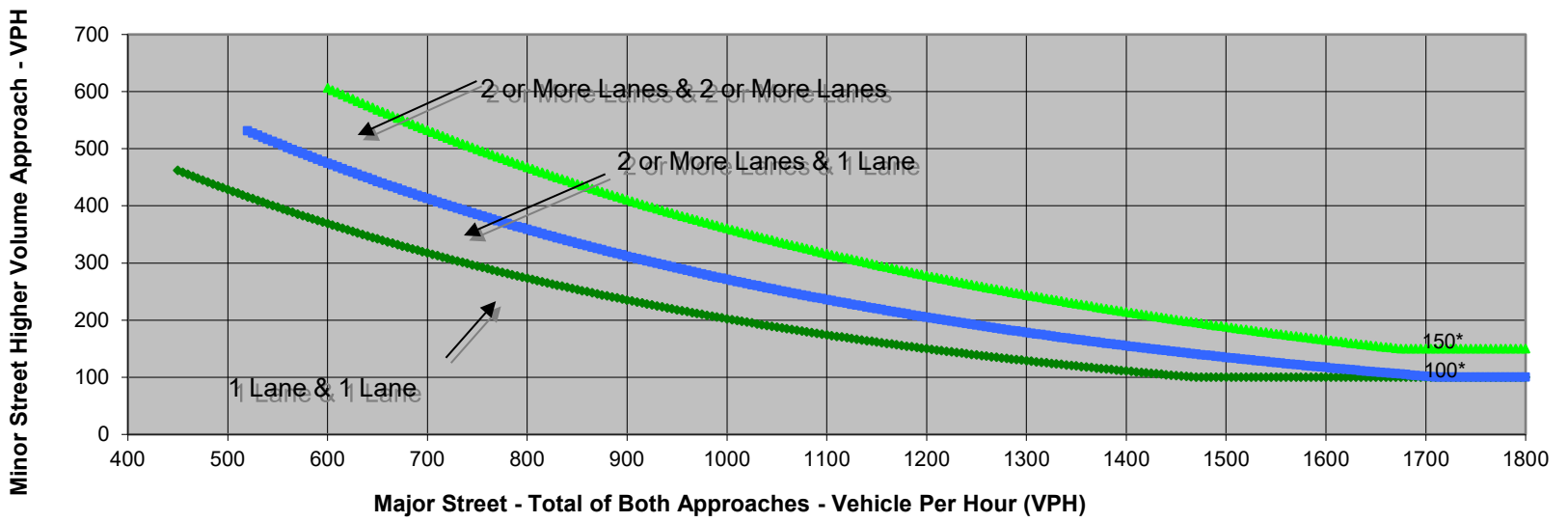
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	10	0
Through	0	0	1290	1290
Right	0	10	0	0
Total	0	20	1,300	1,290

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Kenwick Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,590**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	6	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Radec Ct	Peak Hour	AM

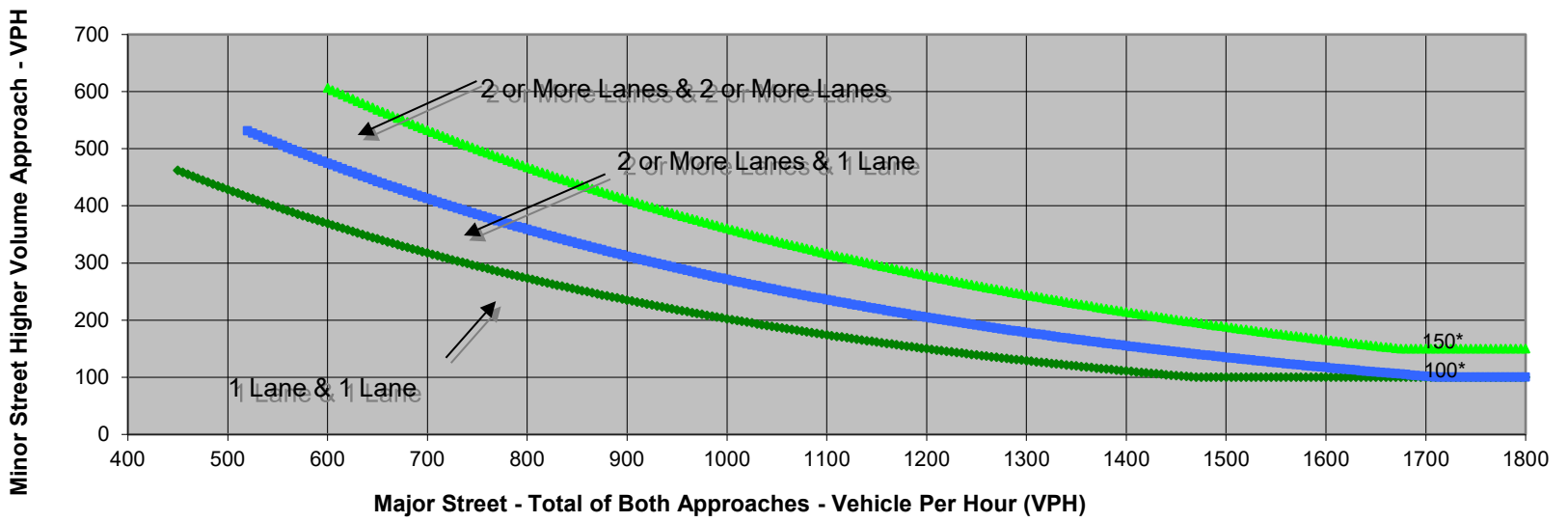
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1290	1290
Right	10	0	10	0
Total	20	0	1,300	1,300

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Radec Ct	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,600**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	8	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Park Villa Ln	Peak Hour	AM

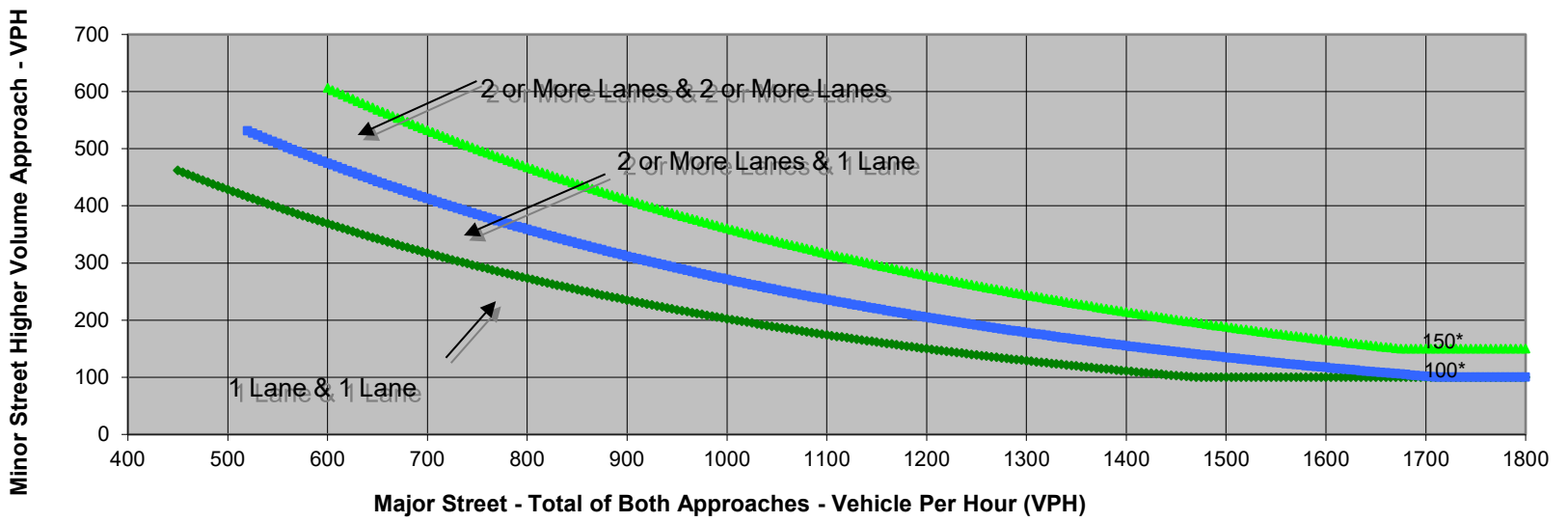
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1210	1190
Right	10	0	10	0
Total	20	0	1,220	1,200

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Park Villa Ln	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,420**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	11	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	N Linda Vista St	Peak Hour	AM

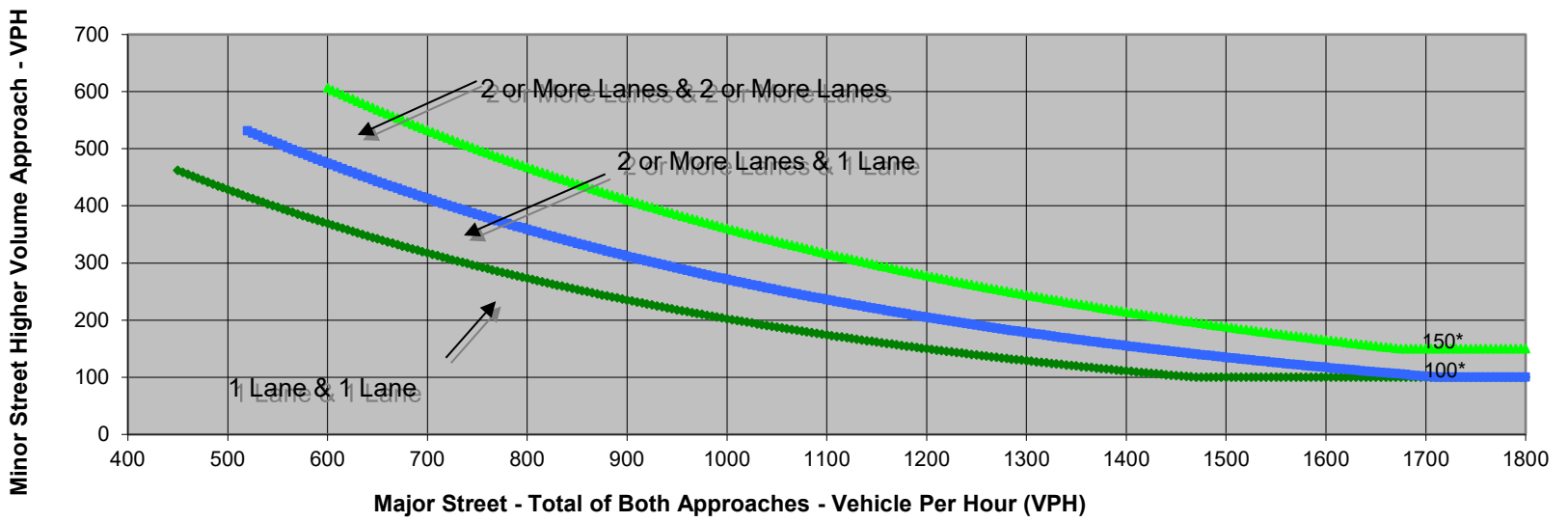
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	30	70	10
Through	10	0	1250	1640
Right	30	110	40	100
Total	50	140	1,360	1,750

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	N Linda Vista St	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,110**	**140**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	15	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Loma St	Scenario	Future Year (2045) Conditions
Minor Street	Cannon St	Peak Hour	AM

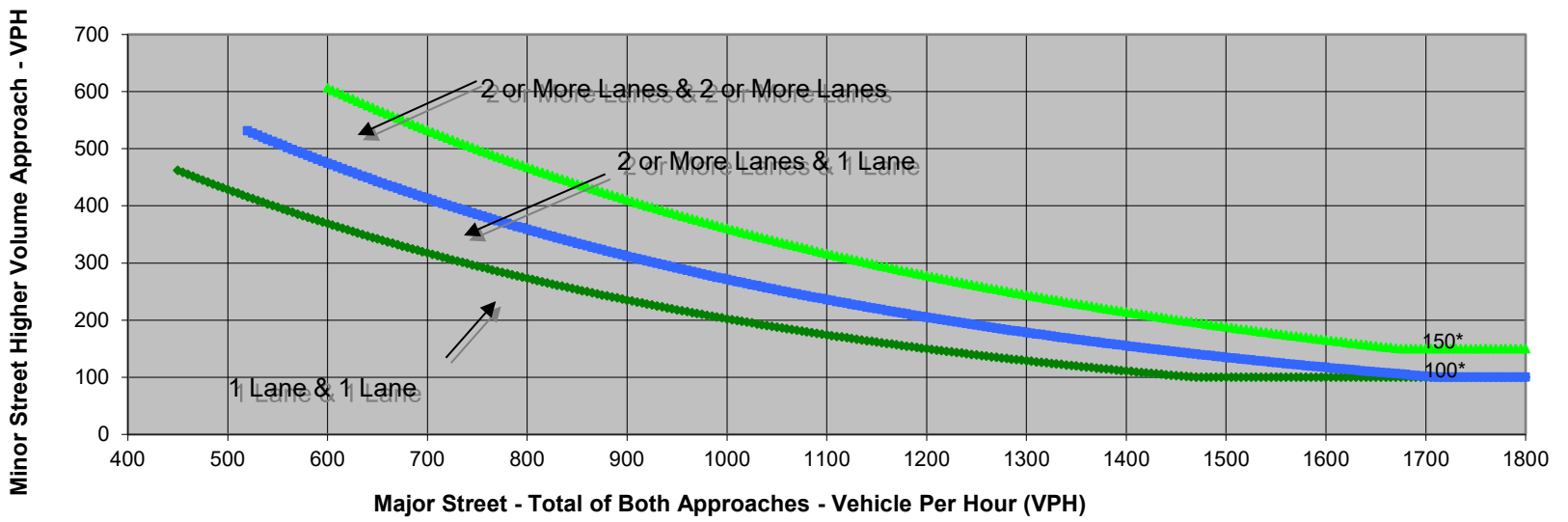
Turn Movement Volumes

	NB	SB	EB	WB
Left	30	0	40	0
Through	920	1770	0	0
Right	0	60	60	0
Total	950	1,830	100	0

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Mesa Dr	Cannon St	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,780**	**100**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	2	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kathleen Ln	Peak Hour	PM

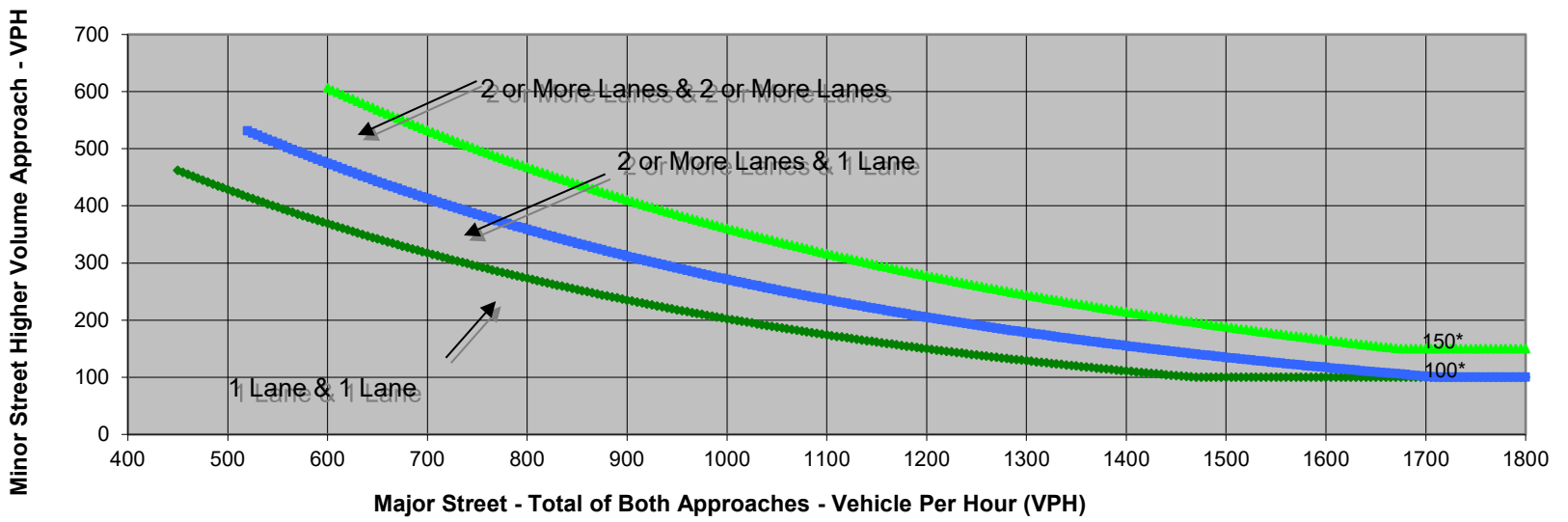
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	10	0
Through	0	0	1280	1420
Right	0	10	0	0
Total	0	10	1,290	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	**Minor Street**	**Warrant Met**
	Villa Park Rd	E Trenton Ave	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,710**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	3	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Morrow Cir	Peak Hour	PM

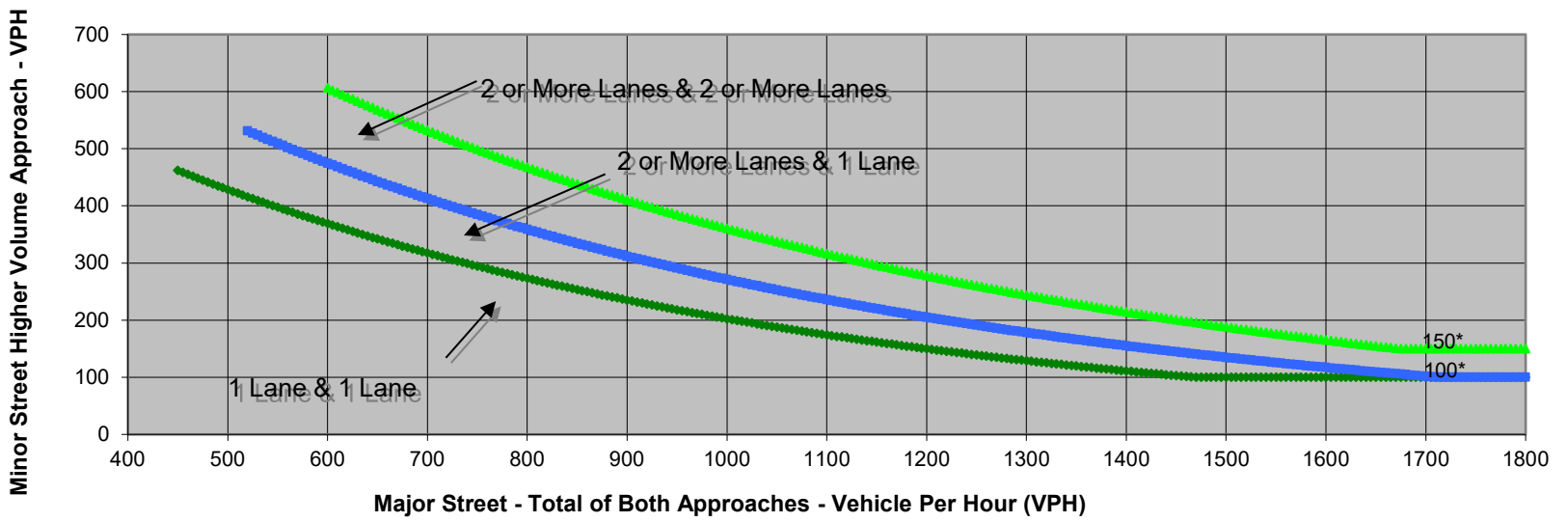
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1270	1410
Right	10	0	10	0
Total	20	0	1,280	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Morrow Cir	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,700**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	4	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Prado Woods Dr	Peak Hour	PM

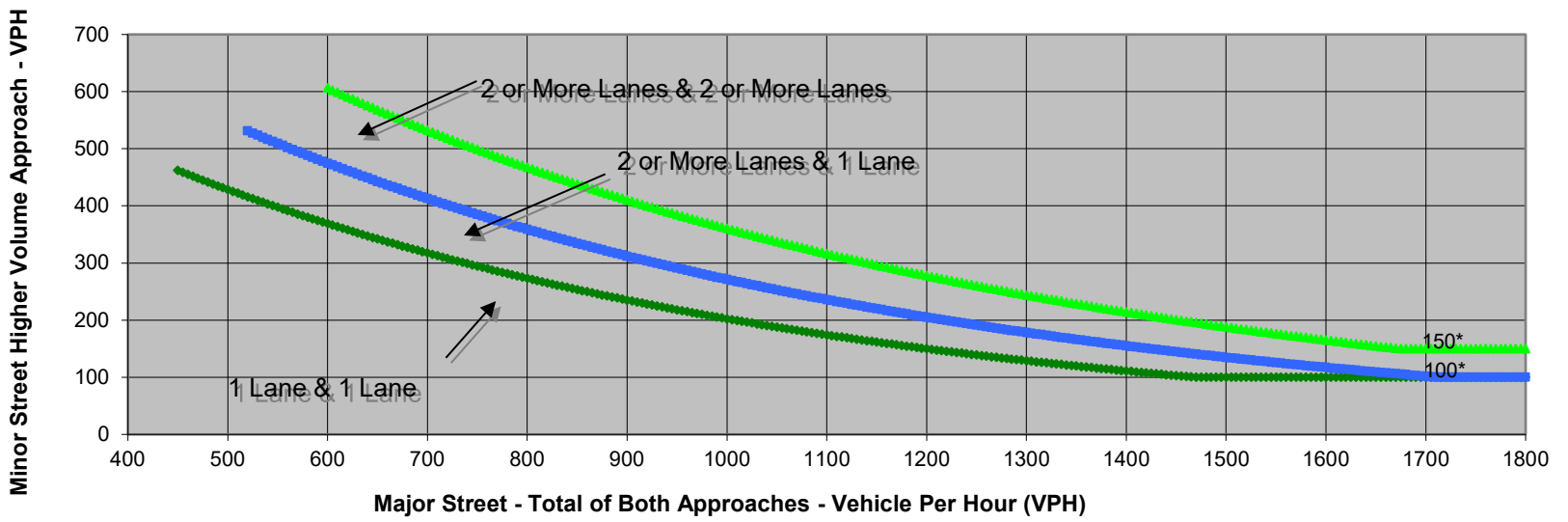
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	10	20	0
Through	0	0	1260	1410
Right	0	10	0	10
Total	0	20	1,280	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Prado Woods Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,700**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	5	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Kenwick Dr	Peak Hour	PM

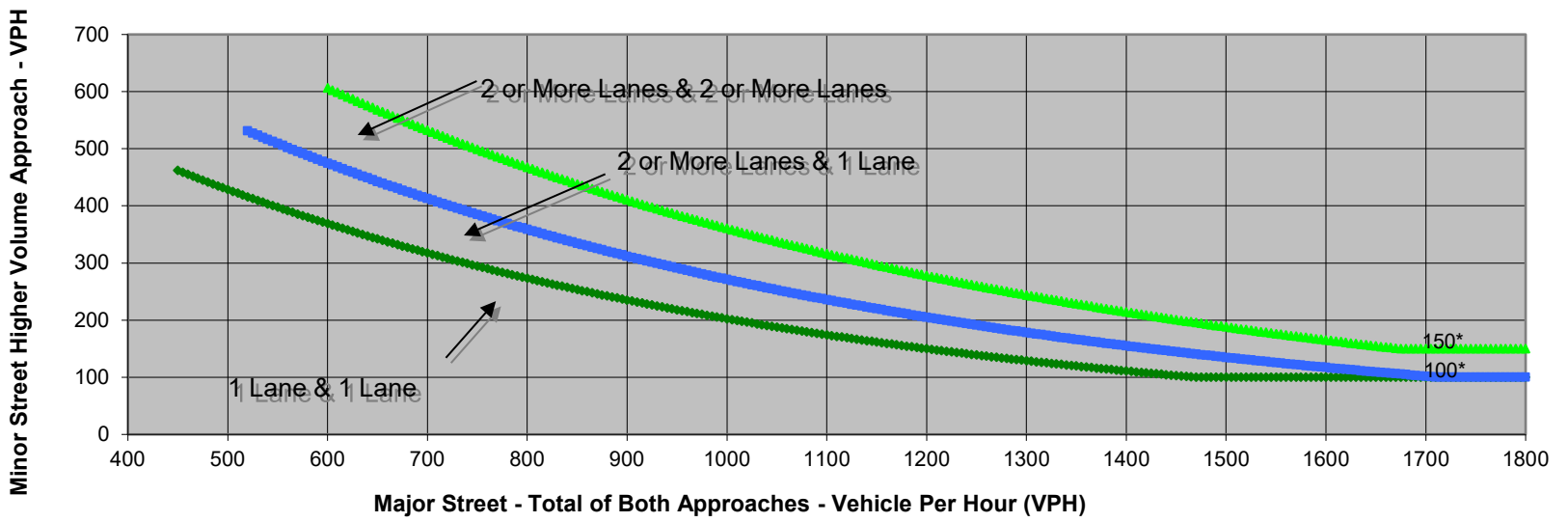
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	10	0
Through	0	0	1260	1410
Right	0	10	0	10
Total	0	10	1,270	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Kenwick Dr	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,690**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Intersection	6	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Radec Ct	Peak Hour	PM

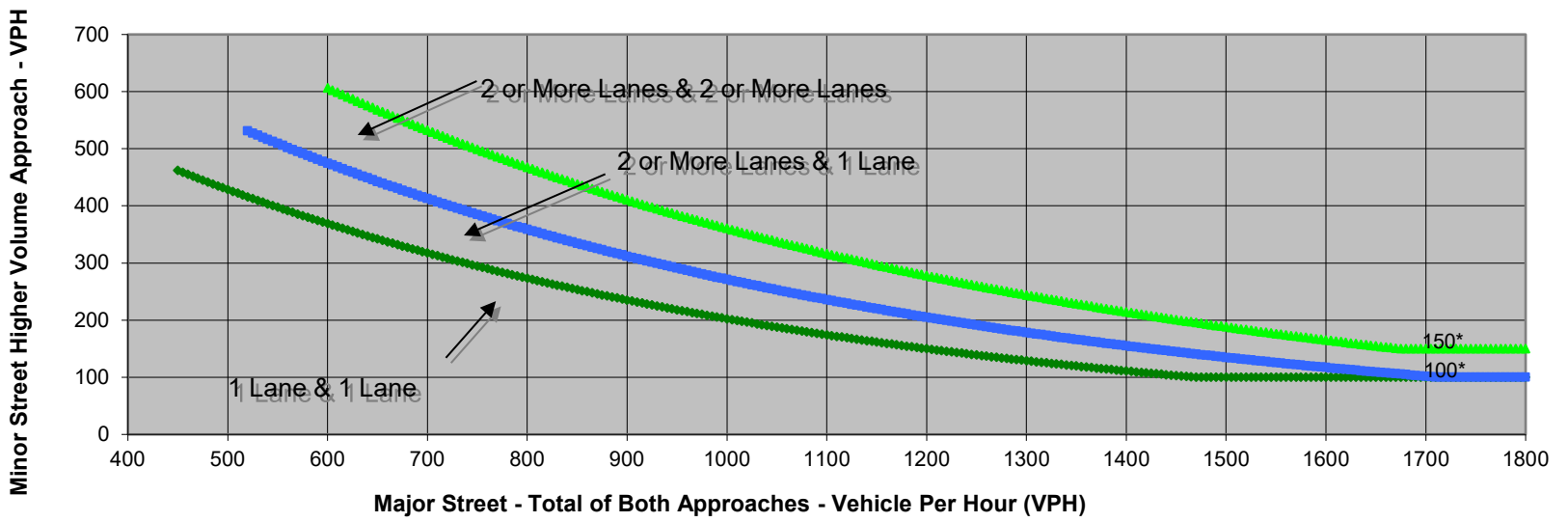
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1250	1410
Right	0	0	10	0
Total	10	0	1,260	1,420

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Radec Ct	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,680**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	8	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	Park Villa Ln	Peak Hour	PM

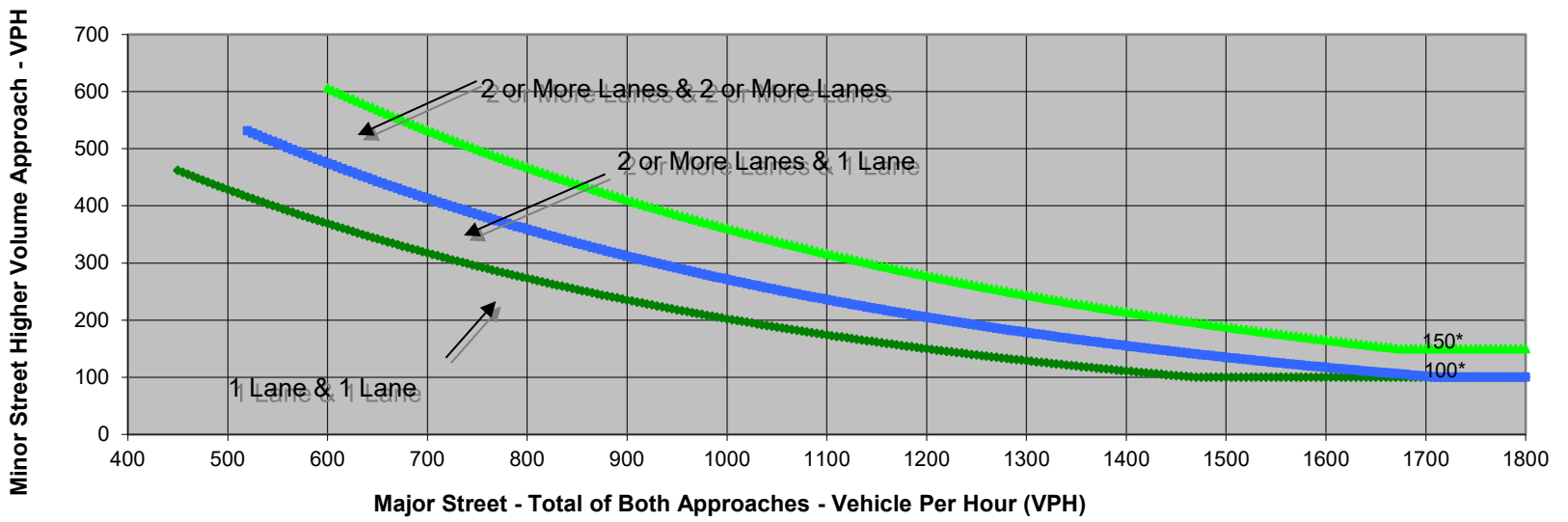
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1200	1420
Right	10	0	10	0
Total	20	0	1,210	1,430

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	Park Villa Ln	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,640**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	11	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Villa Park Rd	Scenario	Future Year (2045) Conditions
Minor Street	N Linda Vista St	Peak Hour	PM

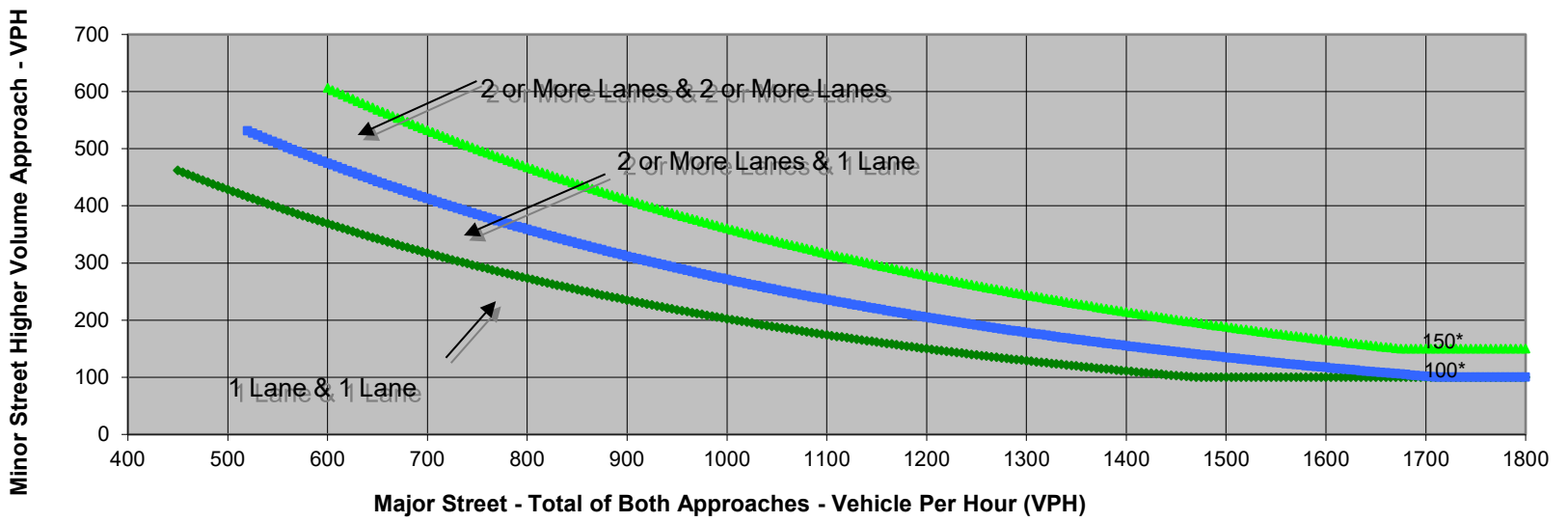
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	10	10	10
Through	0	0	1600	1620
Right	10	20	30	20
Total	20	30	1,640	1,650

Major Street Direction

	North/South
x	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Villa Park Rd	N Linda Vista St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**3,290**	**30**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Intersection	15	Project	MPAH Amendment Study - Villa Park Rd
Major Street	Loma St	Scenario	Future Year (2045) Conditions
Minor Street	Cannon St	Peak Hour	PM

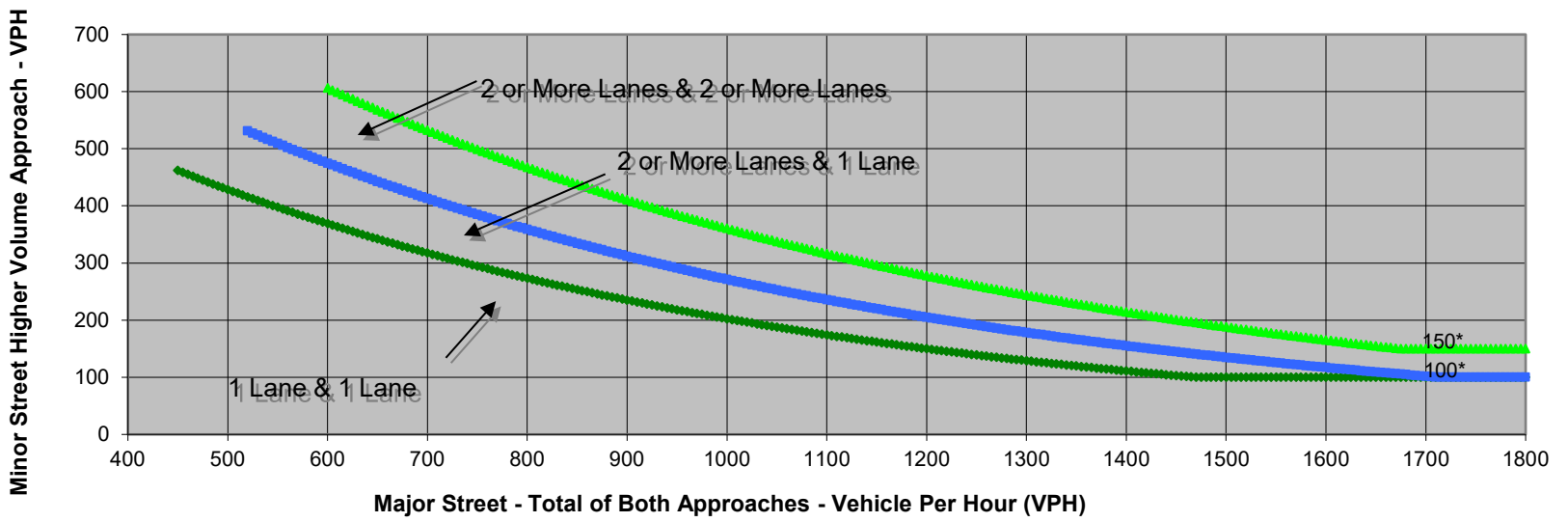
Turn Movement Volumes

	NB	SB	EB	WB
Left	40	0	30	0
Through	1580	940	0	0
Right	0	30	30	0
Total	1,620	970	60	0

Major Street Direction

x	North/South
	East/West

Figure 4C-3. Warrant 3, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2012

	Major Street	Minor Street	Warrant Met
	Mesa Dr	Cannon St	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,590**	**60**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Attachment F: Collision Data

Crash Details for: Case ID 8717340

Crash Information

County	Orange
City	Orange
Date & Time (M/D/Y)	09/14/2018 15:19
Location (Intersection)	Villa Park Rd & N Wanda Rd
Dist. & Dir. from Intersection	At Intersection
State Highway	No
Geocoded Location	33.8104591, -117.8219681

Type of Crash	A - Head-On
Motor Vehicle Involved With	G - Bicycle
Crash Severity	3 - Injury (Other Visible)
PCF Violation Category	09 - Automobile Right of Way
Weather	A - Clear
Alcohol Involved	No

Pedestrian Accident	No	**Bicycle Accident**	Yes
Motorcycle Accident	No	**Truck Accident**	No

Map View



Street View



Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	4 - Bicyclist	L - Bicycle	Yes	South	B - Proceeding Straight
2	1 - Driver (including Hit and Run)	D - Pickup or Panel Truck	No	West	B - Proceeding Straight

Victims: 2

Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
1	4 - Bicyclist	M - Male	12	6 - Suspected Minor Injury
2	2 - Passenger	M - Male	58	0 - No Injury

Crash Details for: Case ID 8784782

Crash Information

County	Orange
City	Orange
Date & Time (M/D/Y)	01/09/2019 14:06
Location (Intersection)	East Katella Av & Wanda Rd
Dist. & Dir. from Intersection	At Intersection
State Highway	No
Geocoded Location	33.8104591, -117.8219681

Type of Crash	H - Other
Motor Vehicle Involved With	G - Bicycle
Crash Severity	4 - Injury (Complaint of Pain)
PCF Violation Category	09 - Automobile Right of Way
Weather	A - Clear
Alcohol Involved	No

Pedestrian Accident	No	**Bicycle Accident**	Yes
Motorcycle Accident	No	**Truck Accident**	No

Map View



Street View



Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	4 - Bicyclist	L - Bicycle	No	West	D - Making Right Turn
2	1 - Driver (including Hit and Run)	D - Pickup or Panel Truck	Yes	West	B - Proceeding Straight

Victims: 1

Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
1	4 - Bicyclist	M - Male	84	7 - Possible Injury

Crash Details for: Case ID 8874276

Crash Information

County	Orange
City	Orange
Date & Time (M/D/Y)	05/14/2019 06:36
Location (Intersection)	Katella Av & Wanda St
Dist. & Dir. from Intersection	At Intersection
State Highway	No
Geocoded Location	33.8104591, -117.8219681

Type of Crash	D - Broadside
Motor Vehicle Involved With	G - Bicycle
Crash Severity	3 - Injury (Other Visible)
PCF Violation Category	12 - Traffic Signals and Signs
Weather	A - Clear
Alcohol Involved	No

Pedestrian Accident	No	**Bicycle Accident**	Yes
Motorcycle Accident	No	**Truck Accident**	No

Map View



Street View



Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	1 - Driver (including Hit and Run)	A - Passenger Car/Station Wagon	Yes	West	B - Proceeding Straight
2	4 - Bicyclist	L - Bicycle	No	North	B - Proceeding Straight

Victims: 1

Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
2	4 - Bicyclist	M - Male	16	6 - Suspected Minor Injury

Crash Details for: Case ID 82028363

Crash Information

County	Orange
City	Orange
Date & Time (M/D/Y)	08/06/2022 05:30
Location (Intersection)	Santiago Canyon Rd & Cannon St
Dist. & Dir. from Intersection	225.00 ft West
State Highway	No
Geocoded Location	33.8111458, -117.7961502

Type of Crash	G - Vehicle/Pedestrian
Motor Vehicle Involved With	B - Pedestrian
Crash Severity	3 - Injury (Other Visible)
PCF Violation Category	21 - Unsafe Starting or Backing
Weather	A - Clear
Alcohol Involved	Yes

Pedestrian Accident	Yes	**Bicycle Accident**	No
Motorcycle Accident	No	**Truck Accident**	No

Map View



Street View



Parties: 2

Party Number	Party Type	Statewide Vehicle Type	At Fault	Party Direction	Movement Preceding Collision
1	1 - Driver (including Hit and Run)	A - Passenger Car/Station Wagon	Yes	West	G - Backing
2	2 - Pedestrian	N - Pedestrian	No	East	A - Stopped

Victims: 1

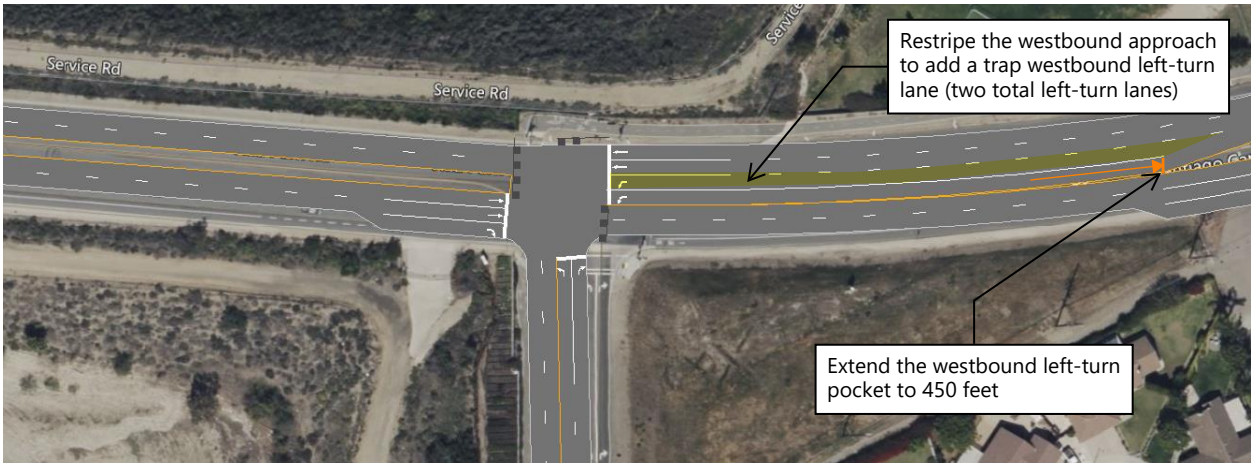
Party Number	Victim Role	Victim Gender	Victim Age	Victim Degree of Injury
2	3 - Pedestrian	M - Male	21	6 - Suspected Minor Injury

Attachment G: Intersection Improvements

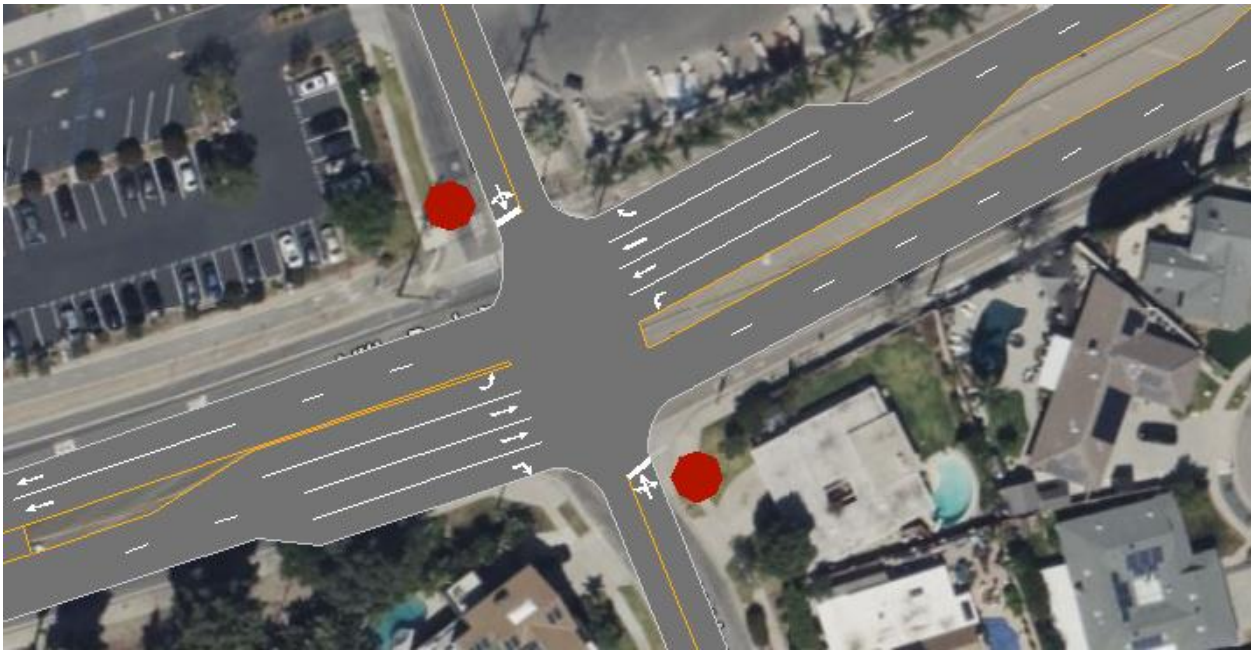
Intersection # 10: Hewes Street and Villa Park Road No Improvements



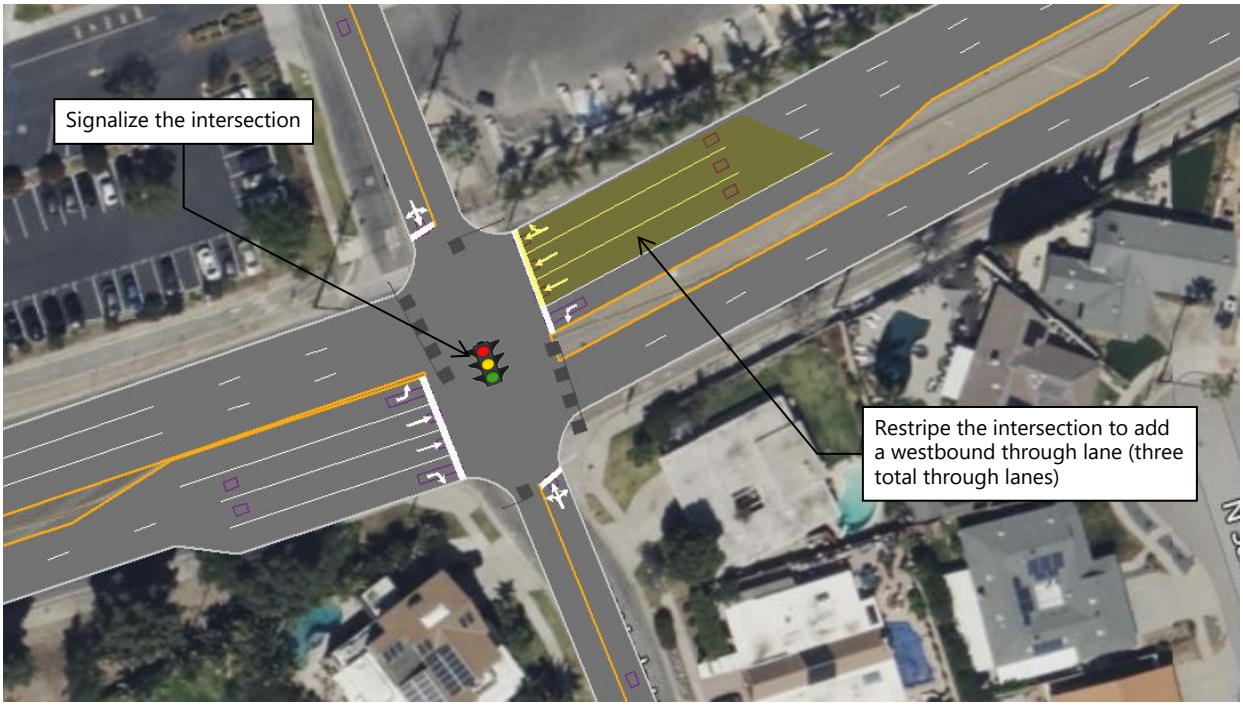
Intersection # 10: Hewes Street and Villa Park Road with Improvements



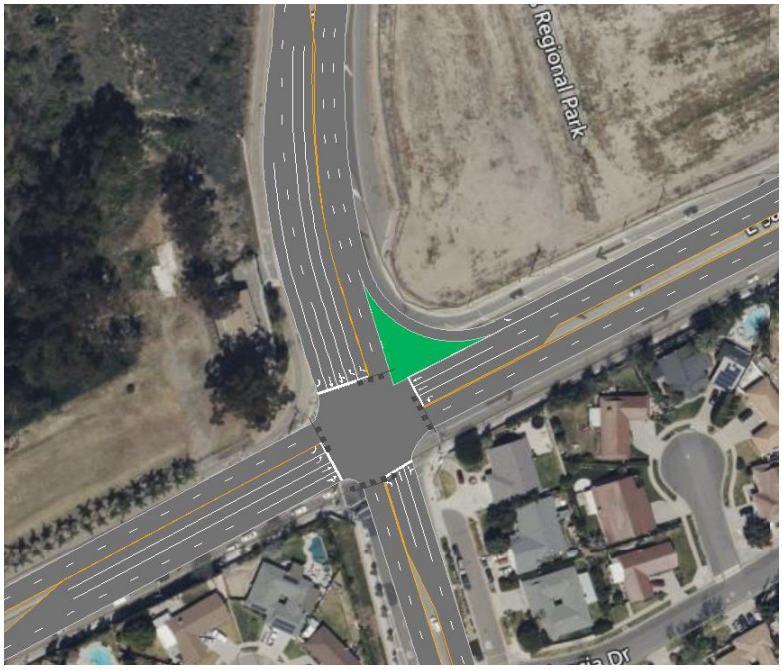
Intersection #11: Linda Vista Street and Villa Park Road No Improvements



Intersection #11: Linda Vista Street and Villa Park Road with Improvements



Intersection #12: Cannon Street and Santiago Canyon Road No Improvements



Intersection #12: Cannon Street and Santiago Canyon Road with Improvements



Agenda Item

AGENDA STAFF REPORT

ASR Control 25-000190

MEETING DATE:	05/06/25
LEGAL ENTITY TAKING ACTION:	Board of Supervisors
BOARD OF SUPERVISORS DISTRICT(S):	All Districts
SUBMITTING AGENCY/DEPARTMENT:	OC Public Works (Approved)
DEPARTMENT CONTACT PERSON(S):	Justin Kirk (714) 667-1627
	Cindy Salazar (714) 667-8870

SUBJECT: Adopt General Plan Amendment TGPA 24-03 - Transportation Element

CEO CONCUR	**COUNTY COUNSEL REVIEW**	**CLERK OF THE BOARD**
Concur	Approved Resolution to Form	Public Hearing 3 Votes Board Majority

Budgeted: N/A **Current Year Cost:** N/A **Annual Cost:** N/A

Staffing Impact: No **# of Positions:** **Sole Source:** N/A

Current Fiscal Year Revenue: N/A

Funding Source: N/A **County Audit in last 3 years:** N/A

Levine Act Review Completed: N/A

Prior Board Action: 10/8/2024 #15, 1/12/2021 #44-45, 11/17/2020 #30, 2/25/2020 #17-18

RECOMMENDED ACTION(S):

1. Find that the proposed project is exempt from the provisions of the CEQA, Common Sense Exemption pursuant to CEQA Guidelines Section 15061 (b)(3).

2. Conduct public hearing.

3. Consider the matter and adopt Resolution which will adopt General Plan Amendment TGPA 24-03 - Transportation Element.

SUMMARY:

Adoption of General Plan Amendment TGPA 24-03 - Transportation Element will reclassify roadway designation for Villa Park Road/Santiago Canyon Road to accurately reflect changing development and traffic patterns.

BACKGROUND INFORMATION:

The County of Orange (County) Transportation Element identifies goals, objectives, policies and implementation programs that affect the transportation system. The Transportation Element contains policies on the development of the transportation facilities necessary to accommodate orderly growth within

the County, provides guidance for future planning efforts within the unincorporated area and ensures a balanced transportation system.

OC Public Works initiated a Master Plan of Arterial Highways (MPAH) amendment request with the Orange County Transportation Authority (OCTA) after evaluation of a Transportation Assessment (TA) (Fehr and Peers, March 2024, Attachment D). The MPAH depicts a Countywide roadway network intended to ensure coordinated transportation system development among local jurisdictions in the County. The TA compared the existing MPAH roadway designations for Villa Park Road/Santiago Canyon Road against proposed modifications to those roadway designations to conform the designations to reduced growth projections through the year 2045. Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street is a four-lane Primary Arterial. The MPAH designates the roadway as a six-lane Major Arterial.

The proposed reclassification of the roadway segment is meant to support the County's effort to improve traffic conditions and conform to changing traffic patterns and growth estimates. Over the last ten years, the population growth projections have indicated reduced future growth compared to previous years. As a result, some of the future planned roadway infrastructure to support the previously assumed higher population growth may no longer be necessary.

The TA analyzed future forecasts along Villa Park Road/Santiago Canyon Road and indicated that more capacity is needed between Hewes Street and Cannon Street to effectively serve future demand. However, the current Major Arterial designation does not fit within the existing right of way. The TA concluded that the roadway designation of a five lane Asymmetric Primary Arterial (three westbound lanes and two eastbound lanes) on Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street will be sufficient to serve future traffic demand on the roadway, be the best use of the available right-of-way to increase capacity, meet operational goals of the County and limit impacts to adjacent properties. Further explanation of this review is detailed in Planning Commission Staff Report and Resolution No. 2025-03 (Attachment D). The five lane Asymmetric Primary Arterial roadway can fit within the existing 100-foot right-of-way.

Proposed Project:
The proposed General Plan Amendment TGPA 24-03 - Transportation Element (Amendment) includes the following revisions, including the Circulation Plan (Attachment C):

1. Reclassify the existing classification of Major Arterial (divided six-lane) to Asymmetric Primary Arterial (divided five-lane) for Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street. The reclassification would provide three westbound lanes and two eastbound lanes and provide adequate right-of-way to accommodate a Class II bicycle lanes with three-foot painted buffers to improve traffic conditions on Villa Park Road/Santiago Canyon Road.

2. Include the definition of Asymmetric Lanes in the Transportation Element (Attachment B).

    a. Asymmetric Lanes: Capacity augmentation may be needed that creates more lanes in one direction than the other (asymmetric lanes) along some Smart Streets, Principal, Major and/or Primary arterials.

The MPAH amendment request was conditionally approved by OCTA's Regional Transportation Planning Committee on August 29, 2024, and by OCTA's Board on September 9, 2024. OCTA's conditional approval action remains conditional until OCTA receives documentation that the County has amended their General Plan and complies with the requirements of CEQA. OC Public Works recommends the Board adopt the Resolution to adopt the Amendment.

Planning Commission (Commission) Action:
OC Public Works received authorization from the Commission on December 11, 2024, to initiate the Amendment, including the Circulation Plan. On February 26, 2025, the Commission held a public hearing, considered the Amendment and voted to adopt Commission Resolution No. 2025-03, which recommends adoption by the Board of Supervisors (Board) to update the County's Transportation Element (Attachment D).

Prior Board actions related to the County's Transportation Element are summarized in the table below.

Board Date	Action
10/8/2024	Adopted General Plan Amendment T24-01 - County of Orange Transportation Element
1/12/2021	Adopted General Plan Amendment T20-02 - County of Orange Transportation Element Adopted General Plan Amendment T20-03 - County of Orange Transportation Element
11/17/2020	Adopted General Plan Amendment 20-01 Land Use, Transportation, Growth Management
2/25/2020	Adopted General Plan Amendment T19-01 - County of Orange Transportation Element Adopted General Plan Amendment T19-02 - County of Orange Transportation Element

Compliance with CEQA: The proposed Amendment is exempt (Common Sense Exemption) from the provisions of CEQA pursuant to CEQA Guidelines Sections 15061(b)(3) since there is no possibility that the revisions to the roadway designations may have a significant effect on the environment.

FINANCIAL IMPACT:

N/A

STAFFING IMPACT:

N/A

ATTACHMENT(S):

Attachment A - Resolution
Attachment B - Resolution Exhibit A (Transportation Element)
Attachment C - Resolution Exhibit B (Circulation Plan Map)
Attachment D - Planning Commission Staff Report and Resolution No. 2025-03

September 9, 2024

To: Members of the Board of Directors

From: Andrea West, Clerk of the Board

Subject: Amendments to the Master Plan of Arterial Highways

Regional Transportation Planning Committee Meeting of August 29, 2024

Present: Directors Dumitru, Federico, Foley, and Stephens
Absent: Directors Do, Harper, and Khan

Committee Vote

This item was passed by the Members present.

Committee Recommendation(s)

A. Approve the following Master Plan of Arterial Highways amendments:

County of Orange

1. Reclassify Villa Park Road/Santiago Canyon Road from a major (six-lane, divided) arterial to an asymmetric primary (five-lane, divided) arterial between Hewes Street and Cannon Street.
2. Reclassify Santiago Canyon Road from a primary (four-lane, divided) arterial to a divided collector (two-lane, divided) arterial between State Route 241 and Live Oak Canyon Road.
3. Reclassify El Toro Road from a major (six-lane, divided) arterial to a primary (four-lane, divided) arterial between Live Oak Canyon Road and Pheasant Creek.
4. Reclassify El Toro Road, from a major (six-lane, divided) arterial to an asymmetric primary (five-lane, divided) arterial between Pheasant Creek and Portola Parkway.
5. Delete Black Star Canyon Road between Silverado Canyon Road and the Orange County/Riverside County Line.
6. Reclassify Bucker Way from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between Ranch Canyon Road and Coyotes Road.
7. Reclassify Ranch Canyon Road from a primary (four-lane, divided) arterial to a divided collector (two-lane, divided) arterial between Bucker Way and Cow Camp Road.

City of Fullerton

8. Reclassify Harbor Boulevard, from a major (six-lane, divided) arterial to a primary (four-lane, divided) arterial between Bastanchury Road and Berkeley Avenue.

City of Laguna Hills

9. Reclassify Paseo De Valencia from a major (six-lane, divided) arterial to a divided collector (two-lane, divided) arterial between Alicia Parkway and La Paz Road.
10. Reclassify Paseo De Valencia from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between La Paz Road and Cabot Road.
11. Reclassify Cabot Road from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between Paseo de Valencia and El Paseo.

The Master Plan of Arterial Highways will be amended to reflect each approved request contingent upon receipt of documentation confirming that all affected general plans are consistent with the proposed amendment and are compliant with the California Environmental Quality Act. Amendment requests will expire if the Orange County Transportation Authority does not receive such documentation within three years of granting approval.

Should the proposed Master Plan of Arterial Highways amendment be modified for any reason after receiving approval, the modified Master Plan of Arterial Highways amendment must be returned to the Orange County Transportation Authority Board of Directors for reconsideration and action.

B. Direct the Executive Director of Planning, or his designee, to file a Notice of Exemption from the California Environmental Quality Act for the Master Plan of Arterial Highways amendments.

C. Receive and file a status report on the active Master Plan of Arterial Highways amendments.

OCTA

August 29, 2024

To: Regional Transportation Planning Committe

From: Darrell E. Johnson, Chief Executive Officer



Subject: Amendments to the Master Plan of Arterial Highways

Overview

The Orange County Transportation Authority administers the Master Plan of Arterial Highways, including the review and approval of amendments requested by local agencies. Approvals are recommended for amendment requests from the County of Orange, the City of Fullerton, and the City of Laguna Hills. Also, a status report on pending amendment requests is provided.

Recommendations

A. Approve the following Master Plan of Arterial Highways amendments:

County of Orange

1. Reclassify Villa Park Road/Santiago Canyon Road from a major (six-lane, divided) arterial to an asymmetric primary (five-lane, divided) arterial between Hewes Street and Cannon Street.
2. Reclassify Santiago Canyon Road from a primary (four-lane, divided) arterial to a divided collector (two-lane, divided) arterial between State Route 241 and Live Oak Canyon Road.
3. Reclassify El Toro Road from a major (six-lane, divided) arterial to a primary (four-lane, divided) arterial between Live Oak Canyon Road and Pheasant Creek.
4. Reclassify El Toro Road, from a major (six-lane, divided) arterial to an asymmetric primary (five-lane, divided) arterial between Pheasant Creek and Portola Parkway.
5. Delete Black Star Canyon Road between Silverado Canyon Road and the Orange County/Riverside County Line.
6. Reclassify Bucker Way from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between Ranch Canyon Road and Coyotes Road.
7. Reclassify Ranch Canyon Road from a primary (four-lane, divided) arterial to a divided collector (two-lane, divided) arterial between Bucker Way and Cow Camp Road.

City of Fullerton

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City of Laguna Hills

9. Reclassify Paseo De Valencia from a major (six-lane, divided) arterial to a divided collector (two-lane, divided) arterial between Alicia Parkway and La Paz Road.
10. Reclassify Paseo De Valencia from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between La Paz Road and Cabot Road.
11. Reclassify Cabot Road from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between Paseo de Valencia and El Paseo.

The Master Plan of Arterial Highways will be amended to reflect each approved request contingent upon receipt of documentation confirming that all affected general plans are consistent with the proposed amendment and are compliant with the California Environmental Quality Act. Amendment requests will expire if the Orange County Transportation Authority does not receive such documentation within three years of granting approval.

Should the proposed Master Plan of Arterial Highways amendment be modified for any reason after receiving approval, the modified Master Plan of Arterial Highways amendment must be returned to the Orange County Transportation Authority Board of Directors for reconsideration and action.

B. Direct the Executive Director of Planning, or his designee, to file a Notice of Exemption from the California Environmental Quality Act for the Master Plan of Arterial Highways amendments.

C. Receive and file a status report on the active Master Plan of Arterial Highways amendments.

Background

The Master Plan of Arterial Highways (MPAH) coordinates roadway system planning across Orange County jurisdictions. The MPAH was first adopted by the County of Orange in 1956, and the Orange County Transportation Authority (OCTA) assumed administration responsibilities in 1995.

OCTA is responsible for maintaining the integrity and continuity of the MPAH system as it evolves to fulfill transportation circulation needs by reviewing changes proposed by local jurisdictions. The reviews consider potential transportation-related concerns and ensure interagency collaboration to avoid unintended impacts in neighboring jurisdictions or regional transportation systems. Details on the requested amendments by the County of Orange (County), City of Fullerton (Fullerton), and City of Laguna Hills (Laguna Hills) are presented below, along with a status report of MPAH amendments that are in process.

Discussion

Consistent with the MPAH amendment process described in OCTA's Guidance for Administration of the MPAH, Attachment A documents OCTA's analysis of several requests for amendments to the MPAH. The requests were submitted to OCTA by the County (Attachments B, C, and D), Fullerton (Attachment E), and Laguna Hills (Attachment F). The table below summarizes the current and proposed roadway configurations.

The first five amendments in the table that are proposed by the County are illustrated in Attachment G and the cities of Lake Forest, Mission Viejo, Orange, and Villa Park have provided consent forms (Attachments H and I) to express their support. The remaining three amendments being proposed by the County are illustrated in Attachment J. Additionally, a map of the MPAH amendment request by the City of Fullerton is provided in Attachment K, and a map of the amendment request by the City of Laguna Hills is provided in Attachment L.

Most of the amendments are being requested to accommodate complete street initiatives. OCTA supports these initiatives through the MPAH amendment process, which also ensures that the integrity of the MPAH system is maintained and has no impacts on the ability of OCTA to deliver public transit. The amendment requests are supported by affected jurisdictions, where applicable, and they can be implemented within the existing right-of-way. The requested amendments are expected to sufficiently accommodate future traffic demand and, therefore, they do not adversely impact the MPAH and are recommended for approval.

Agency	Current Configuration	MPAH Classification	Requested Classification
1. Villa Park Road/Santiago Canyon Road - Hewes Street to Cannon Street			
County	4-lane, divided	6-lane, divided	5-lane, divided
2. Santiago Canyon Road - State Route 241 to Live Oak Canyon Road			
County	2-lane, undivided	4-lane, divided	2-lane, divided
3. El Toro Road - Live Oak Canyon Road to Pheasant Creek			
County	2-lane, undivided	6-lane, divided	4-lane, divided
4. El Toro Road - Pheasant Creek to Portola Parkway			
County	5-lane, divided	6-lane, divided	5-lane, divided
5. Black Star Canyon Road - Silverado Canyon Road to County Line			
County	Unbuilt	4-lane, undivided	Remove
6. Bucker Way - Ranch Canyon Road to Coyotes Road			
County	Unbuilt	4-lane, undivided	2-lane, divided
7. Ranch Canyon Road - Bucker Way to Cow Camp Road			
County	Unbuilt	4-lane, divided	2-lane, divided
8. Harbor Boulevard - Bastanchury Road to Berkeley Avenue			
Fullerton	4-lane, divided	6-lane, divided	4-lane, divided
9. Paseo De Valencia - Alicia Parkway to La Paz Road			
Laguna Hills	4-lane, divided	6-lane, divided	2-lane, divided
10. Paseo De Valencia - La Paz Road to Cabot Road			
Laguna Hills	4-lane, divided	4-lane, divided	2-lane, divided
11. Cabot Road - Paseo de Valencia to El Paseo			
Laguna Hills	4-lane, divided	4-lane, undivided	2-lane, divided

California Environmental Quality Act (CEQA)

Amendments to the MPAH plan are exempt from CEQA review. With direction from the Board, staff will file a Notice of Exemption from CEQA for the proposed MPAH amendment.

MPAH Amendment Status Update

There are currently 17 active amendments proposed for the MPAH (Attachment M). Several of the active amendments are awaiting local action to amend their respective general plans. Others are either under review, in the cooperative study process, pending resolution of issues with other agencies, or are awaiting refinement of development plans.

On July 12, 2021, the Board conditionally approved amendments to delete Tonner Canyon Road and Valencia Avenue in the City of Brea (Brea) from the MPAH. Since the general plan update was not completed within three years of the Board approval date, the amendment was not finalized and has expired. Staff is actively coordinating with Brea to potentially restart the amendment process when appropriate.

Staff is also coordinating with the cities of Costa Mesa and Newport Beach on the proposed 19th Street amendment. OCTA has met with both cities to discuss the status of this request. The setting for this change can have implications on roadways that involve the cities of Costa Mesa, Huntington Beach, Newport Beach, the County of Orange, and potentially the California Department of Transportation. OCTA is agreeable to lead a traffic study in the general area, including the Banning Ranch area, to gain consensus between the involved agencies on MPAH network needs before advancing the 19th Street amendment. However, OCTA was asked to pause the effort until after the cities of Costa Mesa and Newport Beach have updated their General Plan Housing Elements so the latest future housing assumptions can be reflected in the traffic analysis.

Summary

The County, Fullerton, and Laguna Hills have requested amendments to the MPAH. Based on an analysis of the requested changes, the MPAH Guidance has been satisfied, and staff recommends Board approval. A summary of active amendments proposed for the MPAH is also provided as information for the Board.

Attachments

A. Master Plan of Arterial Highways Amendments Detailed Discussion
B. Letter from Nardy Khan, PE, PMP, Deputy Director, OC Public Works, to Kurt Brotcke, Director, Strategic Planning, Orange County Transportation Authority, dated March 6, 2024, re: MPAH Amendment Request for Villa Park Road/Santiago Canyon Road
C. Letter from Nardy Khan, PE, PMP, Deputy Director, OC Public Works, to Kurt Brotcke, Director, Strategic Planning, Orange County Transportation Authority, dated March 27, 2024, re: MPAH Amendment Request for Santiago Canyon Road (SCR), El Toro Road, and Black Star Canyon Road
D. Letter from Nardy Khan, PE, PMP, Deputy Director, OC Public Works, to Kia Mortazavi, Executive Director, Strategic Planning, Orange County Transportation Authority, dated July 18, 2024, re: MPAH Amendment Request for Bucker Way and Ranch Canyon Road in RMV
E. Letter from Stephen Bise, PE, Public Works Director, City of Fullerton to Ivy Hang, Senior Transportation Analyst, Orange County Transportation

Authority, dated June 21, 2024, re: Master Plan of Arterial Highways Amendment – Harbor Boulevard

F. Letter from Jarad Hildenbrand, City Manager, City of Laguna Hills, to Kia Mortazavi, Executive Director, Planning Division, Orange County Transportation Authority, dated June 11, 2024, re: Master Plan of Arterial Highways Amendment – Paseo De Valencia and Cabot Road

G. County of Orange MPAH Amendments Map

H. Villa Park Road/Santiago Canyon Road – Jurisdiction Consent Forms

I. Santiago Canyon Road, El Toro Road, and Black Star Canyon Road – Jurisdiction Consent Forms

J. County of Orange MPAH Amendment Map – Bucker Way and Ranch Canyon Road

K. City of Fullerton MPAH Amendment Map

L. City of Laguna Hills MPAH Amendment Map

M. Status Report on Pending Master Plan of Arterial Highways Amendments

Prepared by:



Ivy Hang
Senior Transportation Analyst
(714) 560-5684

Approved by:



Kia Mortazavi
Executive Director, Planning
(714) 560-5741

Master Plan of Arterial Highways Amendments Detailed Discussion

County – Reclassify Villa Park Road/Santiago Canyon Road

Villa Park Road/Santiago Canyon Road, between Hewes Street and Cannon Street, is currently constructed as a primary (four-lane, divided) arterial, and is classified on the Master Plan of Arterial Highways (MPAH) as a future major (six-lane, divided) arterial. The County is requesting to reclassify this facility to an asymmetric primary (five-lane, divided) arterial. This reclassification would provide two eastbound lanes and three westbound lanes, while providing adequate right-of-way to accommodate class II bicycle lanes with three-foot painted buffers. The cities of Orange and Villa Park have also submitted consent forms to express their support for this MPAH amendment.

Based on analysis by Orange County Transportation Authority (OCTA) staff, using the Orange County Transportation Analysis Model (OCTAM) 5.1, 27,000 daily vehicle trips are forecasted for this segment in 2050. Since an asymmetric primary can carry up to 37,500 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides ample capacity, and no trips are expected to be diverted to other facilities.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Reclassify Santiago Canyon Road

Santiago Canyon Road, between State Route 241 and Live Oak Canyon Road, is currently constructed as a collector (two-lane, undivided) arterial, and is classified on the MPAH as a future primary (four-lane, divided) arterial. The County is requesting a reclassification of this facility to a divided collector (two-lane, divided) arterial. The proposed changes would support the County's effort to improve traffic conditions on Santiago Canyon Road. The cities of Lake Forest and Mission Viejo have also submitted consent forms to express their support for this MPAH amendment.

Based on analysis by OCTA staff, using OCTAM 5.1, between 9,000 and 14,000 daily vehicle trips are forecasted for this segment in 2050. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity, and no trips are expected to be diverted to other facilities.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Reclassify El Toro Road

El Toro Road, between Live Oak Canyon Road and Portola Parkway, currently has between two and five travel lanes. This facility is classified on the MPAH as a future major (six-lane, divided) arterial. The County is requesting to reclassify the segment of El Toro Road between Live Oak Canyon Road and Pheasant Creek to a primary

(four-lane, divided) arterial. For the segment of El Toro Road between Pheasant Creek and Portola Parkway, the County is requesting to reclassify to an asymmetric primary (five-lane, divided) arterial, consistent with the existing built configuration. The proposed changes would support the County's effort to accommodate class II bicycle lanes and improve traffic conditions on El Toro Road.

Based on analysis by OCTA staff, using OCTAM 5.1, between 10,000 and 15,000 daily vehicle trips are forecasted for the segment of El Toro Road between Live Oak Canyon Road and Portola Parkway in 2050. No trips are anticipated to be diverted to other facilities as a result of this amendment since the proposed classifications would have ample capacity for the forecasted volumes. Specifically, a primary can carry up to 30,000 daily vehicle trips while maintaining an acceptable level of service, and an asymmetric primary can carry up to 37,500 daily vehicle trips.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Delete Black Star Canyon Road

Black Star Canyon Road is currently built as an approximately one-mile, single-lane road that ends at the Black Star Canyon Falls trailhead in the Black Star Canyon wilderness area. The MPAH classifies the facility as a secondary (four-lane, undivided) arterial that extends to the Orange/Riverside County Line. A corresponding road was deleted from the Riverside County highway plan several years ago and an open space preserve was established by the City of Corona. Due to this lack of connectivity to Riverside County and concerns of severe environmental and cultural impacts from construction in the Cleveland National Forest, the County does not intend to implement this planned facility. Therefore, the County is requesting to delete Black Star Canyon Road from the MPAH.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Reclassify Bucker Way

Bucker Way is an unbuilt facility in the Rancho Mission Viejo community that is currently classified on the MPAH as a future Secondary (four-lane, undivided) arterial. The County is requesting to reclassify Bucker Way as a Divided Collector (two-lane, divided) arterial between Ranch Canyon Road and Coyotes Road to provide the appropriate capacity needed for the anticipated travel demand and accommodations for active transportation.

Based on analysis by OCTA staff, using OCTAM 5.1, approximately 3,000 daily vehicle trips are forecasted on this segment in 2050. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity, and no trips are expected to be diverted to other facilities.

Master Plan of Arterial Highways Amendments Detailed Discussion

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Reclassify Ranch Canyon Road

Ranch Canyon Road is an unbuilt facility in the Rancho Mission Viejo community that is currently classified on the MPAH as a future Primary (four-lane, divided) arterial. The County is requesting to reclassify Rancho Canyon Road to a Divided Collector (two-lane, divided) arterial between Bucker Way and Cow Camp Road to provide the appropriate capacity needed for the anticipated travel demand and accommodations for active transportation.

Based on analysis by OCTA staff, using OCTAM 5.1, approximately 13,000 daily vehicle trips are forecasted on this segment in 2050, assuming the amended classification. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity. This amendment does result in a diversion of approximately 2,000 trips to other facilities within the Rancho Mission Viejo area but does not cause any performance issues.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

Fullerton – Harbor Boulevard

Harbor Boulevard, between Bastanchury Road and Berkeley Avenue, currently has between four and six travel lanes. This segment is classified on the MPAH as a major (six-lane, divided) arterial. The City of Fullerton is requesting reclassification of this facility to a primary (four-lane, divided) arterial to accommodate active transportation improvements that are part of the Orange County Complete Streets Program (OCCSP) approved by the OCTA Board of Directors (Board) on February 12, 2024. This project requires a reduction of one lane in each direction north of Valley View Drive/Brea Boulevard and will provide six-foot bicycle lanes, a two-foot painted buffer, continuous sidewalks, and improved bus stops.

Based on analysis by OCTA staff, using OCTAM 5.1, approximately 35,000 daily vehicle trips are forecasted on Harbor Boulevard north of Valley View Drive/Brea Boulevard, and approximately 52,000 daily vehicle trips south of Valley View Drive/Brea Boulevard, assuming the amended classification. A primary arterial can carry up to 30,000 daily vehicle trips while maintaining an acceptable level of service. However, the City of Fullerton has established a level of service standard that allows a primary arterial to carry up to 33,800. While the projected volumes for 2050 exceed both the MPAH and locally-adopted level of service standards for roadway segments, additional analysis was performed that showed the corridor intersections would continue to meet the locally adopted level of service standards for intersections. Additionally, there are no adverse impacts that extend beyond the City of Fullerton’s jurisdictional boundary.

Master Plan of Arterial Highways Amendments Detailed Discussion

The requested amendment does not adversely impact the MPAH outside of the City of Fullerton, therefore, it is recommended for approval.

Laguna Hills – Paseo De Valencia

Paseo De Valencia, between Alicia Parkway and Cabot Road, is currently constructed as a primary (four-lane, divided) arterial, and is classified as a major (six-lane, divided) arterial and between Alicia Parkway and La Paz Road. The segment between La Paz Road and Cabot Road is classified as a secondary (four-lane, divided) arterial. The City of Laguna Hills is requesting the reclassification of both segments to a divided collector (two-lane, divided) arterial to provide traffic and safety improvements in the vicinity of Valencia Elementary School. This is part of a project included in the OCCSP that was approved by the Board on February 12, 2024.

Based on analysis by OCTA staff, using OCTAM 5.1, between 5,000 and 10,000 daily vehicle trips are forecasted on Paseo De Valencia in 2050. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity with no substantial diversion of traffic.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

Laguna Hills – Cabot Road

Cabot Road, between Paseo De Valencia and El Paseo, is currently constructed as a primary (four-lane, divided) arterial, and is classified as a secondary (four-lane, undivided) arterial. The City of Laguna Hills is requesting the reclassification of this facility to a divided collector (two-lane, divided) arterial to accommodate multimodal improvements that are linked to the improvements on Paseo De Valencia, and are part of the same project noted above that is included in the OCCSP approved by the Board on February 12, 2024.

Based on analysis by OCTA staff, using OCTAM 5.1, approximately 10,000 daily vehicle trips are forecasted on Cabot Road in 2050. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity with no substantial diversion of traffic.

County Administration South
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Santa Ana, CA 92701

P.O. Box 4048
Santa Ana, CA 92702

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info@ocpw.ocgov.com

OCPublicWorks.com

Administrative Services

OC Development Services

OC Facilities Design & Construction Management

OC Facilities Maintenance & CUF

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OC Construction

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OC Operations & Maintenance

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OC Survey

March 6, 2024

Mr. Kurt Brotcke, Director
Strategic Planning
Orange County Transportation Authority
550s. Main Street
Orange, CA 92863-1584

Subject: MPAH Amendment Request for Villa Park Road/Santiago Canyon Road

Dear Mr. Brotcke,

Orange County Public Works (OCPW) is formally requesting the initiation of a Master Plan of Arterial Highways (MPAH) Amendment process for Villa Park Road and Santiago Canyon Road between Hewes Street and Cannon Street. This roadway segment is situated within unincorporated Orange County and City of Orange.

OCPW proposes the following modification to the MPAH:

- Reclassification of Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street from a 6-lane Major Arterial Highway to a 5-lane Asymmetric Primary Arterial Highway.

Other stakeholders involved in the project include the City of Orange and the City of Villa Park, both of which endorse the amendment request (please refer to the attached consent forms). A Traffic Study conducted by OCPW has produced results that support the requested amendment (refer to the report attached).

Should you have any inquiries regarding this change, please feel free to contact Wei Zhu at (657) 303-3113.

Sincerely,

Nardy Khan, P.E., PMP
Deputy Director
OC Public Works/Infrastructure Programs

cc: Denis Bilodeau, OC Public Works/Traffic & Development Support
Wei Zhu, OC Public Works/Traffic

Attachments: Consent Form – City of Orange
Consent Form – City of Villa Park
Villa Park Road MPAH Amendment Traffic Study

ORANGE COUNTY
OC Public Works

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March 27, 2024

Mr. Kurt Brotcke, Director
Strategic Planning
Orange County Transportation Authority
550 South Main Street
Orange, CA. 92863-1584

Subject: MPAH Amendment Request for Santiago Canyon Road (SCR), El Toro Road, and Black Star Canyon Road

Dear Mr. Brotcke,

On May 8, 2017, the Orange County Transportation Authority (OCTA) Board of Directors (Board) approved an amendment to the Master Plan of Arterial Highways (MPAH), which included three changes: reclassification of Santiago Canyon Road (SCR), deletion of the Jeffrey Road Extension, and deletion of Black Star Canyon Road between Silverado Canyon Road and the Orange County/Riverside County line. The approval was contingent upon fulfilling several requirements, including amending each agency's general plan. This amendment was based on a traffic study that recommended reclassifying SCR, from east of the State Route 241 and Live Oak Canyon Road, from a primary (four-lane, divided) to a collector (two-lane undivided). However, this recommendation did not secure approval from the Orange County Planning Commission. Consequently, the County's General Plan was not amended, and the County's original MPAH Amendment request was indefinitely put on hold.

In 2023, Orange County Public Works (OCPW) embarked on another comprehensive Traffic Study for three roadways: SCR, El Toro Road, and Black Star Canyon Road. These roadway segments are situated within unincorporated Orange County, the City of Lake Forest, and the City of Mission Viejo. Please note that the deletion of the Jeffrey Road Extension is not included in our current request as it is not needed at this time. The outcome from our 2023 study for SCR diverges from the 2017 one and now takes precedence.

OCPW formally requests the withdrawal of the previous MPAH Amendment from 2017, and the initiation of a MPAH Amendment process for the segments of SCR, El Toro Road, and Black Star Canyon Road for the following modifications:

- Reclassify SCR between SR-241 and Live Oak Canyon Road from its currently planned designation as a Primary Arterial (four-lane divided roadway) to a Divided Collector (two-lane divided roadway with a center turn-lane)

- Reclassify El Toro Road (ETR) between Live Oak Canyon Road and Portola Parkway from its currently planned designation as a Major Arterial (six-lane divided roadway) to a Primary Arterial (four-lane divided roadway) with the exception that the southern end segment between Pheasant Creek and Portola Parkway remain at its current condition as an asymmetric Primary Arterial (five-lane divided roadway)

Attachment 7

- Delete Black Star Canyon Road (BSCR) between Silverado Canyon Road and the Orange County/Riverside County line.

Both the City of Lake Forest and the City of Mission Viejo, as stakeholders of the project, endorse the amendment request (please refer to the attached consent forms). The report of the 2023 Traffic Study supporting the requested amendment is enclosed for your reference.

Should you have any inquiries regarding the amendment, please feel free to contact Wei Zhu at (657) 303-3113.

Sincerely,

Nardy Khan, P.E./P.M.P.
Deputy Director
Orange County Public Works/ Infrastructure Programs

cc: Denis Bilodeau, Manager, Traffic & Development Support
Wei Zhu, Sr. Civil Engineer, Traffic & Development Support

Attachment: Consent Form – City of Lake Forest
Consent Form – City of Mission Viejo
MPAH Amendment Study for SCR, ETR, BSCR

ORANGE COUNTY OC Public Works

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July 18, 2024

Mr. Kia Mortazavi, Executive Director
Strategic Planning
Orange County Transportation Authority
550 South Main Street
Orange, CA. 92863-1584

Subject: MPAH Amendment Request for Bucker Way and Ranch Canyon Road in RMV

Dear Mr. Mortazavi,

Orange County Public Works (OCPW) is formally requesting the initiation of a Master Plan of Arterial Highways (MPAH) Amendment for Bucker Way and Ranch Canyon Road within the Rancho Mission Viejo Planning Area 3 (PA3). The roadway segments are situated within unincorporated Orange County.

OCPW proposes the following modification to the MPAH:

- Reclassify Bucker Way between Ranch Canyon Road to Coyotes Road (S) from Secondary Arterial (4-lane) to Divided Collector (2-lane)

- Reclassify Ranch Canyon Road between Bucker Way to Cow Camp Road from Primary Arterial (4-lane) to Divided Collector (2-lane)

The report of the Traffic Study dated June 2024 prepared by Fehr & Peers supports the requested amendment and is enclosed for your reference.

Should you have any inquiries regarding the amendment, please feel free to contact Wei Zhu at (657) 303-3113.

Sincerely,

Nardy Khan, P.E./P.M.P.
Deputy Director
Orange County Public Works/ Infrastructure Programs

cc: Denis Bilodeau, Manager, Traffic & Development Support
Wei Zhu, Sr. Civil Engineer, Traffic & Development Support

Attachment: MPAH and GP Amendment for Bucker Way & Ranch Canyon Road

CITY OF FULLERTON

Public Works Department – *Engineering Division*

June 21, 2024

Orange County Transportation Authority
ATTN: Ivy Hang, Senior Transportation Analyst
550 South Main Street, P.O. Box 14184
Orange, CA 92863

Via Email: IHang@octa.net

Subject: **Master Plan of Arterial Highways Amendment – Harbor Boulevard**

The City of Fullerton is requesting an amendment to the Master Plan of Arterial Highways (MPAH). Harbor Boulevard is currently classified as a 6-lane Major Divided Arterial spanning from Berkely Avenue to Lambert Avenue within the City of Fullerton. Below is a summary of the existing lane geometry throughout that segment.

Segment:	Existing Lane Geometry:
Berkeley Avenue to West Valley View Drive/North Brea Boulevard	4-lanes
Valley View Drive/North Brea Boulevard to Bastanchury Road	6-lanes
Bastanchury Road to Imperial Highway	4-lanes
Harbor Boulevard to Lambert Road	6-lanes

NOTE: Harbor Boulevard is classified as a 4-lane Primary Divided Arterial south of Berkeley Avenue to Orangethorpe Avenue and north of Lambert Avenue to La Habra City Limits.

The City is requesting the segment between Berkely Avenue to Bastanchury Road be reclassified to a 4-lane Primary Divided Arterial. The reclassification will support the City's objective to provide various 'complete streets' improvements and fulfil our grant obligations for the recently awarded 2023 Orange County Complete Streets Program (OCCSP) grant application for the Harbor Boulevard Complete Streets Improvement Project. Attachment 'A' illustrates the limits and existing/proposed cross-section.

The reclassification requires lane reduction between Valley View Drive/North Brea Boulevard to Bastanchury Road, which was determined feasible based on the Response to OCTA Comments, dated April 16, 2024; see Attachment 'B' and Revised Traffic Analysis dated April 16, 2024; see Attachment 'C'.

Upon receiving conditional approval from OCTA's Board of Directors, Fullerton will take necessary steps to update the Circulation Element in our General Plan to reflect the changes identified above.

Please contact me if you have any questions or require additional information.

Regards,

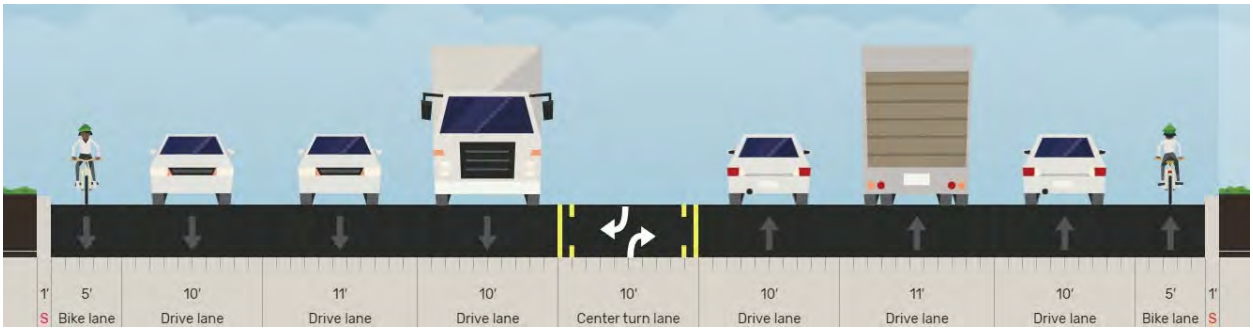
for Stephen Bise, PE, TE
Public Works Director
714-738-6852
Stephen.Bise@cityoffullerton.com

cc: David Grantham, City Engineer
Jerome Joaquin, Public Works Administration Manger
Dave Roseman, City Traffic Engineer
Chris Schaefer, Planning Manager

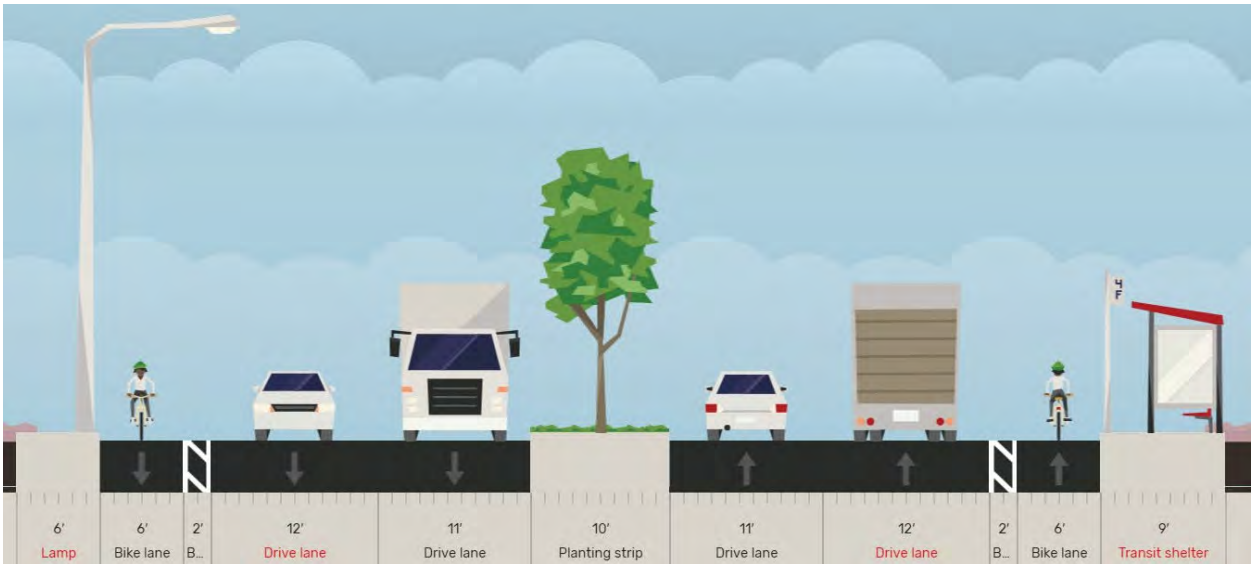
Attachment A

Typical Section

Roadway: **Harbor Boulevard**
Limits: **Valley View Drive/North Brea Boulevard to Bastanchury Road**
Length: **~5000 feet**
Right-of-Way Width: **104-115 feet**



Existing
10–11-ft travel lanes
10-ft two-way left turn lane
5-ft Class II Bike lanes
MPAH Classification = Major Divided Arterial



Proposed
11-12-ft travel lanes
10-ft median or left turn pocket
6-ft buffered Class II Bike Lanes
New, continuous sidewalk with upgrade transit stops
MPAH Classification = Primary Divided Arterial

Attachment B

MEMORANDUM

2 Executive Circle
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Pasadena
Irvine
San Diego

To: Dave Roseman
City Traffic Engineer – City of Fullerton

Date: April 16, 2024

From: Richard E. Barretto, P.E., Principal
Linscott, Law & Greenspan, Engineers

LLG Ref: 1.20.4391.4

Subject: ***Response to Comments Memorandum for the Harbor Boulevard "Complete Streets" Improvements Project Traffic Analysis***

Linscott, Law & Greenspan, Engineers (LLG) is pleased to provide the following responses to address comments from OCTA, summarized in an email dated February 5, 2024, as it pertains to the *Traffic Analysis for the Harbor Boulevard "Complete Streets" Improvements Project*, dated September 20, 2023. The comments from OCTA are attached and referenced in our responses provided below.

Response to OCTA Comments:

- **Response to Comment 1:** *Upon reviewing the MPAH network map, we noted that Harbor Boulevard north of Berkeley Avenue is classified as a Major 6-lane divided Arterial, while south of Berkeley Avene is a Primary 4-lane Arterial. Suppose the City of Fullerton decided to pursue an MPAH amendment to align with the proposed reconfiguration. In that case, OCTA suggests including the segment between Brea Boulevard and Berkeley Avenue for consistent MPAH classification from Berkeley Avenue to Valencia Mesa Drive.*

  The traffic analysis has been revised to include the segments between Brea Boulevard/Valley View Drive and Berkeley Avenue.

- **Response to Comment 2:** *Specify the version of OCTAM used or provide the date of the model to ensure clarity in the analysis.*

  As noted on Page 5 of the report, under sub header *Year 2045 Buildout Traffic Volumes*, OCTAM 5.0 traffic model was utilized for Year 2045 traffic volume forecasts, which was the most current version of the model at the time of analysis.

- **Response to Comment 3:** *Clarify that the volumes were not provided directly by OCTA or directly from a version of OCTAM approved by OCTA.*

  Comment noted, the report has been updated accordingly.

- **Response to Comment 4:** *Clarify and provide a more comprehensive discussion on traffic volume development: a) Provide additional details on the methodology for forecasting future traffic volumes, particularly the rationale behind determining the 1.55% traffic growth; b) Clarify the justifications for not utilizing the model growth on the specific roadways.*

  As noted on Page 5 of the report, under sub header *Year 2045 Buildout Traffic Volumes*, the development of Year 2045 buildout traffic volumes for all study

David S. Shender, PE
John A. Boarman, PE
Richard E. Barretto, PE
Keil D. Maberry, PE
KC Yellapu, PE
Dave Roseman, PE
Shankar Ramakrishnan, PE

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intersections and roadway segments were based on the OCTAM 5.0 model.

The reference to 1.55% was included for informational purposes only. We were merely documenting the annual growth rate when comparing the existing traffic counts to the Year 2045 model generated traffic volumes. However, the report has been updated to remove this reference to avoid potential confusion.

- **Response to Comment 5:** *Clarify why traffic volumes for the with and without project scenarios are the same. The analysis should encompass potential traffic diversions or impacts to parallel/adjacent roadways due to the road diet.*

  It is our understanding that due to the existing topography and street network, there are not any viable parallel routes within the vicinity of the Project that would result in potential traffic diversions due to the road diet. Therefore, traffic volumes are expected to remain the same for both with and without the proposed Project. It should be noted that the weekday peak hour and daily service levels are generally considered adequate with the implementation of the proposed Project and therefore motorists will not feel the need to adjust their driving patterns.

- **Response to Comment 6:** *Identify the specific thresholds for determining significant impacts at intersections and on roadway segments (e.g., LOS threshold and changes in V/C).*

  As noted on Page 7 of the report, under sub header *Level of Service Standards and Thresholds,* the City of Fullerton has identified LOS D as the minimum acceptable condition that should be maintained at both study intersections and roadway segments. Improvements should be considered if the Project causes an intersection or roadway segment operating at or above acceptable LOS D to an unacceptable condition.

* * * * * * * * * * *

Please let us know if you have any comments or questions regarding this response memorandum.

Attachments

cc: Shane S. Green, P.E. LLG
File

OCTA COMMENTS DATED FEBRUARY 5, 2024

Attachment 7

Fw: [EXTERNAL MAIL]MPAH - Harbor Boulevard Complete Street Traffic Study Comments

From: Ivy Hang <IHang@octa.net>
Sent: Monday, February 5, 2024 12:33 PM
To: Stephen Bise <Stephen.Bise@cityoffullerton.com>
Cc: Gregory Nord <gnord@octa.net>; Anup Kulkarni <akulkarni@octa.net>; Archie Tan <atan@octa.net>
Subject: [EXTERNAL MAIL]MPAH - Harbor Boulevard Complete Street Traffic Study Comments

Hi Stephen,

Thank you for providing the Traffic Analysis for the Harbor Boulevard "Complete Streets" Improvements Project. The traffic study recommends reconfiguring the segment from a 6-lane divided Major Arterial to a 4-lane divided Primary Arterial on Harbor Boulevard between Valencia Mesa Drive and Valley View Drive/Brea Boulevard.

Upon reviewing the MPAH network map, we noted that Harbor Boulevard north of Berkeley Avenue is classified as a Major 6-lane divided Arterial, while south of Berkeley Avenue is a Primary 4-lane divided Arterial. Suppose the City of Fullerton decides to pursue an MPAH amendment to align with the proposed reconfiguration. In that case, OCTA suggests including the segment between Brea Boulevard and Berkeley Avenue for consistent MPAH classification from Berkeley Avenue to Valencia Mesa Drive. In addition, please consider revising the traffic study following the comments provided below.

- Specify the version of OCTAM used or provide the date of the model to ensure clarity in the analysis.
- Clarify that the volumes were not provided directly by OCTA or directly from a version of OCTAM approved by OCTA.
- Clarify and provide a more comprehensive discussion on traffic volume development.
    - Provide additional details on the methodology for forecasting future traffic volumes, particularly the rationale behind determining the 1.55% traffic growth.
    - Clarify the justifications for not utilizing the model growth on the specific roadways.
- Clarify why traffic volumes for the with and without project scenarios are the same.
    - The analysis should encompass potential traffic diversions or impacts to parallel/adjacent roadways due to the road diet.
- Identify the specific thresholds for determining significant impacts at intersections and on roadway segments (e.g., LOS threshold and changes in V/C).

Feel free to reach out if you have any questions.

Thank You,

Ivy Hang
Senior Transportation Analyst
Long-Range Planning & Corridor Studies
Orange County Transportation Authority
550 South Main Street, P.O. Box 14184, Orange, CA 92863
P: (714) 560-5684 | **E:** ihang@octa.net

Attachment C

MEMORANDUM

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Pasadena
Irvine
San Diego

To: Dave Roseman
City Traffic Engineer – City of Fullerton

Date: April 16, 2024

From: Richard E. Barretto, P.E., Principal
Linscott, Law & Greenspan, Engineers

LLG Ref: 2.23.4708.1

Subject: ***Revised Traffic Analysis for the Harbor Boulevard "Complete Streets" Improvements Project Fullerton, California***

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit this revised traffic analysis memorandum for the proposed Harbor Boulevard "Complete Streets" Improvements Project (hereinafter referred to as Project) located in Fullerton, California. This traffic analysis has been prepared to identify the traffic implications associated with the proposed "complete streets" modifications to Harbor Boulevard, between Bastanchury Road and Brea Boulevard/Valley View Drive. Further, the traffic analysis has been prepared in support of the City of Fullerton's proposed reclassification of Harbor Boulevard, between Valencia Mesa Drive and Berkeley Avenue, from a Major Arterial Highway to a Primary Arterial Highway. This letter was revised to address comments provided by OCTA via an email on February 5, 2024.

Harbor Boulevard, along the northern end and southern end, consists of a medical/medical office and commercial/retail properties at the street frontage, whereas the midblock section is fronted by open space. The Project involves multimodal improvements along the middle section of Harbor Boulevard, from Valencia Mesa Drive to Brea Boulevard/Valley View Drive, to provide bicycle and pedestrian connectivity in this corridor. The Project is proposing to modify Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive, to a four-lane divided roadway with on-street "buffered" bike lanes and curb adjacent sidewalks.

Included in this memorandum are:

- AM and PM peak hour and Daily capacity analyses for existing conditions,
- AM and PM peak hour and Daily capacity analyses for existing plus project conditions,
- AM and PM peak hour and Daily capacity analyses for future buildout (Year 2045) conditions,
- AM and PM peak hour and Daily capacity analyses for future buildout (Year 2045) plus project conditions, and
- Intersection vehicle queueing analyses along Harbor Boulevard.

This study satisfies the traffic analysis requirements of the City of Fullerton.

David S. Shender, PE
John A. Boarman, PE
Richard E. Barretto, PE
Keil D. Maberry, PE
KC Yellapu, PE
Dave Roseman, PE
Shankar Ramakrishnan, PE

An LG2WB Company Founded 19[illegible]

STUDY AREA/PROJECT LIMITS

The following six (6) study intersections and four (4) roadway segments located within the limits of the Project have been identified for evaluation:

Study Intersections:

1. Harbor Boulevard at Bastanchury Road
2. Harbor Boulevard at Valencia Mesa Drive
3. Harbor Boulevard at Brea Boulevard/Valley View Drive
4. Harbor Boulevard at Brea Dam Park (Future Signalized Intersection)
5. Harbor Boulevard at E. Valley View Drive
6. Harbor Boulevard at Berkeley Avenue

Study Roadway Segments:

A. Harbor Boulevard, between Bastanchury Road and Valencia Mesa Drive
B. Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive
C. Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive
D. Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue

Figure 1, which is located at the end of this memorandum, presents the vicinity map which illustrates the limits of the Harbor Boulevard improvements and depicts the study locations and surrounding street system.

The Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic implications associated with implementation of the proposed Project. Our methods of analysis, findings and conclusions are described in detail in the following sections of this memorandum.

PROJECT DESCRIPTION

Harbor Boulevard is currently classified as a Major Arterial Highway in the City's Circulation Elements as well as the Orange County Master Plan of Arterial Highways (MPAH). The existing configuration of Harbor Boulevard, between Bastanchury Road and Brea Boulevard/Valley View Drive, is currently three through lanes in the southbound direction and three through lanes in the northbound direction, with Class II bike lanes provided in the middle section from just north of Valencia Mesa Drive to north of Brea Boulevard/Valley View Drive. The existing configuration of Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive, is

currently two through lanes in the southbound direction and three through lanes in the northbound direction. The existing configuration of Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue is two through lanes in the southbound direction and two through lanes in the northbound direction. Daily traffic volumes on Harbor Boulevard, between Bastanchury Road and Berkeley Avenue, range between 28,271 ADT and 44,041 ADT.

With approval of the proposed reclassification to a Primary Arterial Highway, the proposed Project would allow for construction of "complete streets" improvements on Harbor Boulevard, between Bastanchury Road and Brea Boulevard/Valley View Drive, which include the removal of a through lane in both the northbound and southbound directions, the installation of a Class II bike lane with buffer in both the northbound and southbound directions, and the construction of sidewalks on both sides of the roadway, where applicable, which will connect to the existing sidewalk network. It should be noted that the proposed Project will maintain the existing lane geometrics south of Brea Boulevard/Valley View Drive. As such, upon completion of the Project, this section of Harbor Boulevard will generally match the number of travels lanes on the section of Harbor Boulevard south of Brea Boulevard/Valley View Drive.

The Project improvements are proposed to begin at Valencia Mesa Drive and terminate south of Brea Boulevard. Given the focus of the Project is on the midblock segments of Harbor Boulevard, the existing lane geometrics at the intersections of Harbor Boulevard at Bastanchury Road (Intersection No. 1) will be maintained as part of the proposed Project. The "Complete Streets" improvements consist of the following:

- **Harbor Boulevard at Bastanchury Road:** The implementation of a "Complete Streets" on Harbor Boulevard will not affect the intersection; existing lane geometrics will be maintained.

- **Harbor Boulevard at Valencia Mesa Drive:** The implementation of a "Complete Streets" on Harbor Boulevard will replace the outermost through-lane for the northbound approach with a Class II bike land and buffer, the outermost through-lane for the southbound approach with a trap right-turn lane, and the outermost through-lane for the southbound departure with a Class II bike lane and buffer. The northbound left-turn pocket will be restriped to provide 185-feet of storage. Sidewalks will be constructed for the southwest corner of the intersection and proceed southerly to connect to the existing

sidewalk on the west side of Harbor Boulevard at Brea Boulevard/Valley View Drive.

- **Harbor Boulevard at Brea Boulevard/Valley View Drive:** The implementation of a "Complete Streets" on Harbor Boulevard will replace the outermost through-lane for the southbound approach with a right-turn pocket providing 140-feet of storage and restripe the left-turn lane to provide 140-feet of storage. The outermost through-lane for the northbound approach will be removed and the outermost through-lane for the northbound departure will be replaced with a Class II bike lane and buffer.

It should also be noted that a new signalized intersection for the existing Brea Dam Park along Harbor Boulevard, located between Valencia Mesa Drive and Brea Boulevard/Valley View Drive, has been assumed as part of the proposed Project and consists of the following:

- **Harbor Boulevard at Brea Dam Park:** Construct a three-leg intersection to provide two through lanes and a 200-foot right-turn pocket in the northbound direction, two through lanes and a 250-foot left-turn pocket in the southbound direction, and shared left/right-turn lane in the westbound direction. Install a two-phase traffic signal. The implementation of a "Complete Streets" on Harbor Boulevard will construct sidewalks along Harbor Boulevard and provide a Class II bike lane and buffer in both the northbound and southbound directions.

Figure 2 presents the aerial map for Harbor Boulevard, between Bastanchury Road and Berkeley Avenue, under existing conditions. ***Figure 3*** presents the proposed lane geometry on Harbor Boulevard with the Project and compares it to the existing lane geometry.

EXISTING AND FUTURE TRAFFIC VOLUMES

Existing Traffic Volumes

Six (6) study intersections and four (4) roadway segments have been identified as the locations at which to evaluate existing and future traffic operating conditions. Existing weekday daily and peak hour traffic volumes for the five (5) existing study intersections and four (4) roadway segments evaluated in this report were obtained from manual turning movement counts conducted by Transportation Studies, Inc. in May 2023 and March 2024. ***Figure 4*** presents the existing weekday AM peak hour,

PM peak hour, and daily traffic volumes at the five (5) key study intersections and four (4) roadway segments evaluated in this report. ***Appendix A*** contains the detailed count sheets for the locations evaluated in this report.

Since the proposed Project is the implementation of "Complete Streets" improvements along Harbor Boulevard, the project does not generate any additional vehicular trips. As such, Existing Plus Project traffic volumes are identical to the Existing without Project traffic volumes.

Year 2045 Buildout Traffic Volumes

The Year 2045 traffic volume forecasts were developed via the utilization of the OCTAM 5.0 Year 2045 traffic model. Specifically, daily, AM peak period and PM peak period intersection traffic svolumes were provided by OCTA for the existing base year (i.e. Year 2016) and for the Year 2045 year. The AM peak period corresponds to a three-hour morning commute period while the PM peak period corresponds to a four-hour afternoon commute period. Using the peak period model runs and the OCTA approved peak hour factors (i.e. AM = 0.3566 and PM = 0.2662), the one-hour peak hour intersection traffic volumes were determined. ***Figure 5*** presents the Year 2045 Buildout weekday AM peak hour, PM peak hour, and daily traffic volumes at the six (6) key study intersections and four (4) roadway segments evaluated in this report.

Since the proposed Project is the implementation of "Complete Streets" improvements along Harbor Boulevard, the project does not generate any additional vehicular trips. As such, Year 2045 Buildout Plus Project traffic volumes are identical to the Year 2045 Buildout without Project traffic volumes.

LEVEL OF SERVICE CRITERIA

Level of Service Analysis Methodologies

In conformance with the City of Fullerton criteria, weekday AM and PM peak hour operating conditions for the six (6) key study intersections were evaluated using the methodology outlined in the *Highway Capacity Manual 6* (HCM 6) for signalized intersections. The analysis of the four (4) roadway segments were evaluated per the Volume to Capacity (V/C) Ratio methodology.

Highway Capacity Manual (HCM) Method of Analysis (Signalized)

Based on the HCM 6th Edition operations method of analysis, level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometries, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents and when there are no other vehicles on the road.

In the HCM, only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle. The six qualitative categories of Level of Service that have been defined along with the corresponding HCM control delay value range for signalized intersections are shown in ***Table 1***.

Daily Volume to Capacity (V/C) Ratio Method of Analysis (Roadway Segments)

Daily operating conditions for the key study roadway segments have been investigated according to the Volume to Capacity (V/C) Ratio of each roadway segment. The V/C relationship is used to estimate the LOS of the roadway segment with the volume based on the 24-hour traffic volumes and the capacity based on the City's classification of each roadway. The six qualitative categories of Level of Service have been defined along with the corresponding Volume to Capacity (V/C) value range and are shown in ***Table 2***.

The roadway link capacity of each street classification according to the Orange County Master Plan of Arterial Highways (MPAH) is presented in ***Table 3***, along with the six corresponding service levels and associated V/C ratios.

Level of Service Standards and Thresholds

According to the City of Fullerton, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours. LOS D has also been assumed as the threshold for daily.

Based on the City of Fullerton, the need for potential improvements will be assessed based on the following criteria:

- The Project causes a signalized or unsignalized intersection or roadway segment operating at or above an acceptable operating condition to degrade to an unacceptable condition.

EXISTING CONDITIONS TRAFFIC ANALYSIS

Existing Traffic Conditions Intersection Capacity Analysis

Table 4 summarizes the peak hour level of service results at the six (6) study intersections for Existing Plus Project traffic conditions. The first column (1) of HCM/LOS values in presents a summary of existing AM and PM peak hour traffic conditions utilizing the existing lane configurations. The second column (2) lists existing plus project traffic conditions utilizing the proposed project lane configurations. The third column (3) indicates whether the Project will exceed the LOS thresholds defined in this report and thus require improvements.

As shown in column (1) of *Table 4*, all five (5) existing key study intersections currently operate at an acceptable service level (LOS D or better) during the AM and PM peak hours.

As shown in column (2) of *Table 4*, all six (6) key study intersections are forecast to operate at an acceptable service level (LOS D or better) during the AM and PM peak hours with the addition of the proposed Project. As such, it can be concluded that the proposed Project will not have a negative effect on existing traffic conditions. ***Appendix B*** presents the HCM/LOS calculations for the study intersections.

Existing Traffic Conditions Roadway Segment Analysis

Table 5 summarizes the roadway segment level of service results at the four (4) roadway segments for Existing Plus Project traffic conditions. The first column (1) presents a summary of existing daily traffic conditions utilizing the existing lane configurations. The second column (2) lists existing plus project traffic conditions utilizing the proposed project lane configurations and indicates whether the intersection will operate adversely based on the criteria defined in this report and thus require improvements.

As shown in column (1) of *Table 5*, the two (2) out of the four (4) roadway segments currently operate adversely on a daily basis. Harbor Boulevard, between Brea

Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) currently operate at LOS E and LOS F, respectively. The remaining roadway segments currently operate at an acceptable service level (LOS D or better) on a daily basis.

As shown in column (2) of *Table 5*, Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) are forecast to operate adversely with the addition of the proposed Project. However, the proposed Project will maintain the existing lane geometrics along these roadway segments and thus the adverse service levels are not caused or worsened by the Project. The remaining two (2) roadway segments will continue to operate at an acceptable service level (LOS D or better) on a daily basis with the addition of the proposed Project. As such, it can be concluded that the proposed Project will not have a negative effect on existing traffic conditions.

YEAR 2045 BUILDOUT CONDITIONS TRAFFIC ANALYSIS

Year 2045 Buildout Traffic Conditions Intersection Capacity Analysis

Table 6 summarizes the peak hour level of service results at the six (6) study intersections for Year 2045 buildout Plus Project traffic conditions. The first column (1) of HCM/LOS values presents a summary of Year 2045 buildout AM and PM peak hour traffic conditions utilizing the existing lane configurations. The second column (2) lists Year 2045 buildout plus project traffic conditions utilizing the proposed project lane configurations. The third column (3) indicates whether the Project will exceed the LOS thresholds defined in this report and thus require additional improvements.

As shown in column (1) of *Table 6*, the intersection of Harbor Boulevard at Bastanchury Road (Intersection No. 1) is forecast to operate adversely during the AM and PM peak hours under Year 2045 Buildout traffic conditions. The remaining four (4) existing study intersections are forecast to operate at an acceptable service level (LOS D or better) during the AM and PM peak hours.

As shown in column (2) of *Table 6*, the intersection of Harbor Boulevard at Bastanchury Road (Intersection No. 1) will continue to operate adversely during the AM and PM peak hours with the addition of the proposed Project. Although the study intersection is forecast to operate adversely, the implementation of the Project does

not affect the forecast LOS E conditions. As such, it can be concluded that the proposed Project will not have a negative effect on future traffic conditions. *Appendix B* presents the HCM/LOS calculations for the study intersections.

Year 2045 Buildout Traffic Conditions Roadway Segment Analysis

Table 7 summarizes the roadway segment level of service results at the four (4) roadway segments for Year 2045 buildout Plus Project traffic conditions. The first column (1) presents a summary of Year 2045 Buildout daily traffic conditions utilizing the existing lane configurations. The second column (2) lists Year 2045 buildout plus project traffic conditions utilizing the proposed project lane configurations and indicates whether the intersection will operate adversely based on the criteria defined in this report and thus require additional improvements.

As shown in column (1) of *Table 7*, two (2) out of the four (4) roadway segments are forecast to operate adversely on a daily basis. Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) are forecast to operate at LOS F. The remaining roadway segments are forecast to operate at an acceptable service level (LOS D or better) on a daily basis under Year 2045 Buildout traffic conditions and assuming a six-lane arterial is maintained.

As shown in column (2) of *Table 7*, Harbor Boulevard between Bastanchury Road and Valencia Mesa Drive (Segment A), Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) are forecast to operate adversely with the addition of the proposed Project, whereas the segment between Valencia Mesa Drive and Brea Boulevard/Valley Drive (Segment D) is forecast to operate at LOS D with the conversion to a four-lane arterial.

The proposed Project will maintain the existing lane geometrics along Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) and thus the adverse service levels are not caused or worsened by the Project.

To determine if the proposed Project will result in a deficiency for Harbor Boulevard between Bastanchury Road and Valencia Mesa Drive (Segment A), the roadway segment was further analyzed under peak hour conditions, as presented in ***Table 8***. Review of *Table 8* indicates that Segment A is forecast to operate at an acceptable

level of service during the AM and PM peak hours. As such, it can be concluded that the proposed Project will not have a negative effect on future traffic conditions.

INTERSECTION QUEUING EVALUATION

To validate the adequacy of the existing stacking/storage lengths along Harbor Boulevard with the addition of the proposed Project, a Synchro queuing evaluation was prepared for the northbound and southbound left-turn and right-turn pockets at the six (6) study intersections. The queuing evaluation was conducted for Existing Plus Project and Year 2045 Buildout Plus Project traffic conditions utilizing the Synchro 11.0 SimTraffic 95th percentile delay methodology. It should be noted that vehicular queues from Synchro 11.0 SimTraffic are computed based on the average queues of the microsimulation model, and therefore, each simulation is unique.

Existing Traffic Conditions

Table 9 presents the lane queuing analyses results for the six (6) signalized study intersections for existing traffic conditions. The first column (1) presents the lane queuing results for Existing traffic conditions. The second column (2) presents the results for Existing Plus Project traffic conditions.

Review of column (1) of *Table 9* indicates that the five (5) existing study intersections have queues which exceed the existing storage capacity for one or more intersection approaches under existing traffic conditions.

Review of column (2) of *Table 9* indicates that six (6) study intersections have queues which exceed the existing storage capacity for one or more intersection approaches with the addition of the proposed Project. However, with the exception of the southbound right-turn at Harbor Boulevard and Brea Boulevard/Valley View Drive (Intersection No. 3) and the northbound left-turn at Harbor Boulevard and Berkeley Avenue (Intersection No 6), the approaches which provide insufficient storage are the same as those identified under existing without project traffic conditions. As such, it can be concluded that the effect of the proposed Project on the existing roadway network is considered minimal when taking into consideration the already deficient storage under existing traffic conditions. It should be noted that the spillover queue for the southbound right-turn at Harbor Boulevard and Brea Boulevard/Valley View Drive (Intersection No. 3) can be accommodated within the transition area of the turn pocket. Similarly, the spillover queue for the northbound left-turn at Harbor Boulevard and Berkeley Avenue (Intersection No. 6) can be accommodated within

the upstream two-way left-turn lane. ***Appendix C*** presents the Synchro 11.0 SimTraffic worksheets for the study intersections.

Year 2045 Buildout Traffic Conditions

Table 10 presents the lane queuing analyses results for the six (6) signalized study intersections for Year 2045 Buildout traffic conditions. The first column (1) presents the lane queuing results for Year 2045 Buildout traffic conditions. The second column (2) presents the results for Year 2045 Buildout Plus Project traffic conditions.

Review of column (1) *Table 10* indicates that the five (5) existing study intersections have queues which exceed the existing storage capacity for one or more intersection approaches under Year 2045 Buildout traffic conditions.

Review of column (2) of *Table 10* indicates that six (6) study intersections have queues which exceed the existing storage capacity for one or more intersection approaches with the addition of the proposed Project. However, with the exception of the southbound right-turn at Harbor Boulevard and Brea Boulevard/Valley View Drive (Intersection No. 3), the approaches which provide insufficient storage are the same as those identified under Year 2045 Buildout without project traffic conditions. As such, it can be concluded that the effect of the proposed Project on the future roadway network is considered minimal when taking into consideration the already deficient storage under Year 2045 buildout traffic conditions. It should be noted that the spillover queue for the southbound right-turn at Harbor Boulevard and Brea Boulevard/Valley View Drive (Intersection No. 3) can be accommodated within the transition area of the turn pocket. *Appendix C* presents the Synchro 11.0 SimTraffic worksheets for the study intersections.

CONCLUSIONS

Based on the above, the proposed "Complete Streets" Project is not expected to negatively affect existing or future traffic conditions along Harbor Boulevard. Based on the City of Fullerton's level of service standards and threshold criteria, the weekday peak hour and daily service levels are considered adequate with the implementation of the proposed Project.

Although some queues at the six (6) study intersections are considered deficient, the implementation of the proposed Project will ensure bicycle and pedestrian connectivity along the corridor and will allow for a more balanced, multimodal

transportation network that meets the needs of all users of streets, roads, and highways, including motorists, pedestrians, and bicyclists. In addition, the proposed Project would generally provide continuity to Harbor Boulevard, which already is generally a four lane roadway south of Valley View Drive/Brea Boulevard. An added benefit of the proposed lane drop is that it helps to improve OCTA bus services since the bus will no longer be required to stop in a through lane and block traffic. It should be noted that some cities are adopting more flexible policies to solve traffic problems. For example, some communities have started accepting a lower (worse) automobile level of service standard in their downtowns and in urban neighborhoods or along transit corridors. By doing so, these cities are increasing capacity for other modes like transit and/or bikes. Therefore, opportunities and constraints both exist and should be thoroughly considered prior to approval of the "Complete Streets".

As such, LLG has concluded that the peak hour and daily traffic volumes (current and projected) on Harbor Boulevard do not warrant its current classification of Major Arterial Highway. The City's proposed reclassification of Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive, from a Major Arterial Highway to a Primary Arterial Highway, to install a new protected bike lane, with the provision of a new continuous sidewalk system, would appear feasible with the removal of one northbound through lane and one southbound through lane. It is also recommended to reclassify Harbor Boulevard, between Brea Boulevard/Valley View Drive and Berkeley Avenue, from a Major Arterial Highway to a Primary Arterial Highway for consistent MPAH classification. However, it should be noted that the proposed Project will maintain the existing lane geometrics along Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive, which currently has two through lanes in the southbound direction and three through lanes in the northbound direction with the third lane functioning primarily as a dedicated right turn for direct access to Brea Boulevard.

Therefore, it is recommended that the City of Fullerton formally request approval from Orange County Transportation Authority (OCTA) of the following classification for Harbor Boulevard:

Street	Limits	Existing Classification	Proposed Classification
Harbor Boulevard	Valencia Mesa Drive to Berkeley Avenue	Major Arterial	Primary Arterial

* * * * * * * * * * *

We appreciate the opportunity to work on this project. If you have any questions regarding this letter, please do not hesitate to call me at (949) 825-6175.

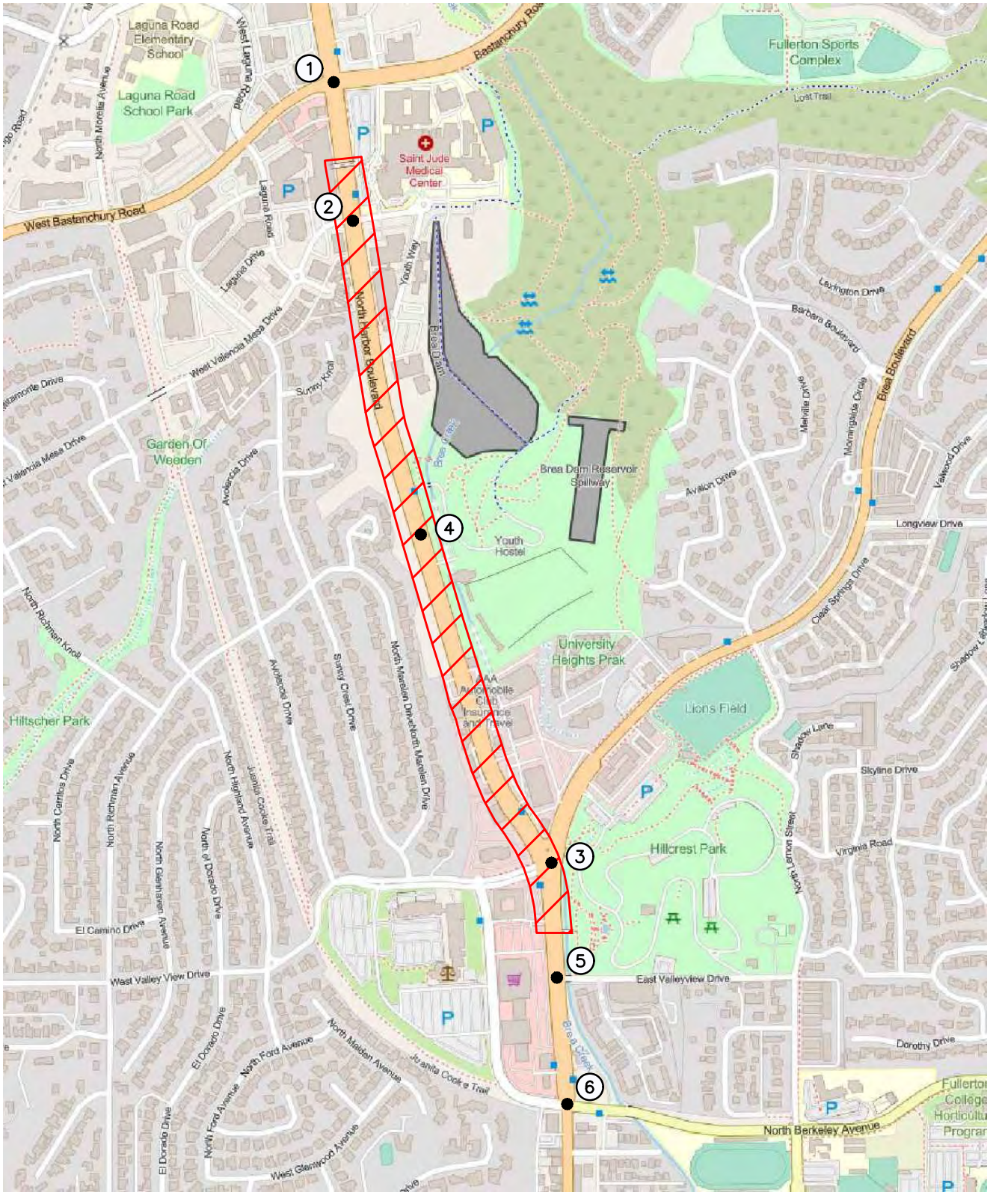
Sincerely,
Linscott, Law & Greenspan, Engineers

Richard E. Barretto, P.E.
Principal

REGISTERED PROFESSIONAL ENGINEER
RICHARD E. BARRETTO
No. 2006
Exp. 6/30/25
TRAFFIC
STATE OF CALIFORNIA

cc: Shane S. Green, P.E., Senior Transportation Engineer

Attachments



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY
(#) = STUDY INTERSECTION
= PROJECT LIMITS

FIGURE 1

VICINITY MAP

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON



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LINSCOTT LAW & GREENSPAN engineers

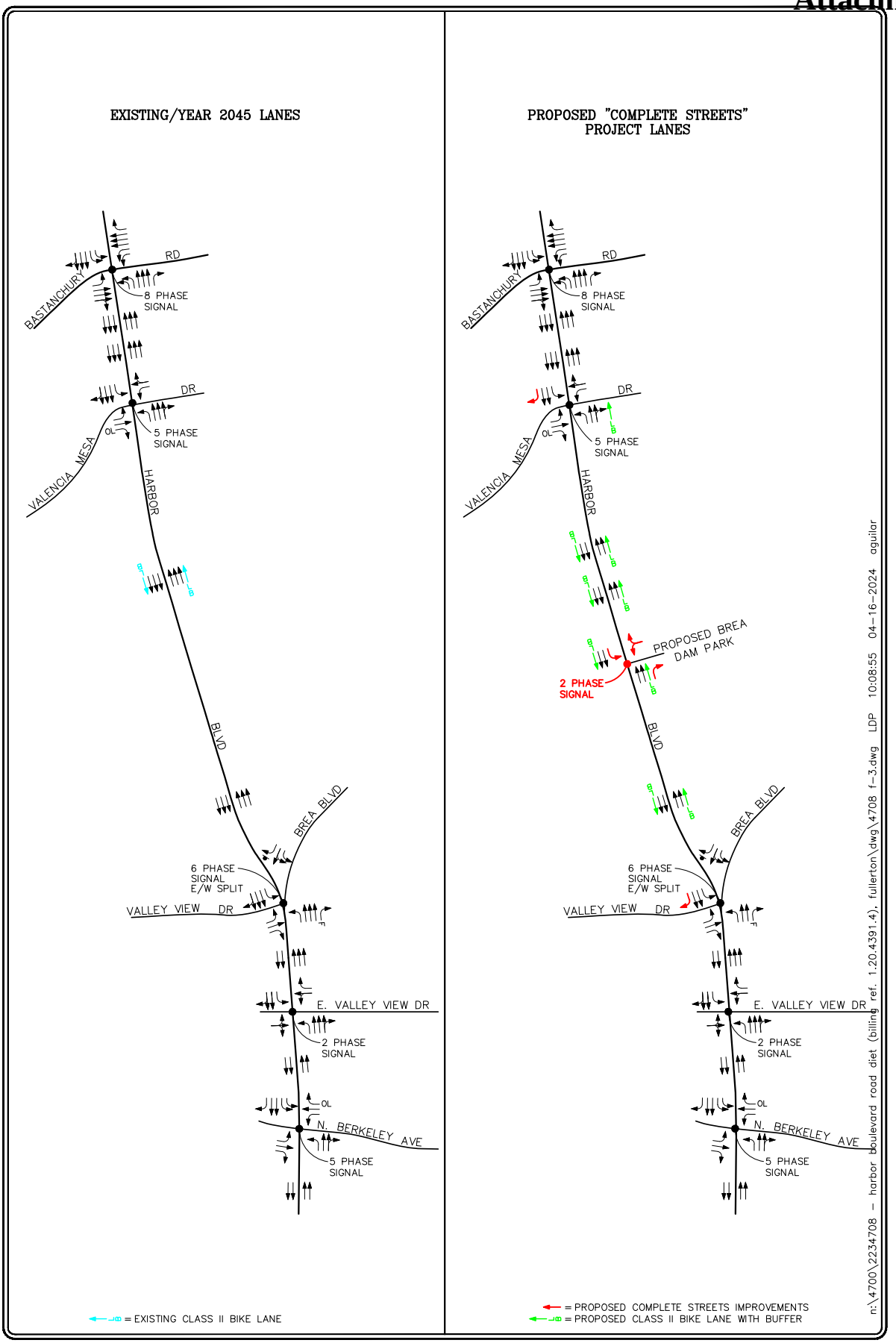
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KEY
= PROJECT LIMITS

FIGURE 2

EXISTING SITE AERIAL

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

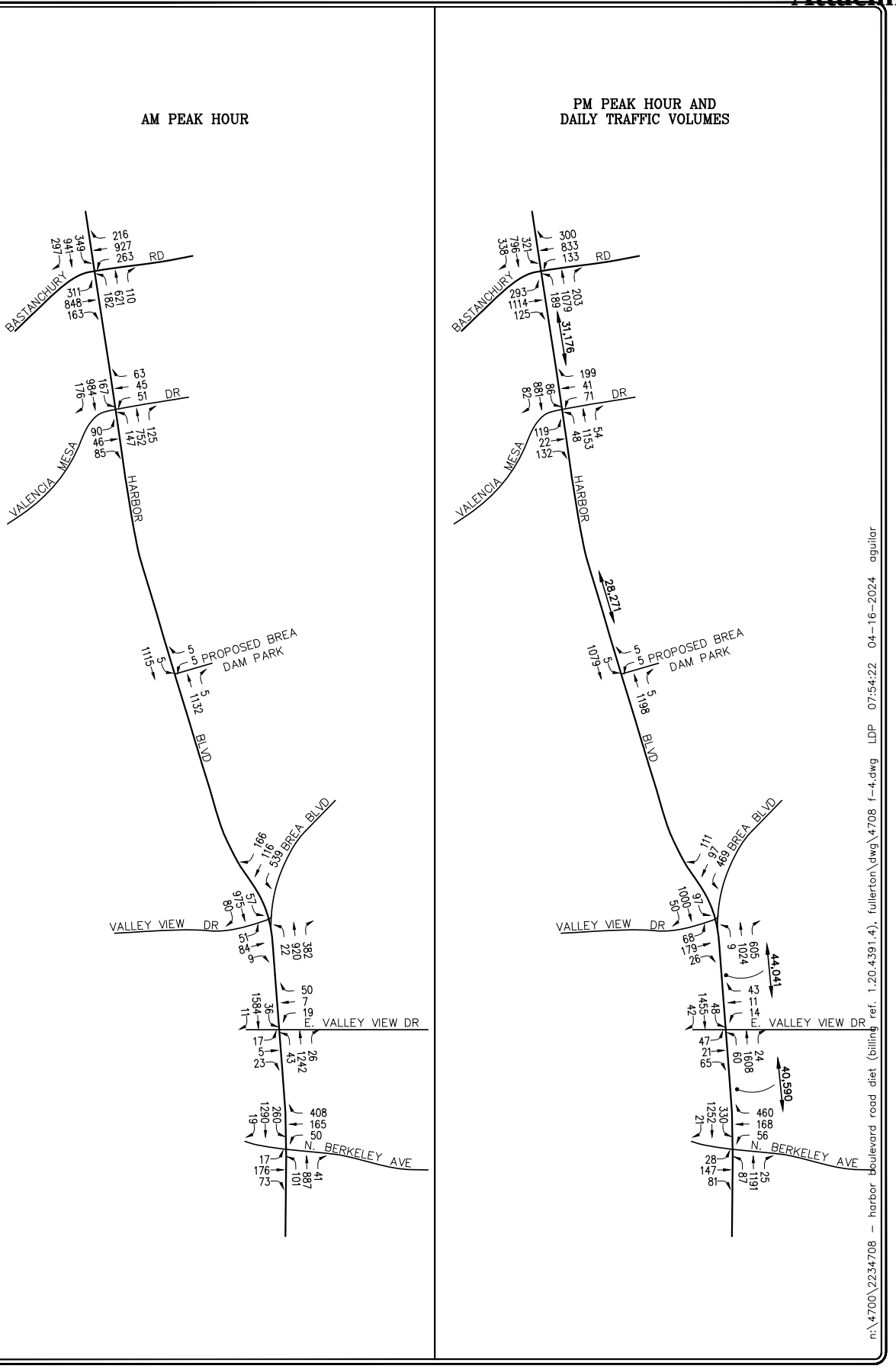


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FIGURE 3

HARBOR BOULEVARD EXISTING VS COMPLETE STREETS LANE GEOMETRICS

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON



KEY
XX,XXX = DAILY TRAFFIC VOLUMES

NO SCALE

FIGURE 4

EXISTING TRAFFIC VOLUMES

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

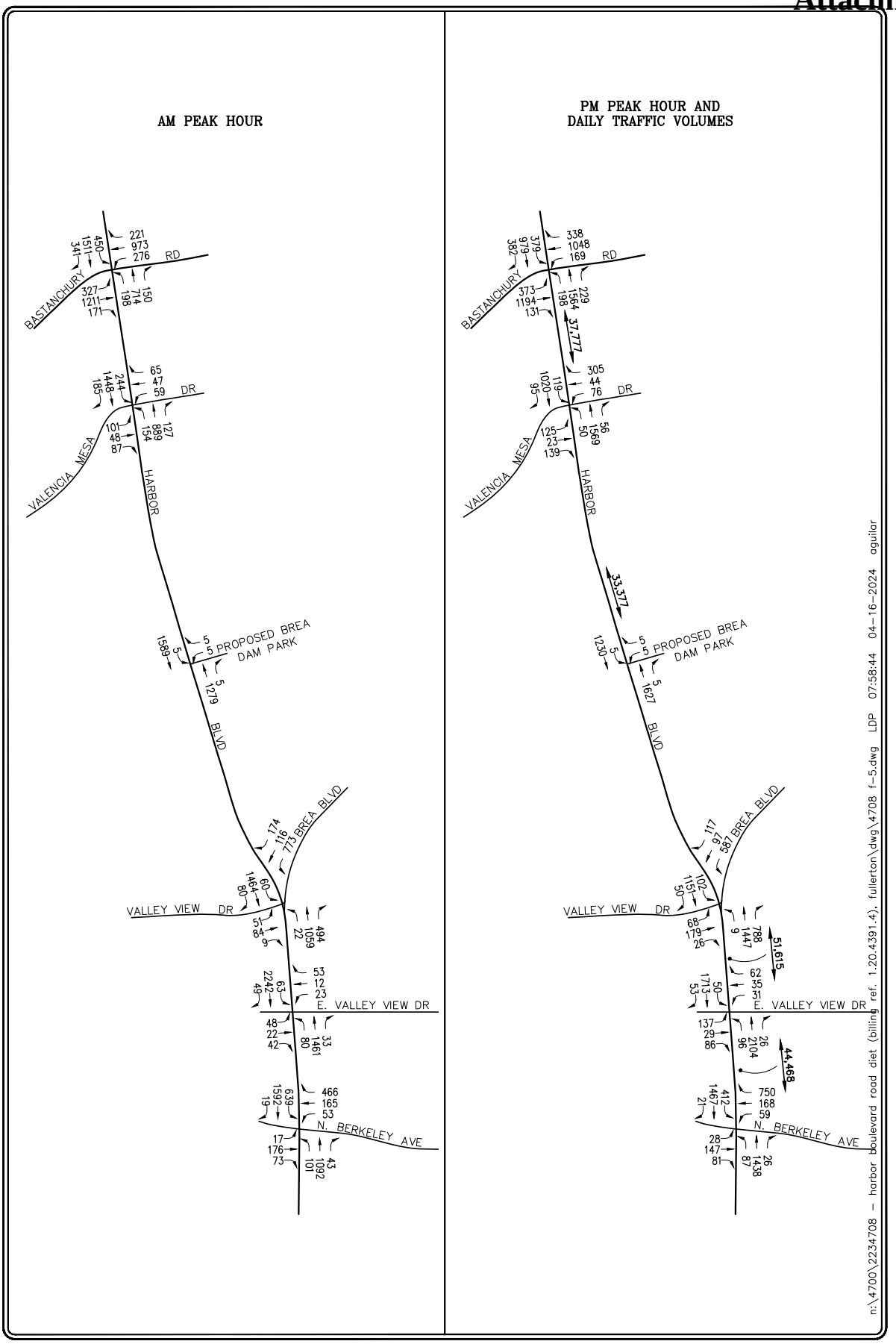


FIGURE 5

NO SCALE

YEAR 2045 BUILDOUT TRAFFIC VOLUMES

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

TABLE 1
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM)[1]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Level of Service (LOS)	Control Delay Per Vehicle (seconds/vehicle)	Level of Service Description
A	≤ 10.0	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	Average traffic delays. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	Long traffic delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	Very long traffic delays. This level is considered by many agencies (i.e. SANBAG) to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.
F	≥ 80.0	Severe congestion. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

[1] Source: *Highway Capacity Manual* (Signalized Intersections).

TABLE 2
LEVEL OF SERVICE CRITERIA FOR ROADWAY SEGMENTS (V/C METHODOLOGY)[2]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Level of Service (LOS)	Volume to Capacity Ratio (V/C)	Level of Service Description
A	≤ 0.600	**EXCELLENT**. Describes primarily free flow operations at average travel speeds, usually about 90% of the free flow speed for the arterial class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	0.601 – 0.700	**VERY GOOD**. Represents reasonably unimpeded operations at average travel speeds, usually about 70% of the free flow speed for the arterial class. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tension.
C	0.701 – 0.800	**GOOD**. Represents stable conditions; however, ability to maneuver and change lanes in mid-block location may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50% of the average free flow speed for the arterial class. Motorists will experience appreciable tension while driving.
D	0.801 – 0.900	**FAIR**. Borders on a range in which small increases in flow may cause substantial increases in approach delay and, hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40% of free flow speed.
E	0.901 – 1.000	**POOR**. Characterized by significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination of adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.
F	> 1.000	**FAILURE**. Characterizes arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with resultant high approach delays. Adverse progression is frequently a contributor to this condition.

[2] Source: *Transportation Research Board 2000.*

TABLE 3
LEVEL OF SERVICE CRITERIA FOR ROADWAY SEGMENTS (V/C METHODOLOGY)[3]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Facility Type	Number of Lanes	Level of Service Criteria With Associated Roadway Capacity					
		Daily Values (VPD)					
		Level of Service (LOS)					
		A	B	C	D	E	F
Principal	8-lanes divided	45,000	52,500	60,000	67,500	75,000	--
Smart Street[4]	6-lanes divided	36,300	42,200	48,200	54,200	60,200	--
Major	6-lanes divided	33,900	39,400	45,000	50,600	56,300	--
Primary	4-lanes divided	22,500	26,300	30,000	33,800	37,500	--
Secondary	4-lanes undivided	15,000	17,500	20,000	22,500	25,000	--
Commuter	2-lanes undivided	7,500	8,800	10,000	11,300	12,500	--
V/C Ratio		≤ 0.600	0.601-0.700	0.701-0.800	0.801-0.900	0.901-1.000	≥ 1.01

Notes:
- VPD = vehicles per day

[3] Source: *Transportation Research Board 2000.*

[4] The capacity of a Smart Street is seven percent higher than the capacity of a major arterial, due to traffic flow operation enhancements that are associated with the Smart Street facility designation.

TABLE 4

EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Study Intersection		Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Exceeds LOS Thresholds (2) – (1)	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Increase	Yes/No
1.	Harbor Boulevard at	AM	50.9	D	51.8	D	0.9	No
	Bastanchury Road	PM	44.1	D	48.9	D	4.8	No
2.	Harbor Boulevard at	AM	20.9	C	27.6	C	6.7	No
	Valencia Mesa Drive	PM	23.3	C	29.6	C	6.3	No
3.	Harbor Boulevard at	AM	35.3	D	35.7	D	0.4	No
	Brea Boulevard/Valley View Drive	PM	38.1	D	40.1	D	2.0	No
4.	Harbor Boulevard at	AM	--	--	1.5	A	--	No
	Proposed Brea Dam Park	PM	--	--	1.5	A	--	No
5.	Harbor Boulevard at	AM	5.1	A	5.1	A	0.0	No
	E. Valley View Drive	PM	7.5	A	7.5	A	0.0	No
6.	Harbor Boulevard at	AM	28.1	C	28.2	C	0.1	No
	Berkeley Avenue	PM	31.5	C	31.5	C	0.0	No

Notes:

- s/v = seconds per vehicle (delay)
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

TABLE 5

EXISTING DAILY ROADWAY SEGMENT ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Roadway Segment	(1) Existing Traffic Conditions					(2) Existing Plus Project Traffic Conditions					
	No. of Lanes	LOS "E" Capacity (VPD)[5]	Daily Volume	V/C Ratio	LOS	No. of Lanes	LOS "E" Capacity (VPD)	Daily Volume	V/C Ratio	LOS	Adverse (Yes/No)
A. Harbor Boulevard, between Bastanchury Road and Valencia Mesa Drive	6D	56,300	31,176	0.554	A	4D	37,500	31,176	0.831	D	No
B. Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive	6D	56,300	28,271	0.502	A	4D	37,500	28,271	0.754	C	No
C. Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive	5D	46,900	44,041	**0.939**	**E**	5D	46,900	44,041	**0.939**	**E**	No[6]
D. Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue	4D	37,500	40,590	**1.082**	**F**	4D	37,500	40,590	**1.082**	**F**	No[6]

Notes:

- D = Divided; U = Undivided; VPD = Vehicles per day; V/C = Volume over capacity
- **Bold LOS values** indicate adverse service levels

[5] Source: *Guidance for Administration of the Orange County Master Plan of Arterial Highways, dated November 1995 and Amended April 1998.*

[6] The roadway segment is forecast to operate at deficient levels of service both with and without the proposed Project. The proposed Project will maintain the existing lane geometrics along the roadway segment and thus the adverse service levels are not caused by the Project.

TABLE 6

YEAR 2045 BUILDOUT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Study Intersection		Time Period	(1) Year 2045 Buildout Traffic Conditions		(2) Year 2045 Buildout Plus Project Traffic Conditions		(3) Exceeds LOS Thresholds (2) – (1)	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Increase	Yes/No
1.	Harbor Boulevard at	AM	**67.4**	**E**	**69.8**	**E**	2.4	No
	Bastanchury Road	PM	**56.9**	**E**	**60.8**	**E**	3.9	No
2.	Harbor Boulevard at	AM	21.2	C	34.1	C	12.9	No
	Valencia Mesa Drive	PM	26.1	C	37.1	D	11.0	No
3.	Harbor Boulevard at	AM	37.0	D	42.7	D	5.7	No
	Brea Boulevard/Valley View Drive	PM	38.3	D	43.7	D	5.4	No
4.	Harbor Boulevard at	AM	--	--	1.7	A	--	No
	Proposed Brea Dam Park	PM	--	--	1.7	A	--	No
5.	Harbor Boulevard at	AM	9.4	A	9.4	A	0.0	No
	E. Valley View Drive	PM	14.2	B	14.2	B	0.0	No
6.	Harbor Boulevard at	AM	31.8	C	31.8	C	0.0	No
	Berkeley Avenue	PM	47.0	D	47.0	D	0.0	No

Notes:

- s/v = seconds per vehicle (delay)
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

TABLE 7

YEAR 2045 BUILDOUT DAILY ROADWAY SEGMENT ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Roadway Segment	(1) Year 2045 Buildout Traffic Conditions					(2) Year 2045 Buildout Plus Project Traffic Conditions					
	No. of Lanes	LOS "E" Capacity (VPD)[7]	Daily Volume	V/C Ratio	LOS	No. of Lanes	LOS "E" Capacity (VPD)	Daily Volume	V/C Ratio	LOS	Adverse (Yes/No)
A. Harbor Boulevard, between Bastanchury Road and Valencia Mesa Drive	6D	56,300	37,777	0.671	B	4D	37,500	37,777	**1.007**	**F**	**Yes**
B. Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive	6D	56,300	33,377	0.593	A	4D	37,500	33,377	0.890	D	No
C. Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive	5D	46,900	51,615	**1.101**	**F**	5D	46,900	51,615	**1.101**	**F**	No[8]
D. Harbor Boulevard, between and E. Valley View Drive and Berkeley Avenue	4D	37,500	55,468	**1.186**	**F**	4D	37,500	55,468	**1.186**	**F**	No[8]

Notes:

- D = Divided; U = Undivided; VPD = Vehicles per day; V/C = Volume over capacity
- **Bold LOS values** indicate adverse service levels

[7] Source: *Guidance for Administration of the Orange County Master Plan of Arterial Highways, dated November 1995 and Amended April 1998.*

[8] The roadway segment is forecast to operate at deficient levels of service both with and without the proposed Project. The proposed Project will maintain the existing lane geometrics along the roadway segment and thus the adverse service levels are not caused by the Project.

TABLE 8

YEAR 2045 BUILDOUT PLUS PROJECT PEAK HOUR ROADWAY SEGMENTS ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Roadway Segment	Approach	Time Period	Link Capacity (VPHPL)	(1) Year 2045 Buildout Plus Project Traffic Conditions					
				Lanes	Total Link Capacity (VPH)	Peak Hour Volume	V/C Ratio	LOS	Adverse (Yes/No)
A. Harbor Boulevard, between Bastanchury Road and Valencia Mesa Drive	Northbound	AM	1,600	2	3,200	1,284	0.401	A	No
		PM	1,600	2	3,200	1,604	0.501	A	No
	Southbound	AM	1,600	2	3,200	1,632	0.510	A	No
		PM	1,600	2	3,200	1,303	0.407	A	No

Notes:

- VPHPL = Vehicles Per Hour Per Lane
- VPH = Vehicles Per Hour
- V/C = Volume to Capacity Ratio

TABLE 9
EXISTING PEAK HOUR INTERSECTION QUEUING ANALYSIS[9]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Existing Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
1. Harbor Boulevard at Bastanchury Road									
Northbound Left-Turn	460[10]	244	Yes	267	Yes	277	Yes	330	Yes
Northbound Right-Turn	150	68	Yes	**213**	**No**	80	Yes	**264**	**No**
Southbound Left-Turn	550[11]	**617**	**No**	**702**	**No**	**690**	**No**	**633**	**No**
2. Harbor Boulevard at Valencia Mesa Drive									
Northbound Left-Turn	175 / 185[12]	**192**	**No**	84	Yes	**198**	**No**	139	Yes
Southbound Left-Turn	230	212	Yes	125	Yes	214	Yes	143	Yes
Southbound Right-Turn[13]	705	--	--	--	--	55	Yes	40	Yes

9 Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

10 Movement consists of dual left-turn lanes. Both lanes provide approximately 230' of storage. The storage reported is the total of both lanes.

11 Movement consists of dual left-turn lanes. The first lane provides approximately 140' of storage and the second lane provides approximately 410' of storage. The storage reported is the total of both lanes.

12 Restriping the northbound left-turn from 175-feet to 185-feet is proposed as part of the Project.

13 Restriping the southbound through/right-turn lane into a southbound right-turn pocket is proposed as part of the Project.

TABLE 9 (CONTINUED)
EXISTING PEAK HOUR INTERSECTION QUEUING ANALYSIS[14]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Existing Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
3. Harbor Boulevard at Brea Boulevard/Valley View Drive									
Northbound Left-Turn	95	35	Yes	32	Yes	34	Yes	33	Yes
Southbound Left-Turn	150 / 140[15]	108	Yes	**156**	**No**	119	Yes	**196**	**No**
Southbound Right-Turn[16]	140	**--**	--	**--**	**--**	**164**	**No**	**190**	**No**
4. Harbor Boulevard at Proposed Brea Dam Park									
Northbound Right-Turn	200	**--**	--	**--**	**--**	25	Yes	25	Yes
Southbound Left-Turn	250	**--**	--	**--**	**--**	25	Yes	25	Yes

14 Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

15 Restriping the southbound left-turn from 150-feet to 140-feet is proposed as part of the Project.

16 Restriping the southbound through/right-turn lane into a southbound right-turn pocket is proposed as part of the Project.

TABLE 9 (CONTINUED)
EXISTING PEAK HOUR INTERSECTION QUEUING ANALYSIS[17]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Existing Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
5. Harbor Boulevard at E. Valley View Drive									
Northbound Left-Turn	95	59	Yes	70	Yes	52	Yes	72	Yes
Southbound Left-Turn	100	76	Yes	75	Yes	69	Yes	62	Yes
6. Harbor Boulevard at Berkeley Avenue									
Northbound Left-Turn	205	173	Yes	204	Yes	172	Yes	**219**	**No**
Southbound Left-Turn	600[18]	279	Yes	315	Yes	290	Yes	297	Yes
Southbound Right-Turn	165	54	Yes	25	Yes	69	Yes	25	Yes

[17] Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

[18] Movement consists of dual left-turn lanes. Both lanes provide approximately 300' of storage. The storage reported is the total of both lanes.

TABLE 10

YEAR 2045 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[19]

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Year 2045 Buildout Traffic Conditions				(2) Year 2045 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
1. Harbor Boulevard at Bastanchury Road									
Northbound Left-Turn	460[20]	302	Yes	**476**	**No**	424	Yes	**498**	**No**
Northbound Right-Turn	150	109	Yes	**278**	**No**	130	Yes	**274**	**No**
Southbound Left-Turn	550[21]	**729**	**No**	**730**	**No**	**703**	**No**	**723**	**No**
2. Harbor Boulevard at Valencia Mesa Drive									
Northbound Left-Turn	175 / 185[22]	**177**	**No**	**191**	**No**	**278**	**No**	**278**	**No**
Southbound Left-Turn	230	**260**	**No**	146	Yes	**247**	**No**	155	Yes
Southbound Right-Turn[23]	705	--	--	--	--	55	Yes	28	Yes

19 Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

20 Movement consists of dual left-turn lanes. Both lanes provide approximately 230' of storage. The storage reported is the total of both lanes.

21 Movement consists of dual left-turn lanes. The first lane provides approximately 140' of storage and the second lane provides approximately 410' of storage. The storage reported is the total of both lanes.

22 Restriping the northbound left-turn from 175-feet to 185-feet is proposed as part of the Project.

23 Restriping the southbound through/right-turn lane into a southbound right-turn pocket is proposed as part of the Project.

TABLE 10 (CONTINUED)
YEAR 2045 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[24]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Year 2045 Buildout Traffic Conditions				(2) Year 2045 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
3. Harbor Boulevard at Brea Boulevard/Valley View Drive									
Northbound Left-Turn	95	25	Yes	50	Yes	48	Yes	57	Yes
Southbound Left-Turn	150 / 140[25]	**157**	**No**	**163**	**No**	**165**	**No**	**196**	**No**
Southbound Right-Turn[26]	140	--	--	--	--	**180**	**No**	128	Yes
4. Harbor Boulevard at Proposed Brea Dam Park									
Northbound Right-Turn	200	--	--	--	--	25	Yes	25	Yes
Southbound Left-Turn	250	--	--	--	--	33	Yes	25	Yes

24 Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

25 Restriping the southbound left-turn from 150-feet to 140-feet is proposed as part of the Project.

26 Restriping the southbound through/right-turn lane into a southbound right-turn pocket is proposed as part of the Project.

TABLE 10 (CONTINUED)
YEAR 2045 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[27]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Year 2045 Buildout Traffic Conditions				(2) Year 2045 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
5. Harbor Boulevard at E. Valley View Drive									
Northbound Left-Turn	95	**144**	**No**	**130**	**No**	**131**	**No**	**125**	**No**
Southbound Left-Turn	100	75	Yes	96	Yes	65	Yes	84	Yes
6. Harbor Boulevard at Berkeley Avenue									
Northbound Left-Turn	205	**242**	**No**	**286**	**No**	**246**	**No**	**300**	**No**
Southbound Left-Turn	600[28]	449	Yes	336	Yes	472	Yes	357	Yes
Southbound Right-Turn	165	76	Yes	37	Yes	63	Yes	49	Yes

[27] Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

[28] Movement consists of dual left-turn lanes. Both lanes provide approximately 300' of storage. The storage reported is the total of both lanes.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVAR
E-W Direction: BASTANCHURY ROAD

File Name : H2305016
Site Code : 00000000
Start Date : 5/24/2023
Page No : 1

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BASTANCHURY ROAD Westbound				HARBOR BOULEVARD Northbound				BASTANCHURY ROAD Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
00:00	15	15	2	1	6	13	1	1	4	28	2	1	0	15	11	0	115
00:15	2	16	4	1	5	16	2	0	1	30	3	0	1	13	3	0	97
00:30	4	13	0	1	9	15	3	1	3	36	4	0	1	4	2	0	96
00:45	7	11	5	1	5	6	2	0	0	22	2	0	3	15	1	0	80
Total	28	55	11	4	25	50	8	2	8	116	11	1	5	47	17	0	388
01:00	10	15	1	1	2	2	2	2	3	21	3	0	0	8	3	0	73
01:15	1	15	1	1	2	7	2	1	0	14	0	0	2	4	3	0	53
01:30	6	6	1	1	2	2	3	0	2	12	0	0	1	2	4	0	42
01:45	0	12	1	0	3	1	1	1	1	14	0	0	1	2	1	0	38
Total	17	48	4	3	9	12	8	4	6	61	3	0	4	16	11	0	206
02:00	0	11	3	0	2	4	1	0	1	9	2	0	0	2	0	0	35
02:15	2	11	0	0	1	4	3	2	1	7	1	0	0	3	1	0	36
02:30	4	6	4	1	2	4	1	0	1	15	0	0	1	8	2	0	49
02:45	1	10	1	1	1	3	2	0	0	14	0	0	0	7	4	0	44
Total	7	38	8	2	6	15	7	2	3	45	3	0	1	20	7	0	164
03:00	1	12	0	0	3	3	1	0	1	14	0	0	1	2	2	0	40
03:15	2	11	2	0	0	6	1	0	0	19	0	0	1	4	9	0	55
03:30	1	21	4	0	4	3	1	0	2	29	0	0	0	6	5	0	76
03:45	4	23	6	0	2	7	1	1	1	23	0	0	1	11	7	0	87
Total	8	67	12	0	9	19	4	1	4	85	0	0	3	23	23	0	258
04:00	3	14	4	1	3	9	2	0	2	11	0	1	0	9	5	0	64
04:15	8	23	3	0	6	7	1	0	4	31	0	1	0	8	5	0	97
04:30	6	41	12	0	4	30	3	0	0	30	0	0	0	8	12	0	146
04:45	8	40	15	0	7	28	0	2	2	52	1	0	1	15	14	0	185
Total	25	118	34	1	20	74	6	2	8	124	1	2	1	40	36	0	492
05:00	12	35	11	1	6	20	5	0	8	31	4	0	0	8	16	0	157
05:15	19	92	18	1	11	22	6	3	7	53	2	0	3	25	15	0	277
05:30	26	88	15	4	12	51	10	4	5	74	4	1	2	34	24	0	354
05:45	35	87	34	1	23	54	12	3	29	82	6	0	1	45	31	0	443
Total	92	302	78	7	52	147	33	10	49	240	16	1	6	112	86	0	1231
06:00	26	83	39	4	25	57	13	4	14	57	6	0	6	44	25	0	403
06:15	36	122	49	3	16	70	14	2	21	66	4	0	6	61	26	0	496
06:30	39	167	66	3	31	79	31	2	19	77	10	1	8	93	33	0	659
06:45	43	222	74	7	43	148	35	2	36	96	12	1	20	119	63	0	921
Total	144	594	228	17	115	354	93	10	90	296	32	2	40	317	147	0	2479
07:00	40	255	94	4	36	155	33	7	19	104	15	1	31	171	41	0	1006
07:15	53	281	100	3	47	192	36	6	21	124	23	1	26	188	45	0	1146
07:30	74	165	87	6	57	243	41	4	25	164	31	1	36	219	42	0	1195
07:45	75	271	99	5	68	244	69	3	22	187	38	4	39	185	76	0	1385
Total	242	972	380	18	208	834	179	20	87	579	107	7	132	763	204	0	4732
08:00	92	259	71	6	47	240	73	8	33	133	53	1	41	195	72	0	1324
08:15	68	207	70	3	41	228	55	4	26	136	52	3	44	221	84	0	1242
08:30	62	204	89	6	60	215	47	4	29	165	29	2	39	247	79	0	1277
08:45	60	218	77	5	49	176	52	4	34	143	18	2	43	162	52	0	1095
Total	282	888	307	20	197	859	227	20	122	577	152	8	167	825	287	0	4938

Transportation Studies, Inc
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File Name : H2305016
Site Code : 00000000
Start Date : 5/24/2023
Page No : 2

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BASTANCHURY ROAD Westbound				HARBOR BOULEVARD Northbound				BASTANCHURY ROAD Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
09:00	49	178	60	6	67	208	47	3	35	112	22	2	32	148	45	0	1014
09:15	39	145	65	5	52	156	64	4	33	116	26	0	38	145	52	0	940
09:30	49	132	64	5	56	161	44	9	44	122	37	1	37	130	60	0	951
09:45	44	158	50	5	48	160	46	5	27	128	30	0	46	150	54	0	951
Total	181	613	239	21	223	685	201	21	139	478	115	3	153	573	211	0	3856
10:00	58	136	56	4	62	155	54	4	40	110	30	1	46	134	63	0	953
10:15	53	152	61	4	75	134	42	5	32	125	31	3	31	135	54	0	937
10:30	53	157	62	3	48	164	49	4	45	135	31	1	35	133	65	0	985
10:45	38	151	44	3	74	148	69	5	39	128	27	0	33	166	64	0	989
Total	202	596	223	14	259	601	214	18	156	498	119	5	145	568	246	0	3864
11:00	57	157	49	4	70	152	44	8	47	152	28	2	20	141	57	0	988
11:15	58	152	69	8	50	153	31	6	36	135	27	1	48	160	80	0	1014
11:30	54	137	62	8	62	171	33	3	48	165	33	2	27	158	56	0	1019
11:45	47	132	55	5	39	138	25	5	58	166	35	1	34	145	56	0	941
Total	216	578	235	25	221	614	133	22	189	618	123	6	129	604	249	0	3962
12:00	54	138	56	6	58	143	41	7	48	165	47	0	48	168	59	0	1038
12:15	51	144	65	6	50	148	53	7	43	164	41	1	31	177	60	0	1041
12:30	41	135	63	7	74	135	45	3	45	165	44	0	30	164	59	0	1010
12:45	45	152	50	6	73	229	55	6	37	161	51	2	35	160	56	0	1118
Total	191	569	234	25	255	655	194	23	173	655	183	3	144	669	234	0	4207
13:00	53	140	72	8	64	163	40	12	28	149	39	0	52	200	71	0	1091
13:15	40	149	55	8	63	146	53	7	39	169	36	1	34	185	54	0	1039
13:30	63	168	54	5	65	190	40	8	42	168	45	5	26	193	53	0	1125
13:45	60	177	55	9	59	188	56	8	52	146	27	0	43	158	64	0	1102
Total	216	634	236	30	251	687	189	35	161	632	147	6	155	736	242	0	4357
14:00	81	183	67	9	71	183	48	8	38	155	41	0	41	192	60	0	1177
14:15	62	156	70	4	65	161	34	6	45	168	35	2	38	216	66	0	1128
14:30	75	210	68	7	72	179	43	1	50	175	38	2	31	212	64	0	1227
14:45	69	176	78	7	71	178	39	11	49	219	47	4	40	230	67	0	1285
Total	287	725	283	27	279	701	164	26	182	717	161	8	150	850	257	0	4817
15:00	62	191	97	9	66	201	43	10	46	188	40	1	39	196	69	0	1258
15:15	78	203	102	8	63	189	41	13	60	232	35	0	45	230	68	0	1367
15:30	75	205	83	7	86	183	45	13	56	242	50	3	45	252	63	0	1408
15:45	83	197	86	9	74	204	47	4	56	259	47	2	38	311	60	0	1477
Total	298	796	368	33	289	777	176	40	218	921	172	6	167	989	260	0	5510
16:00	84	214	82	3	79	222	25	11	53	240	47	2	36	288	61	0	1447
16:15	76	190	107	4	79	183	35	6	33	264	47	0	39	255	63	0	1381
16:30	82	220	75	12	81	181	24	3	63	269	38	4	33	264	68	0	1417
16:45	81	173	69	8	69	223	30	6	42	286	36	1	39	248	72	0	1383
Total	323	797	333	27	308	809	114	26	191	1059	168	7	147	1055	264	0	5628
17:00	94	194	75	3	71	189	27	8	61	267	60	1	24	292	75	0	1441
17:15	81	209	74	5	79	240	32	3	37	257	48	1	29	310	78	0	1483
17:30	92	200	63	3	68	201	12	7	51	220	48	0	25	231	58	0	1279
17:45	66	183	73	3	55	186	27	6	28	185	28	1	27	226	68	0	1162
Total	333	786	285	14	273	816	98	24	177	929	184	3	105	1059	279	0	5365
18:00	89	153	51	5	57	193	21	7	33	218	25	1	30	190	77	0	1150
18:15	74	141	49	3	59	161	32	8	30	196	30	0	20	166	56	0	1025

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
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City: FULLERTON
N-S Direction: HARBOR BOULEVAR
E-W Direction: BASTANCHURY ROAD

File Name : H2305016
Site Code : 00000000
Start Date : 5/24/2023
Page No : 3

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BASTANCHURY ROAD Westbound				HARBOR BOULEVARD Northbound				BASTANCHURY ROAD Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
18:30	41	145	61	8	66	163	28	15	33	224	37	2	14	170	49	0	1056
18:45	52	125	42	2	68	152	17	5	22	151	21	1	29	143	43	0	873
Total	256	564	203	18	250	669	98	35	118	789	113	4	93	669	225	0	4104
19:00	38	115	32	7	44	120	12	5	23	159	33	0	13	133	40	0	774
19:15	36	105	40	7	50	115	19	10	22	141	27	0	28	124	38	0	762
19:30	36	102	36	8	59	116	18	14	13	116	22	0	15	76	32	0	663
19:45	29	107	36	4	52	115	19	6	20	86	19	1	20	67	37	0	618
Total	139	429	144	26	205	466	68	35	78	502	101	1	76	400	147	0	2817
20:00	41	84	35	8	55	138	20	7	18	137	30	0	19	98	29	0	719
20:15	36	73	35	3	41	92	21	7	28	113	18	0	20	72	30	0	589
20:30	20	84	30	10	40	104	25	4	16	95	23	0	25	83	26	0	585
20:45	23	70	32	5	31	91	11	3	16	107	18	1	10	83	28	0	529
Total	120	311	132	26	167	425	77	21	78	452	89	1	74	336	113	0	2422
21:00	21	75	30	3	30	74	9	4	22	95	11	2	5	68	29	0	478
21:15	21	65	22	0	25	69	17	4	10	90	16	0	10	66	28	0	443
21:30	18	74	14	4	25	57	13	3	8	79	14	0	7	63	21	0	400
21:45	19	44	14	0	20	46	10	2	10	85	21	0	10	52	19	0	352
Total	79	258	80	7	100	246	49	13	50	349	62	2	32	249	97	0	1673
22:00	18	51	17	4	16	44	6	7	10	68	8	0	1	53	17	0	320
22:15	21	37	13	6	17	33	4	2	4	75	6	1	2	32	23	0	276
22:30	13	48	9	2	10	35	5	0	7	66	10	0	3	31	21	0	260
22:45	12	28	7	2	14	32	7	2	4	43	10	0	2	31	15	0	209
Total	64	164	46	14	57	144	22	11	25	252	34	1	8	147	76	0	1065
23:00	19	36	7	2	13	32	5	3	9	53	6	0	3	33	18	0	239
23:15	15	23	5	2	14	27	6	2	3	45	2	0	1	32	12	0	189
23:30	7	29	7	2	9	13	5	2	2	52	5	0	4	11	4	0	152
23:45	9	12	7	2	11	12	3	0	6	38	4	0	0	21	18	0	143
Total	50	100	26	8	47	84	19	7	20	188	17	0	8	97	52	0	723
Grand Total	3800	11002	4129	387	3825	10743	2381	428	2332	11162	2113	77	1945	11164	3770	0	69258
Apprch %	19.7	57	21.4	2	22	61.8	13.7	2.5	14.9	71.2	13.5	0.5	11.5	66.1	22.3	0	
Total %	5.5	15.9	6	0.6	5.5	15.5	3.4	0.6	3.4	16.1	3.1	0.1	2.8	16.1	5.4	0	

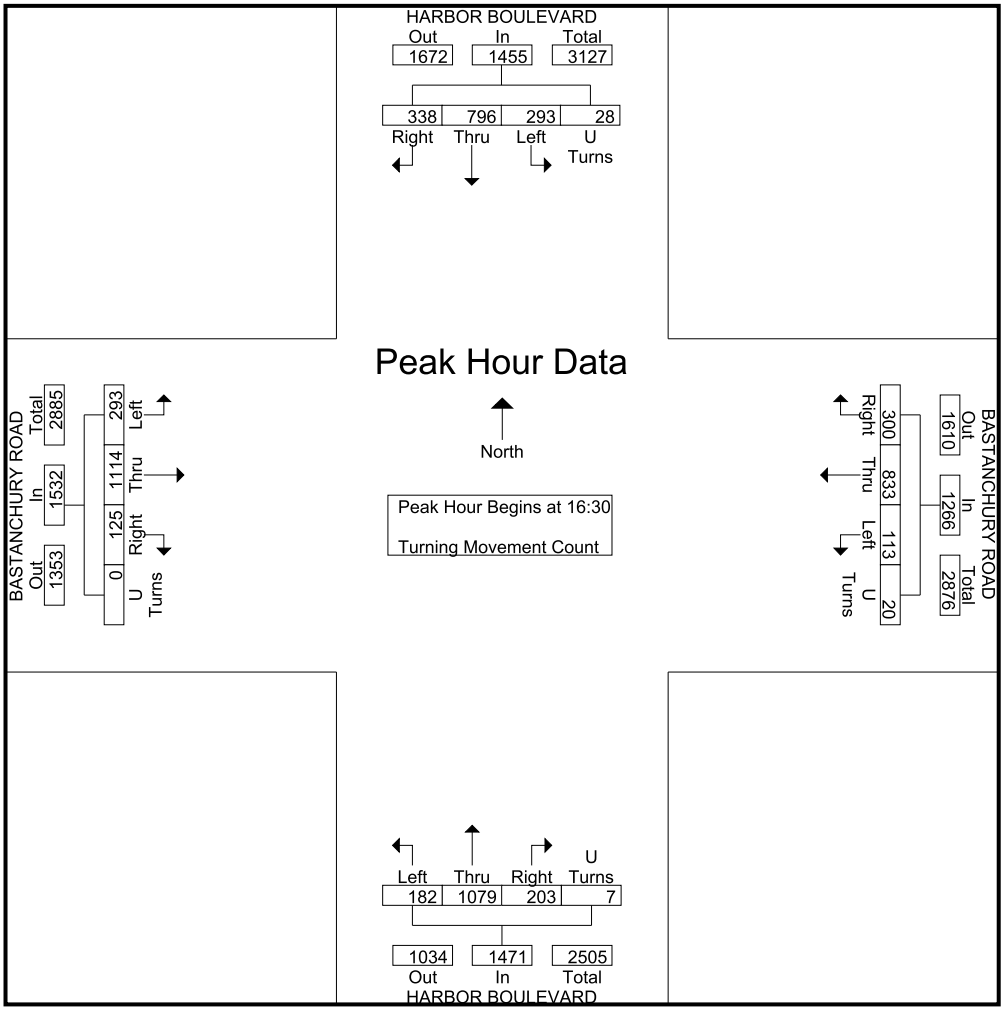
	HARBOR BOULEVARD Southbound				Westbound				HARBOR BOULEVARD Northbound				Eastbound			
	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVAR
E-W Direction: BASTANCHURY ROAD

File Name : H2305016
Site Code : 00000000
Start Date : 5/24/2023
Page No : 4

	HARBOR BOULEVARD Southbound					BASTANCHURY ROAD Westbound					HARBOR BOULEVARD Northbound					BASTANCHURY ROAD Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 00:00 to 23:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	82	220	75	12	389	81	181	24	3	289	63	269	38	4	374	33	264	68	0	365	1417
16:45	81	173	69	8	331	69	223	30	6	328	42	286	36	1	365	39	248	72	0	359	1383
17:00	94	194	75	3	366	71	189	27	8	295	61	267	60	1	389	24	292	75	0	391	1441
17:15	81	209	74	5	369	79	240	32	3	354	37	257	48	1	343	29	310	78	0	417	1483
Total Volume	338	796	293	28	1455	300	833	113	20	1266	203	1079	182	7	1471	125	1114	293	0	1532	5724
% App. Total	23.2	54.7	20.1	1.9		23.7	65.8	8.9	1.6		13.8	73.4	12.4	0.5		8.2	72.7	19.1	0		
PHF	.899	.905	.977	.583	.935	.926	.868	.883	.625	.894	.806	.943	.758	.438	.945	.801	.898	.939	.000	.918	.965



Transportation Studies, Inc
2640 Walnut Avenue, Suite L
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City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BREA BLVD/VALLEY VIEW

File Name : H2305018
Site Code : 00000000
Start Date : 5/24/2023
Page No : 1

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BREA BOULEVARD Westbound				HARBOR BOULEVARD Northbound				VALLEY VIEW DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
00:00	2	16	1	0	1	3	7	0	14	29	0	0	0	2	0	0	75
00:15	1	14	1	0	1	3	7	0	10	25	0	1	0	0	1	0	64
00:30	2	13	3	0	2	2	5	0	13	37	1	0	1	0	0	0	79
00:45	0	17	0	0	1	1	7	0	8	21	0	0	0	1	0	0	56
Total	5	60	5	0	5	9	26	0	45	112	1	1	1	3	1	0	274
01:00	0	11	2	0	1	1	7	0	6	23	0	0	1	0	0	0	52
01:15	0	19	1	0	0	0	1	0	5	10	0	0	2	1	0	0	39
01:30	0	10	1	0	0	0	4	0	3	14	2	0	0	0	0	0	34
01:45	1	14	0	0	0	0	1	0	8	15	0	0	0	1	1	0	41
Total	1	54	4	0	1	1	13	0	22	62	2	0	3	2	1	0	166
02:00	0	12	0	0	1	1	3	0	4	9	0	0	0	0	0	0	30
02:15	0	10	0	0	1	0	4	0	2	8	0	0	0	0	1	0	26
02:30	0	9	0	0	1	0	1	0	2	16	0	0	0	0	0	0	29
02:45	0	12	0	0	0	1	4	0	2	12	0	0	0	1	1	0	33
Total	0	43	0	0	3	2	12	0	10	45	0	0	0	1	2	0	118
03:00	0	14	0	0	0	0	2	0	4	14	0	0	0	0	0	0	34
03:15	0	13	0	0	0	0	2	0	5	20	0	0	0	0	1	0	41
03:30	0	22	0	0	0	0	4	0	16	30	2	0	0	1	0	0	75
03:45	0	24	0	0	0	0	6	0	16	22	0	0	0	0	0	0	68
Total	0	73	0	0	0	0	14	0	41	86	2	0	0	1	1	0	218
04:00	0	13	0	0	2	1	6	0	6	16	1	0	1	0	1	0	47
04:15	0	29	1	0	0	0	5	0	11	29	1	0	0	0	0	0	76
04:30	1	37	1	0	1	0	11	0	10	25	0	0	0	3	1	0	90
04:45	2	48	0	0	2	1	22	0	21	56	1	0	0	2	0	0	155
Total	3	127	2	0	5	2	44	0	48	126	3	0	1	5	2	0	368
05:00	0	34	0	0	0	0	24	0	11	46	1	0	0	3	1	0	120
05:15	0	59	16	0	3	3	25	0	20	58	0	0	2	4	2	0	192
05:30	1	75	7	0	3	0	38	1	20	102	1	0	0	5	2	0	255
05:45	0	98	1	0	9	2	42	0	41	107	1	0	0	1	3	0	305
Total	1	266	24	0	15	5	129	1	92	313	3	0	2	13	8	0	872
06:00	0	85	1	0	5	3	45	0	26	67	2	0	0	4	6	0	244
06:15	1	109	3	0	7	0	63	0	31	110	2	0	0	4	3	0	333
06:30	5	150	8	0	13	5	69	0	46	131	1	0	0	6	7	0	441
06:45	4	213	1	0	16	7	108	0	54	149	3	0	1	10	6	0	572
Total	10	557	13	0	41	15	285	0	157	457	8	0	1	24	22	0	1590
07:00	9	151	9	0	24	15	149	0	69	125	4	0	3	16	10	0	584
07:15	8	271	15	0	30	19	152	0	86	186	2	0	2	17	8	0	796
07:30	17	273	11	0	45	18	120	0	103	247	1	0	1	13	12	0	861
07:45	22	241	17	0	34	30	141	0	101	249	5	0	3	27	11	0	881
Total	56	936	52	0	133	82	562	0	359	807	12	0	9	73	41	0	3122
08:00	20	245	12	0	40	34	130	0	75	210	3	0	1	15	16	0	801
08:15	21	216	17	0	47	34	148	0	103	214	12	1	4	29	12	0	858
08:30	16	222	22	0	32	25	129	0	105	235	4	0	7	28	20	0	845
08:45	16	209	15	0	27	28	148	0	95	194	11	1	7	39	9	0	799
Total	73	892	66	0	146	121	555	0	378	853	30	2	19	111	57	0	3303

Transportation Studies, Inc
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Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BREA BLVD/VALLEY VIEW

File Name : H2305018
Site Code : 00000000
Start Date : 5/24/2023
Page No : 2

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BREA BOULEVARD Westbound				HARBOR BOULEVARD Northbound				VALLEY VIEW DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
09:00	14	200	15	0	30	25	142	0	86	176	3	0	9	6	14	0	720
09:15	14	172	11	0	18	19	117	0	89	163	5	0	10	26	19	0	663
09:30	10	188	12	0	25	13	93	0	82	170	9	0	9	29	13	0	653
09:45	8	186	23	0	19	23	120	0	95	156	5	0	8	25	17	0	685
Total	46	746	61	0	92	80	472	0	352	665	22	0	36	86	63	0	2721
10:00	15	200	14	0	18	21	119	0	70	142	3	0	8	20	12	1	643
10:15	15	177	18	0	17	18	108	0	81	142	7	0	13	25	12	0	633
10:30	11	191	15	0	30	14	77	1	82	178	4	0	7	17	26	0	653
10:45	10	204	14	0	19	13	102	0	76	158	6	0	6	14	16	0	638
Total	51	772	61	0	84	66	406	1	309	620	20	0	34	76	66	1	2567
11:00	6	210	11	0	24	17	102	0	87	179	4	1	10	15	15	0	681
11:15	16	202	16	0	24	15	109	0	90	151	8	0	8	15	19	0	673
11:30	7	187	10	0	25	20	100	0	94	183	8	0	5	34	16	0	689
11:45	10	172	17	0	29	22	130	0	100	159	7	0	10	28	26	0	710
Total	39	771	54	0	102	74	441	0	371	672	27	1	33	92	76	0	2753
12:00	14	191	24	0	21	17	119	0	102	205	3	0	20	40	35	0	791
12:15	8	177	14	0	26	8	88	0	105	166	4	0	8	28	15	0	647
12:30	13	196	16	0	16	21	95	0	99	215	8	0	6	16	17	0	718
12:45	18	182	13	0	32	28	123	0	104	181	10	0	9	22	16	0	738
Total	53	746	67	0	95	74	425	0	410	767	25	0	43	106	83	0	2894
13:00	21	191	12	0	23	40	106	0	99	196	6	0	5	21	18	0	738
13:15	17	183	19	0	25	28	110	0	108	181	8	0	12	32	21	0	744
13:30	14	195	17	0	22	19	108	0	111	212	7	0	13	15	8	0	741
13:45	6	193	14	0	33	21	129	0	126	182	9	0	11	18	14	0	756
Total	58	762	62	0	103	108	453	0	444	771	30	0	41	86	61	0	2979
14:00	12	217	19	0	9	27	111	0	95	200	7	0	9	20	12	0	738
14:15	11	206	16	0	23	22	114	0	102	176	7	0	7	22	11	0	717
14:30	13	238	15	0	24	32	95	0	123	225	12	1	5	20	14	0	817
14:45	12	212	17	0	24	23	116	0	145	243	12	0	10	31	18	0	863
Total	48	873	67	0	80	104	436	0	465	844	38	1	31	93	55	0	3135
15:00	13	245	22	0	26	23	109	0	113	230	3	0	6	14	14	0	818
15:15	16	230	9	0	27	24	120	0	111	223	8	0	10	26	20	0	824
15:30	12	218	20	0	26	32	104	0	140	253	8	1	10	26	13	0	863
15:45	17	270	16	0	26	32	104	0	143	284	5	0	16	41	23	0	977
Total	58	963	67	0	105	111	437	0	507	990	24	1	42	107	70	0	3482
16:00	12	249	16	0	37	38	109	0	143	252	2	0	6	36	20	0	920
16:15	19	241	24	0	26	16	119	0	119	265	3	0	11	32	19	0	894
16:30	16	261	21	1	33	26	107	0	137	263	0	0	13	50	25	0	953
16:45	7	221	30	0	23	25	130	0	164	243	3	0	4	46	12	0	908
Total	54	972	91	1	119	105	465	0	563	1023	8	0	34	164	76	0	3675
17:00	12	274	24	0	26	21	115	0	156	268	3	0	4	46	18	0	967
17:15	15	244	21	0	29	25	117	0	148	250	3	0	5	37	13	0	907
17:30	14	237	32	0	21	22	120	0	152	250	6	0	4	24	12	0	894
17:45	11	172	25	0	19	21	114	0	124	200	3	0	5	31	10	0	735
Total	52	927	102	0	95	89	466	0	580	968	15	0	18	138	53	0	3503
18:00	9	184	18	0	24	19	124	0	137	203	1	0	3	23	12	0	757
18:15	9	153	14	0	21	14	101	0	126	215	2	0	5	20	11	0	691

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BREA BLVD/VALLEY VIEW

File Name : H2305018
Site Code : 00000000
Start Date : 5/24/2023
Page No : 3

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BREA BOULEVARD Westbound				HARBOR BOULEVARD Northbound				VALLEY VIEW DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
18:30	6	159	22	0	18	7	98	0	127	214	2	0	2	14	11	0	680
18:45	10	146	25	0	18	16	87	0	128	180	3	0	2	12	13	0	640
Total	34	642	79	0	81	56	410	0	518	812	8	0	12	69	47	0	2768
19:00	3	153	15	0	24	33	97	0	107	157	4	0	8	9	9	0	619
19:15	5	125	20	0	28	13	88	0	105	158	5	0	3	18	9	0	577
19:30	3	129	10	0	14	15	88	0	78	125	2	1	2	14	8	0	489
19:45	5	128	10	0	7	8	76	0	83	98	5	0	3	20	4	0	447
Total	16	535	55	0	73	69	349	0	373	538	16	1	16	61	30	0	2132
20:00	6	101	17	0	14	11	73	0	82	142	3	0	6	14	5	0	474
20:15	5	112	9	0	13	16	78	0	92	131	3	0	2	8	10	0	479
20:30	4	130	11	0	12	26	53	0	76	127	5	0	3	12	4	0	463
20:45	3	93	9	0	7	12	40	0	84	115	2	0	6	5	6	0	382
Total	18	436	46	0	46	65	244	0	334	515	13	0	17	39	25	0	1798
21:00	3	98	11	0	21	20	93	0	70	116	1	0	0	7	2	0	442
21:15	2	96	9	0	5	3	54	0	36	87	2	0	5	7	3	0	309
21:30	1	93	4	0	5	10	30	0	45	91	2	0	1	5	3	0	290
21:45	1	63	3	0	7	5	39	0	40	67	0	0	3	6	5	0	239
Total	7	350	27	0	38	38	216	0	191	361	5	0	9	25	13	0	1280
22:00	0	63	7	0	4	1	16	0	50	75	5	0	4	1	4	0	230
22:15	0	45	2	0	2	2	27	0	42	70	1	0	2	0	5	0	198
22:30	0	63	5	0	4	2	21	0	33	77	1	0	3	1	1	0	211
22:45	2	37	4	0	0	3	22	0	29	46	2	0	1	1	2	0	149
Total	2	208	18	0	10	8	86	0	154	268	9	0	10	3	12	0	788
23:00	2	43	6	0	1	3	27	0	22	63	0	0	1	3	0	0	171
23:15	0	34	1	0	2	3	17	0	24	47	2	0	1	2	2	0	135
23:30	0	41	1	0	3	1	13	0	16	46	2	0	1	2	2	0	128
23:45	0	17	0	0	1	2	5	0	19	36	1	0	1	1	0	0	83
Total	2	135	8	0	7	9	62	0	81	192	5	0	4	8	4	0	517
Grand Total	687	12846	1031	1	1479	1293	7008	2	6804	12867	326	7	416	1386	869	1	47023
Apprch %	4.7	88.2	7.1	0	15.1	13.2	71.6	0	34	64.3	1.6	0	15.6	51.9	32.5	0	
Total %	1.5	27.3	2.2	0	3.1	2.7	14.9	0	14.5	27.4	0.7	0	0.9	2.9	1.8	0	

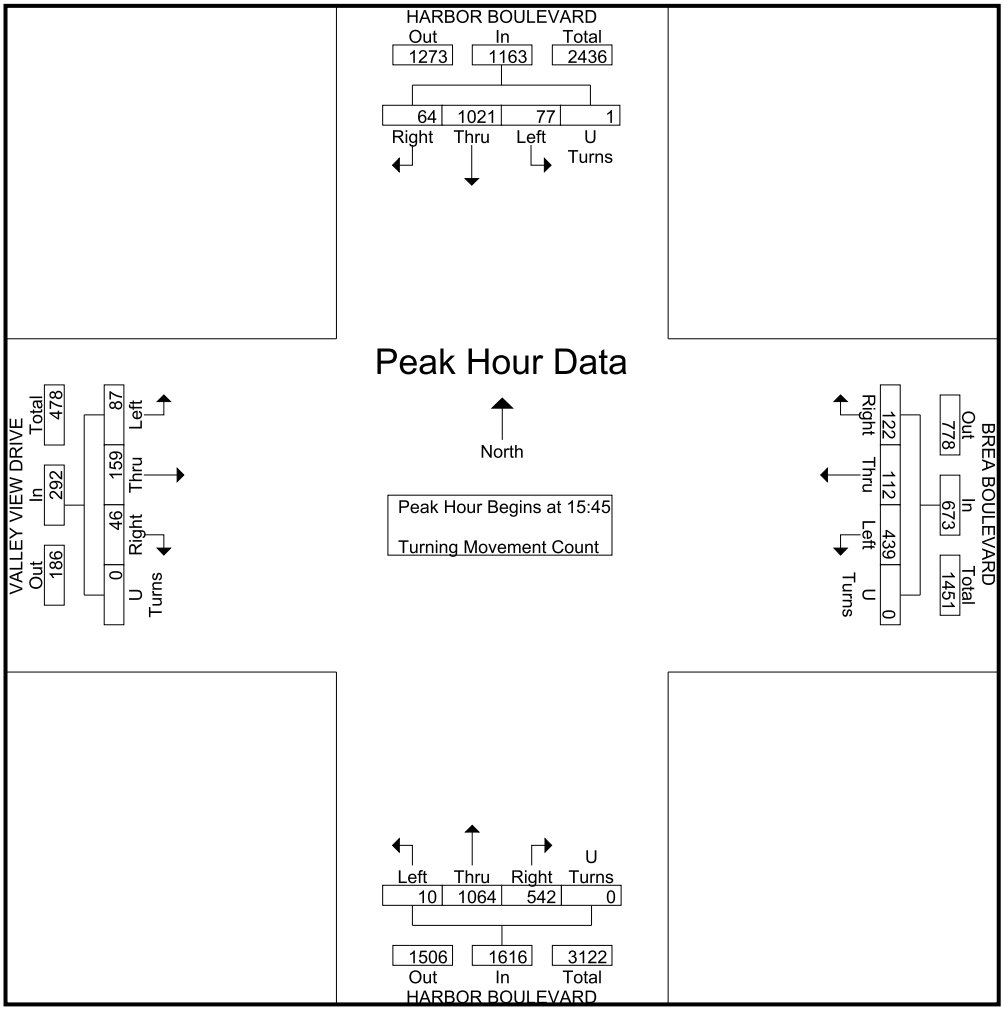
HARBOR BOULEVARD Southbound				BREA BOULEVARD Westbound				HARBOR BOULEVARD Northbound				VALLEY VIEW DRIVE Eastbound			
Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns

Transportation Studies, Inc
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City: FULLERTON
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File Name : H2305018
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	HARBOR BOULEVARD Southbound					BREA BOULEVARD Westbound					HARBOR BOULEVARD Northbound					VALLEY VIEW DRIVE Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 00:00 to 23:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:45																					
15:45	17	270	16	0	303	26	32	104	0	162	143	284	5	0	432	16	41	23	0	80	977
16:00	12	249	16	0	277	37	38	109	0	184	143	252	2	0	397	6	36	20	0	62	920
16:15	19	241	24	0	284	26	16	119	0	161	119	265	3	0	387	11	32	19	0	62	894
16:30	16	261	21	1	299	33	26	107	0	166	137	263	0	0	400	13	50	25	0	88	953
Total Volume	64	1021	77	1	1163	122	112	439	0	673	542	1064	10	0	1616	46	159	87	0	292	3744
% App. Total	5.5	87.8	6.6	0.1		18.1	16.6	65.2	0		33.5	65.8	0.6	0		15.8	54.5	29.8	0		
PHF	.842	.945	.802	.250	.960	.824	.737	.922	.000	.914	.948	.937	.500	.000	.935	.719	.795	.870	.000	.830	.958



Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: VALENCIA MESA DR

File Name : H2305017
Site Code : 00000000
Start Date : 5/24/2023
Page No : 1

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				VALENCIA MESA DRIVE Westbound				HARBOR BOULEVARD Northbound				VALENCIA MESA DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
00:00	2	14	0	0	7	0	2	0	0	28	0	0	2	0	0	0	55
00:15	0	13	6	0	5	0	0	0	1	28	0	0	0	0	1	0	54
00:30	2	14	2	0	6	0	4	0	3	34	1	0	0	0	4	0	70
00:45	0	11	3	0	1	0	3	0	1	22	0	0	0	0	1	0	42
Total	4	52	11	0	19	0	9	0	5	112	1	0	2	0	6	0	221
01:00	2	12	3	0	4	0	1	0	1	22	0	0	1	0	2	0	48
01:15	0	17	1	0	2	0	0	0	0	10	1	0	0	0	2	0	33
01:30	0	9	2	0	1	0	3	0	1	12	0	0	1	0	0	0	29
01:45	0	13	1	0	2	0	2	0	1	15	1	0	0	0	0	0	35
Total	2	51	7	0	9	0	6	0	3	59	2	0	2	0	4	0	145
02:00	1	11	0	0	3	0	0	0	1	9	0	0	0	0	0	0	25
02:15	2	10	1	0	0	0	0	0	2	6	0	0	0	0	2	0	23
02:30	0	8	0	0	1	0	1	0	0	15	2	0	0	0	0	0	27
02:45	0	10	2	0	0	0	0	0	0	13	0	0	2	0	0	0	27
Total	3	39	3	0	4	0	1	0	3	43	2	0	2	0	2	0	102
03:00	0	12	0	0	1	1	1	0	0	15	0	0	0	0	0	0	30
03:15	0	13	0	0	1	0	1	0	1	17	0	0	0	0	0	0	33
03:30	0	21	0	0	1	0	2	0	0	31	0	0	0	0	1	0	56
03:45	0	21	2	0	1	0	0	0	0	21	1	0	0	0	2	0	48
Total	0	67	2	0	4	1	4	0	1	84	1	0	0	0	3	0	167
04:00	0	17	0	0	4	0	0	0	1	12	3	0	0	1	0	0	38
04:15	0	20	0	0	5	0	1	0	1	31	0	0	3	0	1	0	62
04:30	0	39	3	0	0	0	1	0	0	28	0	0	3	1	0	0	75
04:45	0	38	2	0	0	0	2	0	2	55	0	0	0	0	0	0	99
Total	0	114	5	0	9	0	4	0	4	126	3	0	6	2	1	0	274
05:00	2	34	6	0	0	0	1	0	2	36	3	0	0	2	5	0	91
05:15	2	86	8	0	5	0	1	0	2	57	4	0	0	6	0	0	171
05:30	5	83	12	0	0	1	1	0	5	98	5	0	4	3	0	0	217
05:45	9	94	4	0	3	4	1	0	5	105	7	0	3	0	4	0	239
Total	18	297	30	0	8	5	4	0	14	296	19	0	7	11	9	0	718
06:00	4	82	11	0	10	1	4	0	6	60	9	0	4	4	5	0	200
06:15	15	112	11	0	6	4	1	0	15	82	11	0	6	5	8	0	276
06:30	14	161	21	0	7	3	7	0	17	83	27	0	3	5	4	0	352
06:45	16	216	28	0	12	6	6	0	16	127	23	0	7	9	10	0	476
Total	49	571	71	0	35	14	18	0	54	352	70	0	20	23	27	0	1304
07:00	21	281	22	0	8	4	7	0	17	127	14	0	12	12	10	0	535
07:15	25	287	27	0	6	4	3	0	24	157	28	0	12	10	12	0	595
07:30	31	274	31	0	7	6	6	0	15	212	30	0	13	6	17	0	648
07:45	56	260	45	0	5	14	14	0	30	207	41	0	17	12	20	0	721
Total	133	1102	125	0	26	28	30	0	86	703	113	0	54	40	59	0	2499
08:00	41	271	47	0	20	4	12	0	23	178	36	0	14	10	23	0	679
08:15	42	234	35	0	21	18	17	0	38	177	37	0	22	13	18	0	672
08:30	37	219	40	0	17	9	8	0	34	190	33	0	32	11	29	0	659
08:45	53	223	26	0	20	5	12	0	21	146	28	0	27	18	30	0	609
Total	173	947	148	0	78	36	49	0	116	691	134	0	95	52	100	0	2619

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: VALENCIA MESA DR

File Name : H2305017
Site Code : 00000000
Start Date : 5/24/2023
Page No : 2

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				VALENCIA MESA DRIVE Westbound				HARBOR BOULEVARD Northbound				VALENCIA MESA DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
09:00	18	186	43	0	23	6	19	0	19	129	33	0	34	7	23	0	540
09:15	34	170	40	0	27	14	12	0	26	136	26	0	32	24	21	0	562
09:30	28	152	28	0	31	11	17	0	19	125	24	0	28	8	32	0	503
09:45	30	172	40	1	29	12	24	0	19	128	20	0	23	12	24	0	534
Total	110	680	151	1	110	43	72	0	83	518	103	0	117	51	100	0	2139
10:00	27	173	29	0	31	11	25	0	17	121	14	0	27	8	33	0	516
10:15	22	164	38	0	39	19	30	0	18	123	19	0	31	13	34	0	550
10:30	22	183	33	0	24	10	13	0	24	152	19	0	24	20	25	0	549
10:45	24	173	45	0	42	11	22	0	29	146	24	0	24	10	18	0	568
Total	95	693	145	0	136	51	90	0	88	542	76	0	106	51	110	0	2183
11:00	30	175	23	0	38	5	21	0	25	156	15	0	38	5	29	0	560
11:15	22	184	34	0	32	10	24	0	16	149	18	0	29	4	21	0	543
11:30	16	153	22	1	35	18	25	0	18	179	13	0	41	9	40	0	570
11:45	12	157	19	0	25	11	40	0	23	188	17	0	25	8	33	0	558
Total	80	669	98	1	130	44	110	0	82	672	63	0	133	26	123	0	2231
12:00	24	172	20	0	37	6	19	0	19	198	19	0	29	5	21	0	569
12:15	31	154	40	2	27	10	23	0	22	190	17	0	21	9	26	0	572
12:30	25	163	24	3	26	11	18	0	19	188	16	0	30	5	30	0	558
12:45	28	176	35	1	28	6	15	0	10	200	23	0	18	6	27	0	573
Total	108	665	119	6	118	33	75	0	70	776	75	0	98	25	104	0	2272
13:00	34	165	30	0	30	14	16	0	15	170	26	0	21	6	22	0	549
13:15	30	170	31	1	27	7	22	0	20	189	18	0	21	10	31	0	577
13:30	31	172	35	0	43	10	16	0	16	194	19	0	31	10	21	0	598
13:45	39	189	39	0	31	3	12	0	17	169	24	0	14	12	25	0	574
Total	134	696	135	1	131	34	66	0	68	722	87	0	87	38	99	0	2298
14:00	33	199	24	0	26	6	12	0	9	189	10	0	22	8	27	0	565
14:15	19	180	42	0	35	7	16	0	18	194	10	0	30	11	24	0	586
14:30	26	222	31	0	29	8	15	0	11	200	22	0	23	4	31	0	622
14:45	30	207	38	0	52	14	14	0	24	259	21	0	31	16	26	0	732
Total	108	808	135	0	142	35	57	0	62	842	63	0	106	39	108	0	2505
15:00	21	227	26	0	37	10	20	0	23	220	16	0	31	6	33	0	670
15:15	28	212	35	0	41	6	13	0	16	237	20	0	20	4	35	0	667
15:30	26	245	19	1	44	11	17	0	12	273	20	0	27	6	30	0	731
15:45	22	234	37	0	47	7	14	0	16	281	12	0	29	9	31	0	739
Total	97	918	117	1	169	34	64	0	67	1011	68	0	107	25	129	0	2807
16:00	23	237	18	0	54	13	28	0	11	290	8	0	26	4	31	0	743
16:15	24	221	29	0	43	9	9	0	18	287	11	0	27	8	25	0	711
16:30	18	244	15	0	48	8	14	0	9	294	13	0	38	3	32	0	736
16:45	22	206	21	0	40	7	10	0	14	273	17	0	25	9	33	0	677
Total	87	908	83	0	185	37	61	0	52	1144	49	0	116	24	121	0	2867
17:00	18	210	21	0	68	17	38	0	13	299	7	0	42	2	29	0	764
17:15	12	245	24	0	41	13	21	0	16	267	6	0	18	8	32	0	703
17:30	12	223	10	0	30	6	12	0	9	277	6	0	15	8	26	0	634
17:45	25	188	21	0	18	4	9	0	11	210	6	0	10	7	7	0	516
Total	67	866	76	0	157	40	80	0	49	1053	25	0	85	25	94	0	2617
18:00	11	179	14	0	34	10	19	0	13	232	7	0	7	8	13	0	547
18:15	19	155	18	0	28	2	10	0	9	201	5	0	5	11	17	0	480

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: VALENCIA MESA DR

File Name : H2305017
Site Code : 00000000
Start Date : 5/24/2023
Page No : 3

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				VALENCIA MESA DRIVE Westbound				HARBOR BOULEVARD Northbound				VALENCIA MESA DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
18:30	14	156	17	0	29	9	14	0	13	253	3	0	8	0	17	0	533
18:45	12	137	24	1	21	6	14	0	18	177	11	0	11	4	8	0	444
Total	56	627	73	1	112	27	57	0	53	863	26	0	31	23	55	0	2004
19:00	5	132	9	0	31	9	20	0	12	178	3	0	10	9	7	0	425
19:15	11	117	18	0	25	2	10	0	13	164	5	0	6	2	5	0	378
19:30	6	127	7	0	15	1	14	0	15	127	4	0	9	3	5	1	334
19:45	9	123	17	1	22	5	8	0	10	95	2	0	7	4	5	0	308
Total	31	499	51	1	93	17	52	0	50	564	14	0	32	18	22	1	1445
20:00	6	113	11	0	31	5	15	0	10	147	5	0	6	4	7	0	360
20:15	4	87	17	1	22	3	13	0	4	135	3	0	3	2	6	0	300
20:30	9	114	10	1	14	3	15	0	9	118	5	0	4	3	4	0	309
20:45	4	86	4	0	15	0	11	0	11	120	5	0	4	1	4	0	265
Total	23	400	42	2	82	11	54	0	34	520	18	0	17	10	21	0	1234
21:00	10	83	3	0	19	2	12	0	4	111	4	0	8	1	3	0	260
21:15	7	82	6	0	7	1	14	0	5	105	3	0	3	0	2	0	235
21:30	4	76	7	0	4	1	7	0	3	96	1	0	3	1	1	0	204
21:45	6	56	2	0	14	2	13	0	5	89	3	0	1	0	1	0	192
Total	27	297	18	0	44	6	46	0	17	401	11	0	15	2	7	0	891
22:00	1	53	4	0	6	6	5	0	2	81	0	0	1	0	0	0	159
22:15	4	38	4	0	6	2	8	0	6	69	2	0	2	3	4	0	148
22:30	2	53	5	0	8	0	6	0	4	78	1	0	0	0	4	0	161
22:45	6	28	3	0	0	0	4	0	6	51	2	0	2	0	1	0	103
Total	13	172	16	0	20	8	23	0	18	279	5	0	5	3	9	0	571
23:00	0	42	2	0	7	0	2	0	2	61	1	0	0	0	0	0	117
23:15	4	25	1	0	4	1	5	0	0	42	1	0	0	0	1	0	84
23:30	3	35	1	0	4	0	6	0	1	52	0	0	0	0	0	0	102
23:45	0	12	3	0	5	0	1	0	0	38	2	0	3	0	6	0	70
Total	7	114	7	0	20	1	14	0	3	193	4	0	3	0	7	0	373
Grand Total	1425	12252	1668	14	1841	505	1046	0	1082	12566	1032	0	1246	488	1320	1	36486
Apprch %	9.3	79.8	10.9	0.1	54.3	14.9	30.8	0	7.4	85.6	7	0	40.8	16	43.2	0	
Total %	3.9	33.6	4.6	0	5	1.4	2.9	0	3	34.4	2.8	0	3.4	1.3	3.6	0	

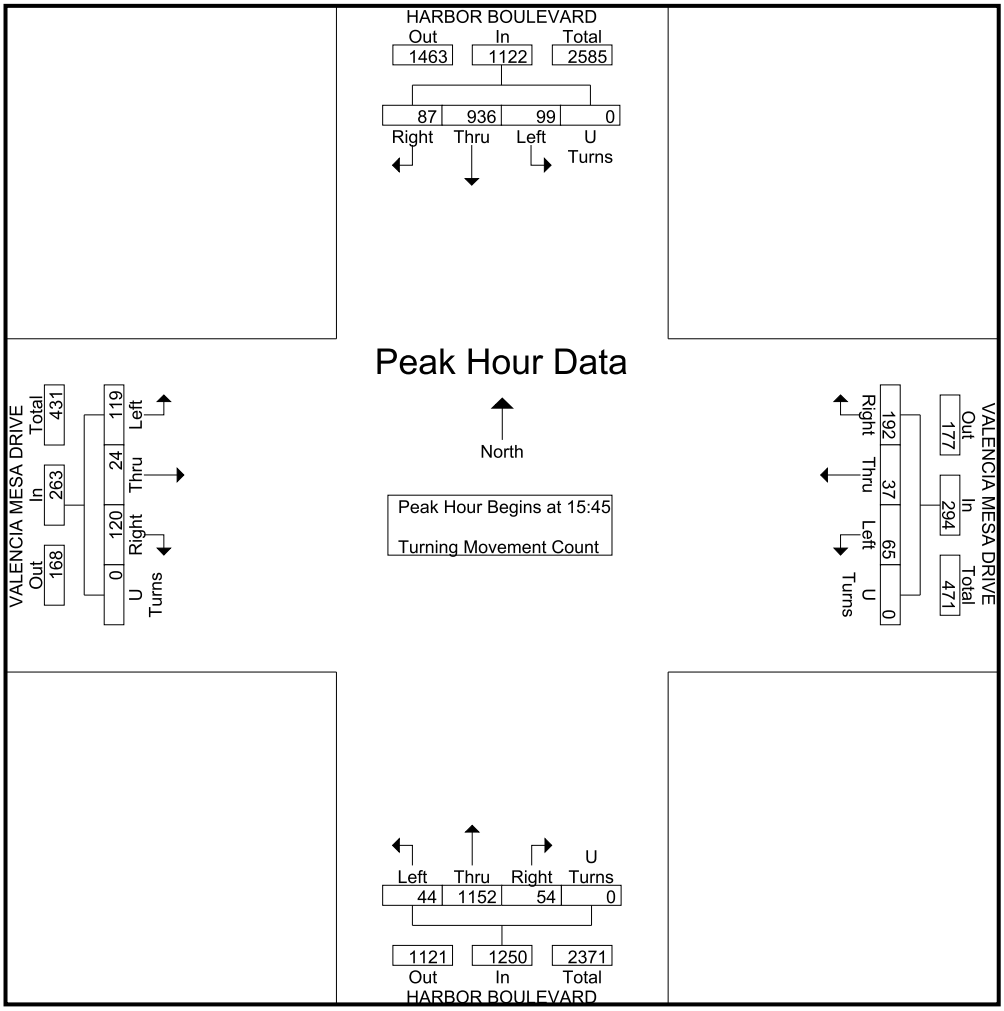
	HARBOR BOULEVARD Southbound				Westbound				HARBOR BOULEVARD Northbound				Eastbound			
	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: VALENCIA MESA DR

File Name : H2305017
Site Code : 00000000
Start Date : 5/24/2023
Page No : 4

	HARBOR BOULEVARD Southbound					VALENCIA MESA DRIVE Westbound					HARBOR BOULEVARD Northbound					VALENCIA MESA DRIVE Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 00:00 to 23:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:45																					
15:45	22	234	37	0	293	47	7	14	0	68	16	281	12	0	309	29	9	31	0	69	739
16:00	23	237	18	0	278	54	13	28	0	95	11	290	8	0	309	26	4	31	0	61	743
16:15	24	221	29	0	274	43	9	9	0	61	18	287	11	0	316	27	8	25	0	60	711
16:30	18	244	15	0	277	48	8	14	0	70	9	294	13	0	316	38	3	32	0	73	736
Total Volume	87	936	99	0	1122	192	37	65	0	294	54	1152	44	0	1250	120	24	119	0	263	2929
% App. Total	7.8	83.4	8.8	0		65.3	12.6	22.1	0		4.3	92.2	3.5	0		45.6	9.1	45.2	0		
PHF	.906	.959	.669	.000	.957	.889	.712	.580	.000	.774	.750	.980	.846	.000	.989	.789	.667	.930	.000	.901	.986



Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: E. VALLEY VIEW DRIVE

File Name : H2403021
Site Code : 00000000
Start Date : 3/27/2024
Page No : 1

Groups Printed- Turning Movement Count

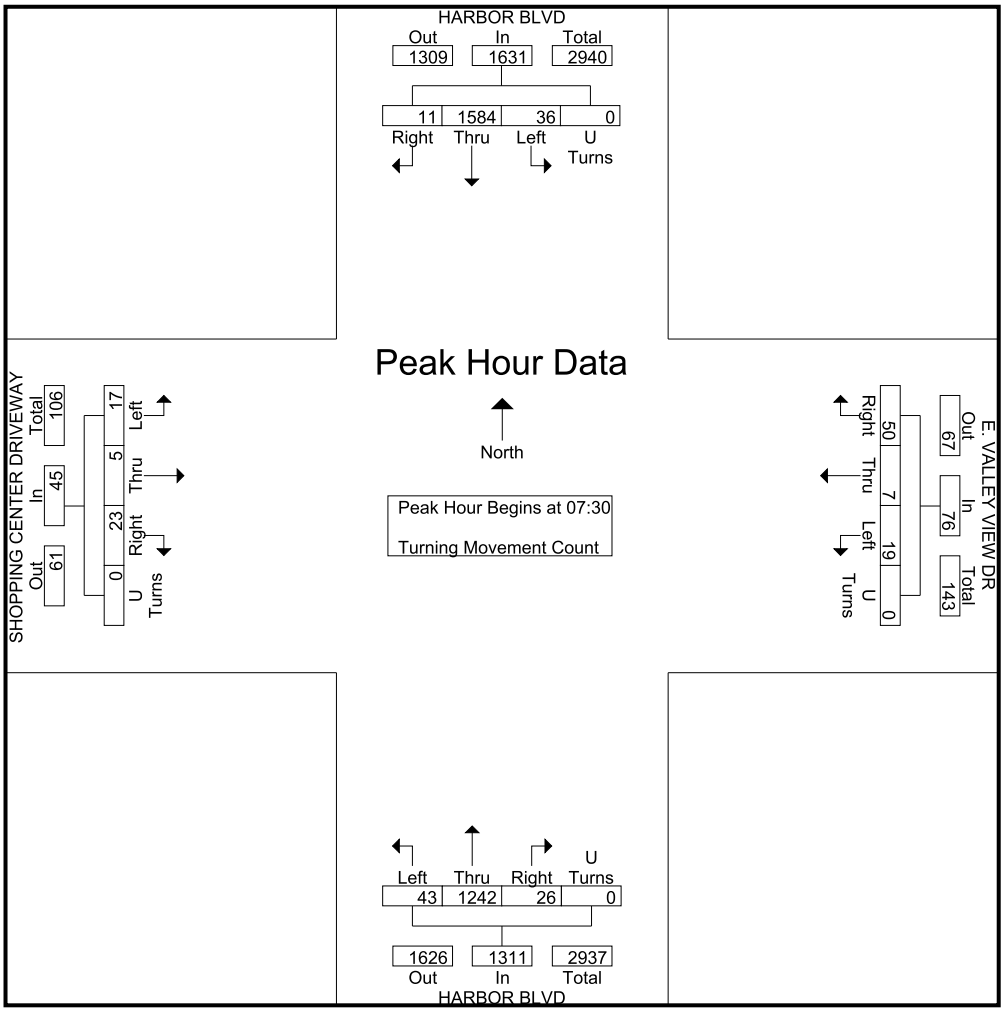
	HARBOR BLVD Southbound				E. VALLEY VIEW DR Westbound				HARBOR BLVD Northbound				SHOPPING CENTER DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
07:00	4	328	15	0	7	2	2	0	6	184	4	0	7	0	6	0	565
07:15	1	381	11	0	7	2	2	0	8	253	10	0	7	1	3	0	686
07:30	0	433	8	0	12	2	6	0	8	317	4	0	8	1	4	0	803
07:45	3	386	10	0	17	1	5	0	4	339	10	0	2	3	6	0	786
Total	8	1528	44	0	43	7	15	0	26	1093	28	0	24	5	19	0	2840
08:00	3	404	9	0	7	2	6	0	7	259	9	0	6	0	3	0	715
08:15	5	361	9	0	14	2	2	0	7	327	20	0	7	1	4	0	759
08:30	5	384	6	2	8	1	4	0	6	300	16	0	6	1	6	0	745
08:45	4	340	8	3	13	2	6	0	8	291	13	0	6	0	1	0	695
Total	17	1489	32	5	42	7	18	0	28	1177	58	0	25	2	14	0	2914
16:00	11	338	14	0	7	3	5	0	13	363	22	0	13	6	7	0	802
16:15	6	377	9	0	9	4	2	0	6	393	22	0	13	7	11	0	859
16:30	6	372	9	0	6	4	3	0	4	404	14	0	13	6	10	0	851
16:45	16	352	10	1	16	0	2	0	10	394	10	0	17	4	9	0	841
Total	39	1439	42	1	38	11	12	0	33	1554	68	0	56	23	37	0	3353
17:00	14	367	13	1	9	3	5	0	5	401	18	0	24	4	12	0	876
17:15	6	364	12	2	12	4	4	0	5	409	18	0	11	7	16	0	870
17:30	9	365	8	0	8	6	7	0	11	356	21	0	11	4	9	0	815
17:45	6	381	8	0	10	2	4	0	10	378	12	0	21	11	11	0	854
Total	35	1477	41	3	39	15	20	0	31	1544	69	0	67	26	48	0	3415
Grand Total	99	5933	159	9	162	40	65	0	118	5368	223	0	172	56	118	0	12522
Apprch %	1.6	95.7	2.6	0.1	60.7	15	24.3	0	2.1	94	3.9	0	49.7	16.2	34.1	0	
Total %	0.8	47.4	1.3	0.1	1.3	0.3	0.5	0	0.9	42.9	1.8	0	1.4	0.4	0.9	0	

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: E. VALLEY VIEW DRIVE

File Name : H2403021
Site Code : 00000000
Start Date : 3/27/2024
Page No : 2

	HARBOR BLVD Southbound					E. VALLEY VIEW DR Westbound					HARBOR BLVD Northbound					SHOPPING CENTER DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	0	433	8	0	441	12	2	6	0	20	8	317	4	0	329	8	1	4	0	13	803
07:45	3	386	10	0	399	17	1	5	0	23	4	339	10	0	353	2	3	6	0	11	786
08:00	3	404	9	0	416	7	2	6	0	15	7	259	9	0	275	6	0	3	0	9	715
08:15	5	361	9	0	375	14	2	2	0	18	7	327	20	0	354	7	1	4	0	12	759
Total Volume	11	1584	36	0	1631	50	7	19	0	76	26	1242	43	0	1311	23	5	17	0	45	3063
% App. Total	0.7	97.1	2.2	0		65.8	9.2	25	0		2	94.7	3.3	0		51.1	11.1	37.8	0		
PHF	.550	.915	.900	.000	.925	.735	.875	.792	.000	.826	.813	.916	.538	.000	.926	.719	.417	.708	.000	.865	.954

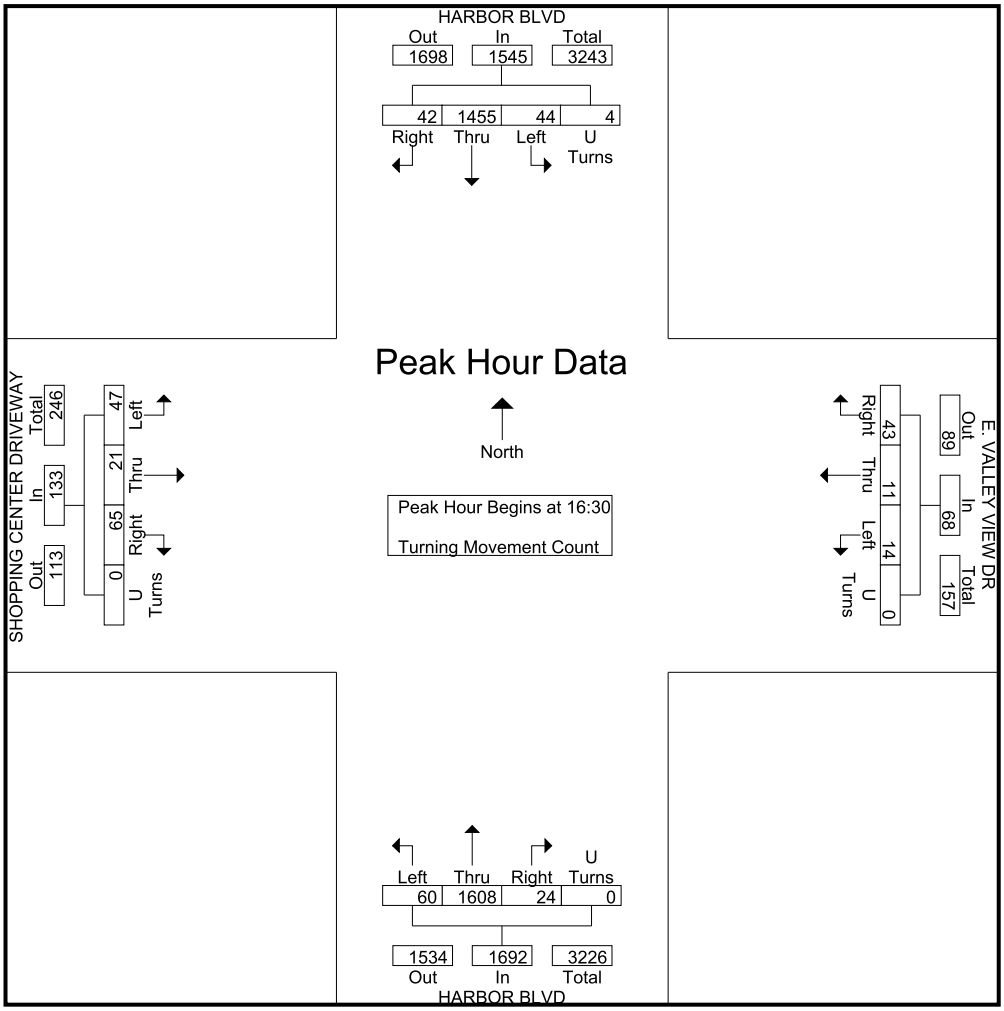


Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: E. VALLEY VIEW DRIVE

File Name : H2403021
Site Code : 00000000
Start Date : 3/27/2024
Page No : 3

	HARBOR BLVD Southbound					E. VALLEY VIEW DR Westbound					HARBOR BLVD Northbound					SHOPPING CENTER DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	6	372	9	0	387	6	4	3	0	13	4	404	14	0	422	13	6	10	0	29	851
16:45	16	352	10	1	379	16	0	2	0	18	10	394	10	0	414	17	4	9	0	30	841
17:00	14	367	13	1	395	9	3	5	0	17	5	401	18	0	424	24	4	12	0	40	876
17:15	6	364	12	2	384	12	4	4	0	20	5	409	18	0	432	11	7	16	0	34	870
Total Volume	42	1455	44	4	1545	43	11	14	0	68	24	1608	60	0	1692	65	21	47	0	133	3438
% App. Total	2.7	94.2	2.8	0.3		63.2	16.2	20.6	0		1.4	95	3.5	0		48.9	15.8	35.3	0		
PHF	.656	.978	.846	.500	.978	.672	.688	.700	.000	.850	.600	.983	.833	.000	.979	.677	.750	.734	.000	.831	.981



Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BERKEKEY AVE

File Name : H2403022
Site Code : 00000000
Start Date : 3/27/2024
Page No : 1

Groups Printed- Turning Movement Count

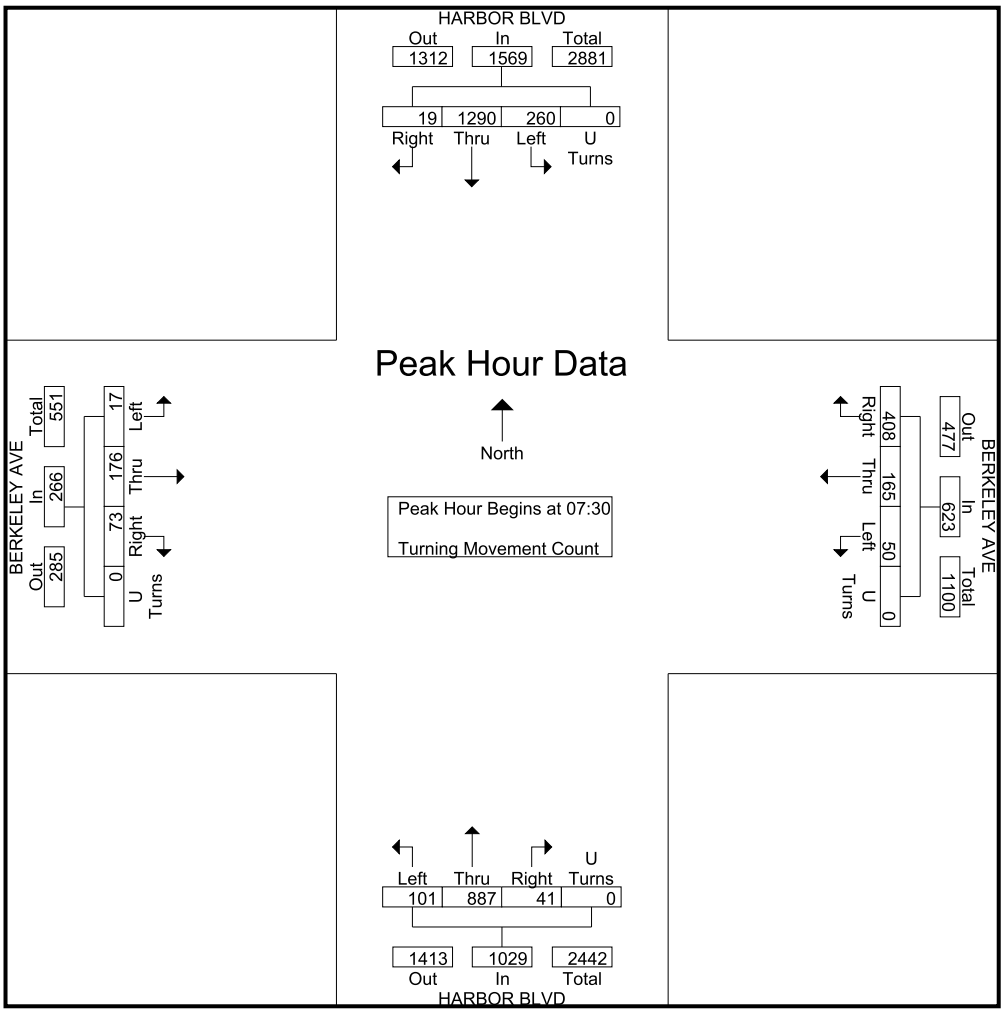
	HARBOR BLVD Southbound				BERKELEY AVE Westbound				HARBOR BLVD Northbound				BERKELEY AVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
07:00	1	275	63	0	55	18	7	0	3	141	9	0	7	26	2	0	607
07:15	9	312	64	0	80	32	6	0	10	187	15	0	15	33	3	0	766
07:30	3	345	66	0	112	46	7	0	10	226	18	0	14	41	2	0	890
07:45	7	317	68	0	119	38	13	0	7	211	23	0	13	34	1	0	851
Total	20	1249	261	0	366	134	33	0	30	765	65	0	49	134	8	0	3114
08:00	4	327	74	0	95	30	18	0	12	187	26	0	21	58	7	0	859
08:15	5	301	52	0	82	51	12	0	12	263	34	0	25	43	7	0	887
08:30	3	310	58	0	100	27	9	0	8	205	26	0	18	25	0	0	789
08:45	2	316	44	0	74	26	13	0	3	238	24	0	10	27	4	0	781
Total	14	1254	228	0	351	134	52	0	35	893	110	0	74	153	18	0	3316
16:00	4	330	83	0	113	32	12	0	7	274	24	0	27	33	5	0	944
16:15	4	240	69	0	112	49	13	0	8	298	25	0	16	31	8	0	873
16:30	6	301	79	0	114	48	14	0	6	294	15	0	29	50	6	0	962
16:45	4	281	71	0	107	34	14	0	4	303	24	0	13	30	11	0	896
Total	18	1152	302	0	446	163	53	0	25	1169	88	0	85	144	30	0	3675
17:00	5	346	90	0	110	40	15	0	7	303	21	0	25	33	4	0	999
17:15	6	324	90	0	129	46	13	0	8	291	27	0	14	34	7	0	989
17:30	5	286	74	0	101	52	11	0	3	280	18	0	10	31	8	0	879
17:45	9	252	80	0	96	32	5	0	7	293	21	0	7	33	14	0	849
Total	25	1208	334	0	436	170	44	0	25	1167	87	0	56	131	33	0	3716
Grand Total	77	4863	1125	0	1599	601	182	0	115	3994	350	0	264	562	89	0	13821
Apprch %	1.3	80.2	18.5	0	67.1	25.2	7.6	0	2.6	89.6	7.8	0	28.9	61.4	9.7	0	
Total %	0.6	35.2	8.1	0	11.6	4.3	1.3	0	0.8	28.9	2.5	0	1.9	4.1	0.6	0	

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BERKEKEY AVE

File Name : H2403022
Site Code : 00000000
Start Date : 3/27/2024
Page No : 2

	HARBOR BLVD Southbound					BERKELEY AVE Westbound					HARBOR BLVD Northbound					BERKELEY AVE Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	3	345	66	0	414	112	46	7	0	165	10	226	18	0	254	14	41	2	0	57	890
07:45	7	317	68	0	392	119	38	13	0	170	7	211	23	0	241	13	34	1	0	48	851
08:00	4	327	74	0	405	95	30	18	0	143	12	187	26	0	225	21	58	7	0	86	859
08:15	5	301	52	0	358	82	51	12	0	145	12	263	34	0	309	25	43	7	0	75	887
Total Volume	19	1290	260	0	1569	408	165	50	0	623	41	887	101	0	1029	73	176	17	0	266	3487
% App. Total	1.2	82.2	16.6	0		65.5	26.5	8	0		4	86.2	9.8	0		27.4	66.2	6.4	0		
PHF	.679	.935	.878	.000	.947	.857	.809	.694	.000	.916	.854	.843	.743	.000	.833	.730	.759	.607	.000	.773	.979

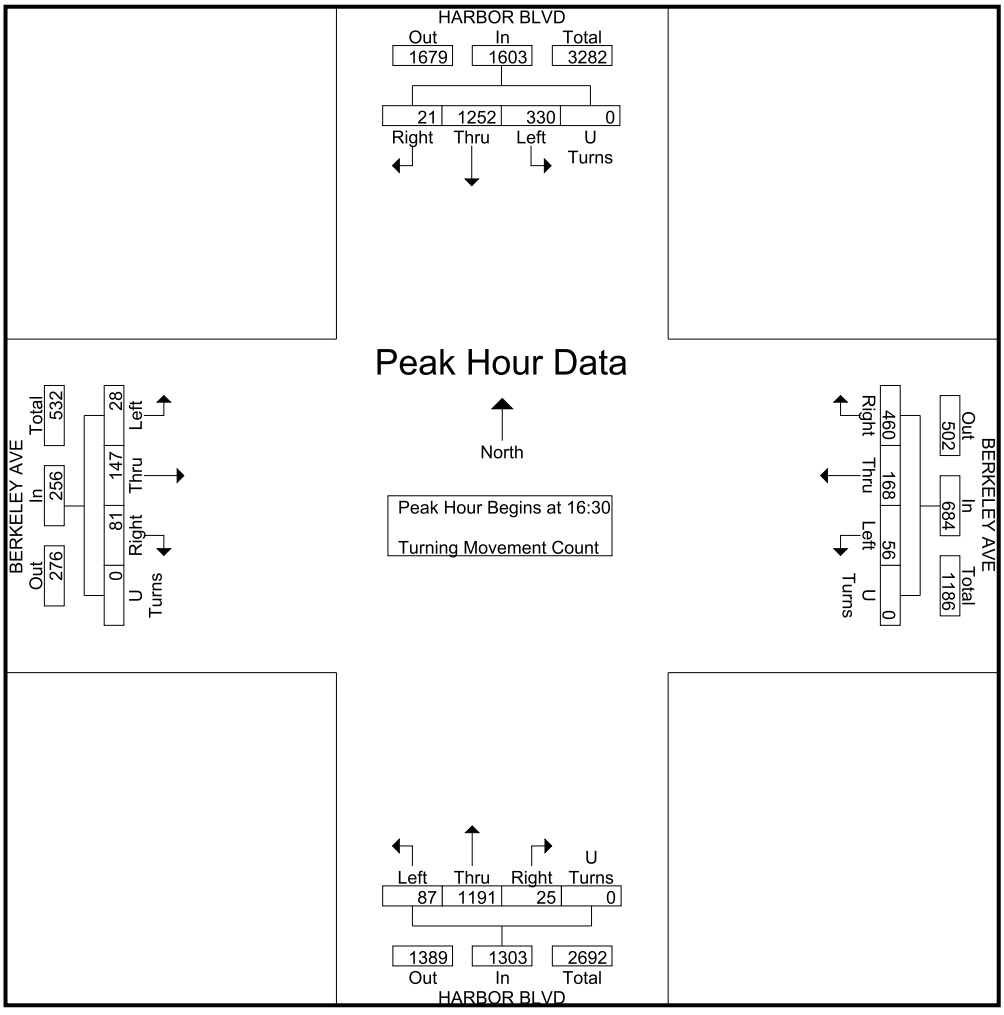


Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BERKEKEY AVE

File Name : H2403022
Site Code : 00000000
Start Date : 3/27/2024
Page No : 3

	HARBOR BLVD Southbound					BERKELEY AVE Westbound					HARBOR BLVD Northbound					BERKELEY AVE Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	6	301	79	0	386	114	48	14	0	176	6	294	15	0	315	29	50	6	0	85	962
16:45	4	281	71	0	356	107	34	14	0	155	4	303	24	0	331	13	30	11	0	54	896
17:00	5	346	90	0	441	110	40	15	0	165	7	303	21	0	331	25	33	4	0	62	999
17:15	6	324	90	0	420	129	46	13	0	188	8	291	27	0	326	14	34	7	0	55	989
Total Volume	21	1252	330	0	1603	460	168	56	0	684	25	1191	87	0	1303	81	147	28	0	256	3846
% App. Total	1.3	78.1	20.6	0		67.3	24.6	8.2	0		1.9	91.4	6.7	0		31.6	57.4	10.9	0		
PHF	.875	.905	.917	.000	.909	.891	.875	.933	.000	.910	.781	.983	.806	.000	.984	.698	.735	.636	.000	.753	.962



Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 7

Location : HARBOR BOULEVARD
Segment : VALLEY MESA TO BASTANCHURY
Client : CITY FULLERTON

Site: FULLERTON
Date: 05/25/23
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	53	152	244	955	23	72	228	887	76	224	472	1,842
12:15	28		274		17		212		45		486	
12:30	38		214		18		214		56		428	
12:45	33		223		14		233		47		456	
01:00	23	80	222	894	15	55	204	931	38	135	426	1,825
01:15	19		217		19		210		38		427	
01:30	21		220		13		244		34		464	
01:45	17		235		8		273		25		508	
02:00	16	65	254	1,092	8	46	270	1,094	24	111	524	2,186
02:15	16		253		15		252		31		505	
02:30	17		256		13		284		30		540	
02:45	16		329		10		288		26		617	
03:00	24	100	299	1,321	20	79	260	1,095	44	179	559	2,416
03:15	18		276		11		275		29		551	
03:30	32		334		24		258		56		592	
03:45	26		412		24		302		50		714	
04:00	18	126	398	1,359	17	134	310	1,098	35	260	708	2,457
04:15	26		310		31		268		57		578	
04:30	24		344		38		254		62		598	
04:45	58		307		48		266		106		573	
05:00	36	288	407	1,386	59	336	268	1,073	95	624	675	2,459
05:15	67		388		60		281		127		669	
05:30	82		302		91		264		173		566	
05:45	103		289		126		260		229		549	
06:00	56	374	244	955	99	648	220	811	155	1,022	464	1,766
06:15	82		254		128		211		210		465	
06:30	116		246		189		204		305		450	
06:45	120		211		232		176		352		387	
07:00	131	769	228	764	294	1,379	140	571	425	2,148	368	1,335
07:15	160		182		353		166		513		348	
07:30	200		198		336		133		536		331	
07:45	278		156		396		132		674		288	
08:00	200	782	180	644	341	1,263	129	472	541	2,045	309	1,116
08:15	202		180		326		109		528		289	
08:30	208		144		326		112		534		256	
08:45	172		140		270		122		442		262	
09:00	214	798	164	501	276	969	99	317	490	1,767	263	818
09:15	182		122		250		86		432		208	
09:30	192		107		193		72		385		179	
09:45	210		108		250		60		460		168	
10:00	166	764	96	362	248	948	54	232	414	1,712	150	594
10:15	192		88		224		60		416		148	
10:30	208		102		252		62		460		164	
10:45	198		76		224		56		422		132	
11:00	216	876	68	235	218	882	42	142	434	1,758	110	377
11:15	222		64		200		36		422		100	
11:30	206		54		234		33		440		87	
11:45	232		49		230		31		462		80	
Totals	5,174		10,468		6,811		8,723		11,985		19,191	
Split%	43.2		54.5		56.8		45.5					
Day Totals		15,642				15,534				31,176		
Day Splits		50.2				49.8						
Peak Hour	07:45		03:45		07:15		03:15		07:30		03:45	
Volume	888		1,464		1,426		1,145		2,279		2,598	
Factor	0.80		0.89		0.90		0.92		0.85		0.91	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 7

Location : HARBOR BOULEVARD
Segment : VALENCIA MESA TO VALLEY VIEW
Client : CITY FULLERTON

Site: FULLERTON
Date: 05/25/23

Interval	NB				SB				Combined				Day: Thursday
Begin	AM		PM		AM		PM		AM		PM		
12:00	47	135	212	889	28	74	235	808	75	209	447	1,697	
12:15	30		242		16		200		46		442		
12:30	28		201		18		186		46		387		
12:45	30		234		12		187		42		421		
01:00	19	73	200	836	14	61	156	781	33	134	356	1,617	
01:15	16		192		20		186		36		378		
01:30	23		222		18		194		41		416		
01:45	15		222		9		245		24		467		
02:00	15	62	224	1,005	6	47	224	983	21	109	448	1,988	
02:15	18		215		14		223		32		438		
02:30	16		270		14		264		30		534		
02:45	13		296		13		272		26		568		
03:00	23	96	249	1,091	15	72	244	1,002	38	168	493	2,093	
03:15	16		236		10		248		26		484		
03:30	31		274		24		238		55		512		
03:45	26		332		23		272		49		604		
04:00	18	124	314	1,129	18	138	294	1,064	36	262	608	2,193	
04:15	24		271		30		260		54		531		
04:30	22		274		42		270		64		544		
04:45	60		270		48		240		108		510		
05:00	39	299	324	1,149	51	296	284	1,058	90	595	608	2,207	
05:15	61		300		50		260		111		560		
05:30	87		265		84		262		171		527		
05:45	112		260		111		252		223		512		
06:00	68	439	234	878	91	551	197	726	159	990	431	1,604	
06:15	101		244		101		188		202		432		
06:30	132		209		160		184		292		393		
06:45	138		191		199		157		337		348		
07:00	134	842	192	690	243	1,091	152	556	377	1,933	344	1,246	
07:15	177		170		296		154		473		324		
07:30	224		188		256		128		480		316		
07:45	307		140		296		122		603		262		
08:00	223	803	157	581	284	1,026	111	436	507	1,829	268	1,017	
08:15	204		158		264		100		468		258		
08:30	202		139		258		120		460		259		
08:45	174		127		220		105		394		232		
09:00	205	800	143	447	209	816	90	312	414	1,616	233	759	
09:15	195		112		223		88		418		200		
09:30	175		90		156		76		331		166		
09:45	225		102		228		58		453		160		
10:00	157	709	76	332	211	808	56	240	368	1,517	132	572	
10:15	178		78		183		69		361		147		
10:30	184		99		216		60		400		159		
10:45	190		79		198		55		388		134		
11:00	178	732	58	212	196	820	43	152	374	1,552	101	364	
11:15	176		56		190		34		366		90		
11:30	178		50		226		39		404		89		
11:45	200		48		208		36		408		84		
Totals	5,114		9,239		5,800		8,118		10,914		17,357		
Split%	46.9		53.2		53.1		46.8						
Day Totals		14,353				13,918				28,271			
Day Splits		50.8				49.2							
Peak Hour	07:30		03:30		07:15		03:45		07:15		03:45		
Volume	958		1,191		1,132		1,096		2,063		2,287		
Factor	0.78		0.90		0.96		0.93		0.86		0.94		

* Data File : D2305033

Location : HARBOR BOULEVARD
Segment : BREA BLVD TO E. VALLEY VIEW DR
Client : LL&G

Site: FULLERTON
Date: 03/27/24
Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	52	142	289	1,186	24	69	394	1,549	76	211	683	2,735
12:15	42		297		17		356		59		653	
12:30	25		313		12		358		37		671	
12:45	23		287		16		441		39		728	
01:00	26	82	305	1,300	21	66	430	1,599	47	148	735	2,899
01:15	26		317		20		341		46		658	
01:30	15		354		13		375		28		729	
01:45	15		324		12		453		27		777	
02:00	13	60	318	1,357	12	52	336	1,520	25	112	654	2,877
02:15	18		324		13		370		31		694	
02:30	13		348		13		402		26		750	
02:45	16		367		14		412		30		779	
03:00	20	116	357	1,459	12	98	434	1,864	32	214	791	3,323
03:15	25		343		24		518		49		861	
03:30	45		377		32		462		77		839	
03:45	26		382		30		450		56		832	
04:00	26	170	398	1,549	28	174	401	1,689	54	344	799	3,238
04:15	26		388		28		402		54		790	
04:30	48		368		54		402		102		770	
04:45	70		395		64		484		134		879	
05:00	51	376	402	1,582	66	403	462	1,641	117	779	864	3,223
05:15	81		382		83		428		164		810	
05:30	94		404		112		441		206		845	
05:45	150		394		142		310		292		704	
06:00	94	605	413	1,465	113	817	370	1,308	207	1,422	783	2,773
06:15	139		348		176		352		315		700	
06:30	174		382		230		296		404		678	
06:45	198		322		298		290		496		612	
07:00	188	1,133	289	1,061	398	2,014	313	1,155	586	3,147	602	2,216
07:15	250		288		494		276		744		564	
07:30	331		256		572		304		903		560	
07:45	364		228		550		262		914		490	
08:00	268	1,220	210	812	571	2,057	242	819	839	3,277	452	1,631
08:15	337		208		466		223		803		431	
08:30	318		216		550		183		868		399	
08:45	297		178		470		171		767		349	
09:00	262	967	159	590	382	1,420	180	548	644	2,387	339	1,138
09:15	252		179		334		150		586		329	
09:30	221		142		300		112		521		254	
09:45	232		110		404		106		636		216	
10:00	216	970	92	359	340	1,311	92	290	556	2,281	184	649
10:15	240		104		300		61		540		165	
10:30	261		81		336		81		597		162	
10:45	253		82		335		56		588		138	
11:00	249	1,092	62	248	378	1,511	54	166	627	2,603	116	414
11:15	270		66		340		43		610		109	
11:30	281		62		389		33		670		95	
11:45	292		58		404		36		696		94	
Totals	6,933		12,968		9,992		14,148		16,925		27,116	
Split%	41.0		47.8		59.0		52.2					
Day Totals		19,901				24,140				44,041		
Day Splits		45.2				54.8						
Peak Hour	07:30		05:15		07:15		03:00		07:30		04:45	
Volume	1,300		1,593		2,187		1,864		3,459		3,398	
Factor	0.89		0.96		0.96		0.90		0.95		0.97	

Location : HARBOR BOULEVARD
Segment : E. VALLEY VIEW DR TO BERKELEY
Client : LL&G

Site: FULLERTON
Date: 03/27/24
Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	51	145	277	1,212	27	73	296	1,206	78	218	573	2,418
12:15	47		302		17		276		64		578	
12:30	27		332		14		302		41		634	
12:45	20		301		15		332		35		633	
01:00	33	86	299	1,291	19	67	313	1,235	52	153	612	2,526
01:15	24		324		20		270		44		594	
01:30	16		341		12		302		28		643	
01:45	13		327		16		350		29		677	
02:00	12	64	321	1,389	21	64	280	1,258	33	128	601	2,647
02:15	22		332		15		310		37		642	
02:30	15		362		14		334		29		696	
02:45	15		374		14		334		29		708	
03:00	21	122	369	1,486	14	94	358	1,530	35	216	727	3,016
03:15	30		344		22		378		52		722	
03:30	46		383		30		377		76		760	
03:45	25		390		28		417		53		807	
04:00	26	177	404	1,618	29	176	353	1,467	55	353	757	3,085
04:15	29		414		30		372		59		786	
04:30	50		383		49		358		99		741	
04:45	72		417		68		384		140		801	
05:00	51	385	384	1,618	66	384	402	1,453	117	769	786	3,071
05:15	84		400		76		390		160		790	
05:30	96		426		110		360		206		786	
05:45	154		408		132		301		286		709	
06:00	93	614	418	1,505	122	771	318	1,179	215	1,385	736	2,684
06:15	142		376		156		327		298		703	
06:30	174		380		211		260		385		640	
06:45	205		331		282		274		487		605	
07:00	191	1,143	294	1,103	332	1,519	247	968	523	2,662	541	2,071
07:15	268		292		380		268		648		560	
07:30	328		259		418		241		746		500	
07:45	356		258		389		212		745		470	
08:00	287	1,264	214	833	391	1,494	202	752	678	2,758	416	1,585
08:15	349		228		368		196		717		424	
08:30	320		209		390		178		710		387	
08:45	308		182		345		176		653		358	
09:00	258	989	163	618	318	1,211	162	529	576	2,200	325	1,147
09:15	256		182		296		153		552		335	
09:30	232		146		265		114		497		260	
09:45	243		127		332		100		575		227	
10:00	214	977	94	379	275	1,107	92	292	489	2,084	186	671
10:15	234		110		270		68		504		178	
10:30	265		84		286		82		551		166	
10:45	264		91		276		50		540		141	
11:00	257	1,099	74	275	302	1,196	56	173	559	2,295	130	448
11:15	260		73		278		41		538		114	
11:30	280		65		308		38		588		103	
11:45	302		63		308		38		610		101	
Totals	7,065		13,327		8,156		12,042		15,221		25,369	
Split%	46.4		52.5		53.6		47.5					
Day Totals		20,392				20,198				40,590		
Day Splits		50.2				49.8						
Peak Hour	07:30		05:15		07:15		04:45		07:30		04:45	
Volume	1,320		1,652		1,578		1,536		2,886		3,163	
Factor	0.93		0.97		0.94		0.96		0.97		0.99	

APPENDIX B

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX B-I

EXISTING TRAFFIC CONDITIONS

Lanes, Volumes, Timings
1: Harbor Blvd & Bastanchury Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	311	848	163	263	927	216	182	621	110	349	941	297
Future Volume (vph)	311	848	163	263	927	216	182	621	110	349	941	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.976				0.850			0.850		0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4963	0	3433	5085	1583	3433	5085	1583	3433	4902	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4963	0	3433	5085	1583	3433	5085	1583	3433	4902	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				170			126		64	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			833			926	
Travel Time (s)		17.8			16.7			12.6			12.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	331	902	173	280	986	230	194	661	117	371	1001	316
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	1075	0	280	986	230	194	661	117	371	1317	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	49.0		21.0	43.0	43.0	14.0	43.0	43.0	17.0	46.0	
Total Split (%)	20.8%	37.7%		16.2%	33.1%	33.1%	10.8%	33.1%	33.1%	13.1%	35.4%	
Maximum Green (s)	23.0	44.0		17.0	38.0	38.0	10.0	38.0	38.0	13.0	41.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	23.0	35.9		20.9	33.9	33.9	10.0	42.1	42.1	13.0	45.1	
Actuated g/C Ratio	0.18	0.28		0.16	0.26	0.26	0.08	0.32	0.32	0.10	0.35	
v/c Ratio	1.06	0.77		0.51	0.74	0.43	0.73	0.40	0.20	1.08	0.76	
Control Delay	117.6	45.6		53.8	47.6	13.3	66.2	14.1	2.2	126.1	39.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	117.6	45.6		53.8	47.6	13.3	66.2	14.1	2.2	126.1	39.6	
LOS	F	D		D	D	B	E	B	A	F	D	
Approach Delay		62.5			43.5			23.1			58.6	
Approach LOS		E			D			C			E	
Queue Length 50th (ft)	~305	297		112	279	39	89	157	9	~179	344	
Queue Length 95th (ft)	#494	326		163	318	108	#141	59	8	#281	421	
Internal Link Dist (ft)		963			901			753			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	313	1701		552	1486	583	264	1648	598	343	1743	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.06	0.63		0.51	0.66	0.39	0.73	0.40	0.20	1.08	0.76	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 59 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 49.3		Intersection LOS: D	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

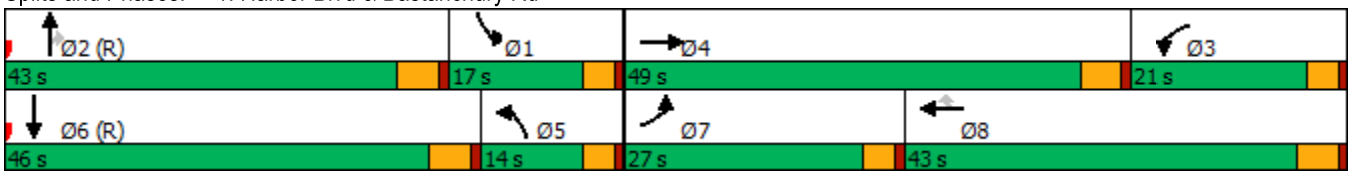
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



HCM 6th Signalized Intersection Summary
1: Harbor Blvd & Bastanchury Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	848	163	263	927	216	182	621	110	349	941	297
Future Volume (veh/h)	311	848	163	263	927	216	182	621	110	349	941	297
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	331	902	173	280	986	230	194	661	117	371	1001	316
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1123	214	518	1232	383	442	1493	463	522	1212	382
Arrive On Green	0.18	0.26	0.26	0.15	0.24	0.24	0.17	0.39	0.39	0.15	0.32	0.32
Sat Flow, veh/h	1781	4304	822	3456	5106	1585	3456	5106	1585	3456	3844	1212
Grp Volume(v), veh/h	331	712	363	280	986	230	194	661	117	371	886	431
Grp Sat Flow(s),veh/h/ln	1781	1702	1722	1728	1702	1585	1728	1702	1585	1728	1702	1652
Q Serve(g_s), s	23.0	25.4	25.6	9.7	23.6	11.9	6.5	12.4	6.5	13.3	31.3	31.4
Cycle Q Clear(g_c), s	23.0	25.4	25.6	9.7	23.6	11.9	6.5	12.4	6.5	13.3	31.3	31.4
Prop In Lane	1.00		0.48	1.00		1.00	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	315	888	449	518	1232	383	442	1493	463	522	1074	521
V/C Ratio(X)	1.05	0.80	0.81	0.54	0.80	0.60	0.44	0.44	0.25	0.71	0.83	0.83
Avail Cap(c_a), veh/h	315	1152	583	518	1493	463	442	1493	463	522	1074	521
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	44.9	45.0	51.1	46.4	22.0	49.8	31.9	30.1	52.5	41.2	41.2
Incr Delay (d2), s/veh	64.5	3.2	6.4	1.1	2.7	1.5	0.6	0.9	1.2	4.5	7.3	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.7	10.9	11.5	4.3	10.1	4.5	2.8	4.8	2.6	5.9	13.6	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.0	48.1	51.3	52.3	49.0	23.6	50.4	32.8	31.3	57.0	48.5	55.2
LnGrp LOS	F	D	D	D	D	C	D	C	C	E	D	E
Approach Vol, veh/h		1406			1496			972			1688	
Approach Delay, s/veh		65.4			45.7			36.1			52.0	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	43.0	24.5	38.9	20.6	46.0	27.0	36.4
Change Period (Y+Rc), s	4.0	5.0	5.0	* 5	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	13.0	38.0	17.0	* 44	10.0	41.0	23.0	38.0
Max Q Clear Time (g_c+I1), s	15.3	14.4	11.7	27.6	8.5	33.4	25.0	25.6
Green Ext Time (p_c), s	0.0	4.6	0.4	6.3	0.1	4.5	0.0	5.8

Intersection Summary	
HCM 6th Ctrl Delay	50.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
2: Harbor Blvd & Valencia Mesa

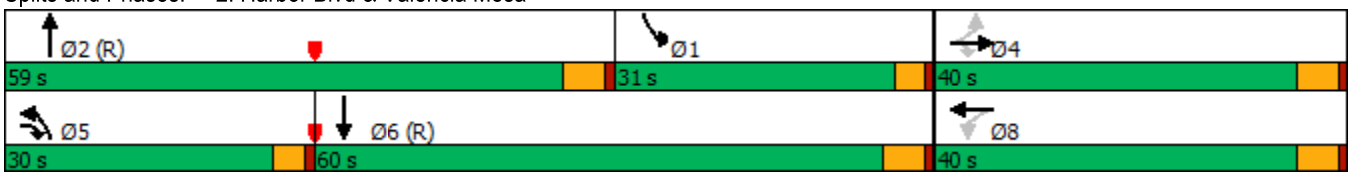
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	46	85	51	45	63	147	752	125	167	984	176
Future Volume (vph)	90	46	85	51	45	63	147	752	125	167	984	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	175		0	230		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850		0.912			0.979			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1699	0	1770	4979	0	1770	4968	0
Flt Permitted	0.583			0.726			0.950			0.950		
Satd. Flow (perm)	1086	1863	1583	1352	1699	0	1770	4979	0	1770	4968	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		53			30			34	
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			3958			833	
Travel Time (s)		18.5			16.0			54.0			12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	48	89	54	47	66	155	792	132	176	1036	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	48	89	54	113	0	155	924	0	176	1221	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	
Total Split (s)	40.0	40.0	30.0	40.0	40.0		30.0	59.0		31.0	60.0	
Total Split (%)	30.8%	30.8%	23.1%	30.8%	30.8%		23.1%	45.4%		23.8%	46.2%	
Maximum Green (s)	35.0	35.0	26.0	35.0	35.0		26.0	54.0		27.0	55.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)	17.2	17.2	38.8	17.2	17.2		16.7	71.8		27.0	82.2	
Actuated g/C Ratio	0.13	0.13	0.30	0.13	0.13		0.13	0.55		0.21	0.63	
v/c Ratio	0.66	0.20	0.17	0.30	0.42		0.68	0.33		0.48	0.39	
Control Delay	73.5	48.5	11.6	52.2	30.8		52.0	6.6		48.0	8.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.5	48.5	11.6	52.2	30.8		52.0	6.6		48.0	8.1	
LOS	E	D	B	D	C		D	A		D	A	
Approach Delay		44.6			37.7			13.1			13.1	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	78	37	18	42	47		81	20		153	109	
Queue Length 95th (ft)	122	66	46	74	93		152	226		m211	304	
Internal Link Dist (ft)		733			625			3878			753	
Turn Bay Length (ft)	55		85				175			230		
Base Capacity (vph)	292	501	623	364	496		354	2764		367	3153	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.33	0.10	0.14	0.15	0.23		0.44	0.33		0.48	0.39	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 84 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 17.1 Intersection LOS: B
Intersection Capacity Utilization 54.4% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa



HCM 6th Signalized Intersection Summary
2: Harbor Blvd & Valencia Mesa

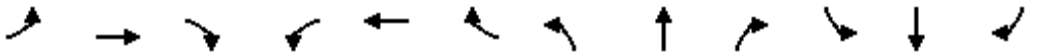
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	46	85	51	45	63	147	752	125	167	984	176
Future Volume (veh/h)	90	46	85	51	45	63	147	752	125	167	984	176
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	48	89	54	47	66	155	792	132	176	1036	185
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	288	407	220	108	152	183	1833	303	561	2769	494
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.42	0.42	0.63	1.00	1.00
Sat Flow, veh/h	1280	1870	1585	1252	704	988	1781	4413	730	1781	4358	777
Grp Volume(v), veh/h	95	48	89	54	0	113	155	610	314	176	809	412
Grp Sat Flow(s),veh/h/ln	1280	1870	1585	1252	0	1692	1781	1702	1739	1781	1702	1731
Q Serve(g_s), s	9.4	2.9	5.7	5.1	0.0	7.9	11.1	16.6	16.8	5.9	0.0	0.0
Cycle Q Clear(g_c), s	17.3	2.9	5.7	8.0	0.0	7.9	11.1	16.6	16.8	5.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.42	1.00		0.45
Lane Grp Cap(c), veh/h	175	288	407	220	0	261	183	1414	722	561	2163	1100
V/C Ratio(X)	0.54	0.17	0.22	0.25	0.00	0.43	0.85	0.43	0.44	0.31	0.37	0.37
Avail Cap(c_a), veh/h	322	504	590	365	0	456	356	1414	722	561	2163	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.92	0.92	0.92	0.63	0.63	0.63
Uniform Delay (d), s/veh	57.7	47.7	38.0	51.2	0.0	49.8	57.3	27.1	27.1	17.5	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.3	0.3	0.6	0.0	1.1	9.5	0.9	1.8	0.2	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.4	2.3	1.6	0.0	3.4	5.3	6.6	7.0	2.2	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.3	48.0	38.3	51.8	0.0	51.0	66.8	27.9	28.9	17.7	0.3	0.6
LnGrp LOS	E	D	D	D	A	D	E	C	C	B	A	A
Approach Vol, veh/h		232			167			1079			1397	
Approach Delay, s/veh		49.3			51.2			33.8			2.6	
Approach LOS		D			D			C			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	46.0	59.0		25.0	17.4	87.6		25.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	27.0	* 54		35.0	26.0	55.0		35.0				
Max Q Clear Time (g_c+I1), s	7.9	18.8		19.3	13.1	2.0		10.0				
Green Ext Time (p_c), s	0.4	6.1		0.7	0.3	9.9		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		20.9	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

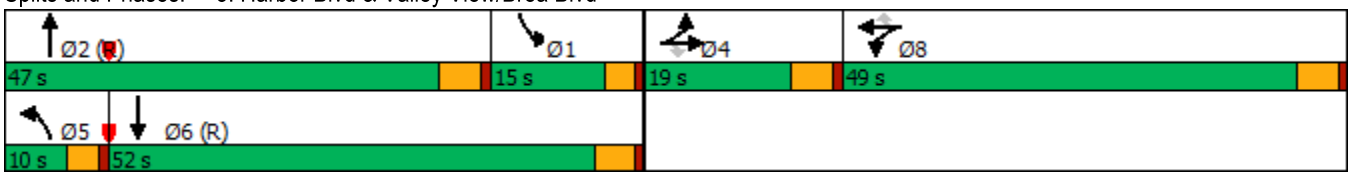


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	84	9	539	116	166	22	920	382	57	975	80
Future Volume (vph)	51	84	9	539	116	166	22	920	382	57	975	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.989	
Flt Protected	0.950			0.950	0.969		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1715	1583	1770	5085	1583	1770	5029	0
Flt Permitted	0.950			0.950	0.969		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1715	1583	1770	5085	1583	1770	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			171			346		11	
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			3958	
Travel Time (s)		23.8			15.7			5.5			54.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	53	87	9	556	120	171	23	948	394	59	1005	82
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	53	87	9	334	342	171	23	948	394	59	1087	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			

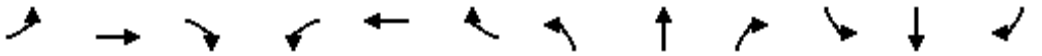
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	
Total Split (s)	19.0	19.0	19.0	49.0	49.0	49.0	10.0	47.0		15.0	52.0	
Total Split (%)	14.6%	14.6%	14.6%	37.7%	37.7%	37.7%	7.7%	36.2%		11.5%	40.0%	
Maximum Green (s)	14.0	14.0	14.0	44.0	44.0	44.0	6.0	42.0		11.0	47.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	
Pedestrian Calls (#/hr)				5	5	5		5			5	
Act Effct Green (s)	11.1	11.1	11.1	32.8	32.8	32.8	6.8	59.1	130.0	10.0	64.3	
Actuated g/C Ratio	0.09	0.09	0.09	0.25	0.25	0.25	0.05	0.45	1.00	0.08	0.49	
v/c Ratio	0.35	0.55	0.04	0.79	0.79	0.32	0.25	0.41	0.25	0.44	0.44	
Control Delay	61.7	69.7	0.2	58.0	58.1	6.2	79.6	17.8	0.4	49.8	8.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	61.7	69.7	0.2	58.0	58.1	6.2	79.6	17.8	0.4	49.8	8.6	
LOS	E	E	A	E	E	A	E	B	A	D	A	
Approach Delay		62.7			47.6			13.8			10.7	
Approach LOS		E			D			B			B	
Queue Length 50th (ft)	43	71	0	276	284	0	20	141	0	53	144	
Queue Length 95th (ft)	84	126	0	355	363	50	48	172	0	102	57	
Internal Link Dist (ft)		791			959			200			3878	
Turn Bay Length (ft)	85						95			150		
Base Capacity (vph)	190	200	290	568	580	648	92	2311	1583	149	2492	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.28	0.43	0.03	0.59	0.59	0.26	0.25	0.41	0.25	0.40	0.44	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 23.0		Intersection LOS: C	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd



HCM 6th Signalized Intersection Summary
3: Harbor Blvd & Valley View/Brea Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	84	9	539	116	166	22	920	382	57	975	80
Future Volume (veh/h)	51	84	9	539	116	166	22	920	382	57	975	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	87	9	642	0	0	23	948	0	59	1005	82
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	118	100	737	0		46	1650		451	2685	219
Arrive On Green	0.06	0.06	0.06	0.21	0.00	0.00	0.03	0.32	0.00	0.25	0.56	0.56
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	5106	1585	1781	4812	392
Grp Volume(v), veh/h	53	87	9	642	0	0	23	948	0	59	710	377
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1702	1585	1781	1702	1800
Q Serve(g_s), s	3.7	5.9	0.7	22.7	0.0	0.0	1.7	20.1	0.0	3.3	15.2	15.2
Cycle Q Clear(g_c), s	3.7	5.9	0.7	22.7	0.0	0.0	1.7	20.1	0.0	3.3	15.2	15.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	112	118	100	737	0		46	1650		451	1900	1004
V/C Ratio(X)	0.47	0.74	0.09	0.87	0.00		0.50	0.57		0.13	0.37	0.37
Avail Cap(c_a), veh/h	192	201	171	1206	0		82	1650		451	1900	1004
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	58.8	59.9	57.4	49.9	0.0	0.0	62.5	36.6	0.0	37.5	16.0	16.1
Incr Delay (d2), s/veh	3.1	8.7	0.4	4.1	0.0	0.0	8.0	1.5	0.0	0.1	0.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.1	0.3	10.2	0.0	0.0	0.9	8.5	0.0	1.4	5.6	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.9	68.6	57.8	54.0	0.0	0.0	70.4	38.0	0.0	37.6	16.6	17.1
LnGrp LOS	E	E	E	D	A		E	D		D	B	B
Approach Vol, veh/h		149			642			971			1146	
Approach Delay, s/veh		65.6			54.0			38.8			17.8	
Approach LOS		E			D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	37.9	47.0		13.2	7.4	77.6		31.9				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	11.0	* 42		14.0	6.0	47.0		44.0				
Max Q Clear Time (g_c+I1), s	5.3	22.1		7.9	3.7	17.2		24.7				
Green Ext Time (p_c), s	0.0	6.5		0.3	0.0	7.3		2.2				

Intersection Summary			
HCM 6th Ctrl Delay		35.3	
HCM 6th LOS		D	

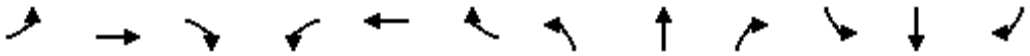
Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	23	19	7	50	43	1242	26	36	1584	11
Future Volume (vph)	17	5	23	19	7	50	43	1242	26	36	1584	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.931				0.850		0.997			0.999	
Flt Protected		0.981			0.964		0.950			0.950		
Satd. Flow (prot)	0	1701	0	0	1796	1583	1770	5070	0	1770	3536	0
Flt Permitted		0.867			0.810		0.125			0.189		
Satd. Flow (perm)	0	1504	0	0	1509	1583	233	5070	0	352	3536	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				53		6			1	
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		390			645			190			410	
Travel Time (s)		10.6			17.6			3.7			9.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	5	24	20	7	53	45	1307	27	38	1667	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	27	53	45	1334	0	38	1679	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

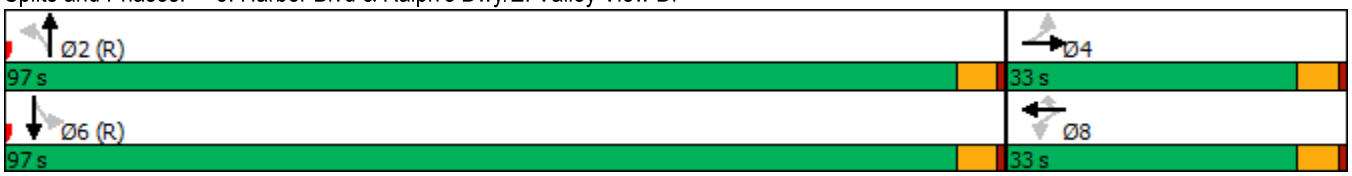


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		11.4			11.4	11.4	111.8	111.8		111.8	111.8	
Actuated g/C Ratio		0.09			0.09	0.09	0.86	0.86		0.86	0.86	
v/c Ratio		0.31			0.20	0.28	0.23	0.31		0.13	0.55	
Control Delay		34.5			54.6	15.7	5.6	2.5		1.4	3.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		34.5			54.6	15.7	5.6	2.5		1.4	3.0	
LOS		C			D	B	A	A		A	A	
Approach Delay		34.5			28.8			2.6			3.0	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		19			22	0	5	56		0	71	
Queue Length 95th (ft)		50			45	35	m17	101		m7	190	
Internal Link Dist (ft)		310			565			110			330	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		342			325	382	200	4360		302	3040	
Starvation Cap Reductn		0			0	0	0	0		0	116	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.14			0.08	0.14	0.23	0.31		0.13	0.57	

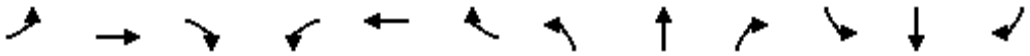
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 3.9		Intersection LOS: A	
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr



HCM 6th Signalized Intersection Summary
5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr



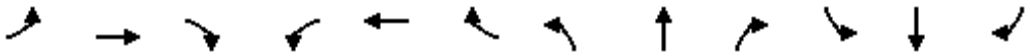
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	5	23	19	7	50	43	1242	26	36	1584	11
Future Volume (veh/h)	17	5	23	19	7	50	43	1242	26	36	1584	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	5	24	20	7	53	45	1307	27	38	1667	12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	14	36	103	29	79	281	4497	93	396	3159	23
Arrive On Green	0.05	0.05	0.05	0.05	0.05	0.05	0.87	0.87	0.87	0.87	0.87	0.87
Sat Flow, veh/h	411	289	731	1114	590	1585	294	5149	106	410	3617	26
Grp Volume(v), veh/h	47	0	0	27	0	53	45	864	470	38	818	861
Grp Sat Flow(s),veh/h/ln	1431	0	0	1704	0	1585	294	1702	1851	410	1777	1866
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	4.3	5.5	5.6	5.6	2.3	14.1	14.1
Cycle Q Clear(g_c), s	4.3	0.0	0.0	1.9	0.0	4.3	19.6	5.6	5.6	7.8	14.1	14.1
Prop In Lane	0.38		0.51	0.74		1.00	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	109	0	0	133	0	79	281	2973	1617	396	1552	1630
V/C Ratio(X)	0.43	0.00	0.00	0.20	0.00	0.67	0.16	0.29	0.29	0.10	0.53	0.53
Avail Cap(c_a), veh/h	359	0	0	378	0	341	281	2973	1617	396	1552	1630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	0.0	0.0	59.6	0.0	60.7	4.2	1.4	1.4	2.1	1.9	1.9
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.7	0.0	9.6	1.2	0.2	0.5	0.5	1.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.9	0.0	1.9	0.4	1.0	1.1	0.2	3.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.4	0.0	0.0	60.3	0.0	70.3	5.5	1.6	1.9	2.5	3.2	3.2
LnGrp LOS	E	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		47			80			1379			1717	
Approach Delay, s/veh		63.4			66.9			1.8			3.2	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		118.5		11.5		118.5		11.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		21.6		6.3		16.1		6.3				
Green Ext Time (p_c), s		15.0		0.2		24.9		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			5.1									
HCM 6th LOS			A									

Lanes, Volumes, Timings
6: Harbor Blvd & Berkeley Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	176	73	50	165	408	101	887	41	260	1290	19
Future Volume (vph)	17	176	73	50	165	408	101	887	41	260	1290	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.993				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3514	0	3433	3539	1583
Flt Permitted	0.401			0.367			0.950			0.950		
Satd. Flow (perm)	747	1863	1583	684	1863	1583	1770	3514	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101			77		5				50
Link Speed (mph)		35			35			35			30	
Link Distance (ft)		538			720			654			541	
Travel Time (s)		10.5			14.0			12.7			12.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	17	180	74	51	168	416	103	905	42	265	1316	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	180	74	51	168	416	103	947	0	265	1316	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

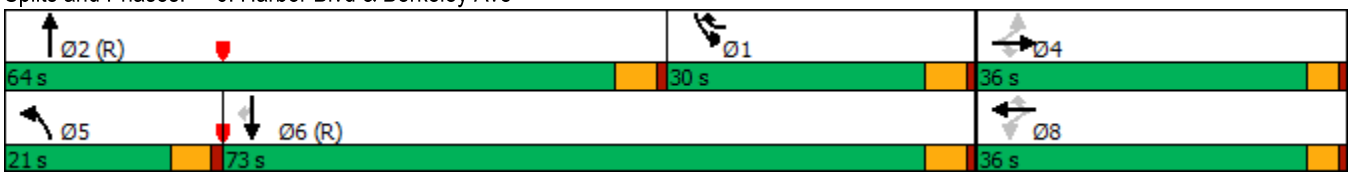


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	29.0	29.0	29.0	35.0	35.0	11.0	11.0	30.0		11.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	30.0	21.0	64.0		30.0	73.0	73.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	23.1%	16.2%	49.2%		23.1%	56.2%	56.2%
Maximum Green (s)	32.0	32.0	32.0	32.0	32.0	25.0	16.0	59.0		25.0	68.0	68.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.3	19.3	19.3	19.3	19.3	48.3	12.7	71.7		25.0	84.0	84.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.37	0.10	0.55		0.19	0.65	0.65
v/c Ratio	0.15	0.65	0.23	0.50	0.61	0.65	0.60	0.49		0.40	0.58	0.02
Control Delay	47.6	62.3	4.9	65.8	60.1	31.7	69.8	19.9		37.3	9.3	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	47.6	62.3	4.9	65.8	60.1	31.7	69.8	19.9		37.3	9.4	0.7
LOS	D	E	A	E	E	C	E	B		D	A	A
Approach Delay		45.7			41.9			24.8			13.9	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	13	147	0	41	136	242	84	239		85	93	0
Queue Length 95th (ft)	33	200	21	78	188	302	142	368		121	427	m1
Internal Link Dist (ft)		458			640			574			461	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	183	458	465	168	458	636	220	1941		660	2287	1040
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	168	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.09	0.39	0.16	0.30	0.37	0.65	0.47	0.49		0.40	0.62	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 122 (94%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



HCM 6th Signalized Intersection Summary
6: Harbor Blvd & Berkeley Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	176	73	50	165	408	101	887	41	260	1290	19
Future Volume (veh/h)	17	176	73	50	165	408	101	887	41	260	1290	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	180	74	51	168	416	103	905	42	265	1316	19
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	309	262	141	309	695	127	1569	73	944	2330	1039
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.07	0.45	0.45	0.27	0.66	0.66
Sat Flow, veh/h	831	1870	1585	1126	1870	1585	1781	3458	160	3456	3554	1585
Grp Volume(v), veh/h	17	180	74	51	168	416	103	465	482	265	1316	19
Grp Sat Flow(s),veh/h/ln	831	1870	1585	1126	1870	1585	1781	1777	1841	1728	1777	1585
Q Serve(g_s), s	2.5	11.6	5.3	5.7	10.7	0.0	7.4	25.2	25.2	7.8	26.3	0.5
Cycle Q Clear(g_c), s	13.2	11.6	5.3	17.3	10.7	0.0	7.4	25.2	25.2	7.8	26.3	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	124	309	262	141	309	695	127	806	836	944	2330	1039
V/C Ratio(X)	0.14	0.58	0.28	0.36	0.54	0.60	0.81	0.58	0.58	0.28	0.56	0.02
Avail Cap(c_a), veh/h	191	460	390	232	460	823	219	806	836	944	2330	1039
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.8	50.1	47.5	58.1	49.8	27.8	59.5	26.3	26.3	37.2	12.2	7.8
Incr Delay (d2), s/veh	0.5	1.7	0.6	1.5	1.5	0.9	11.5	3.0	2.9	0.2	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	5.5	2.1	1.7	5.1	9.8	3.7	11.1	11.5	3.4	10.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.3	51.9	48.1	59.6	51.3	28.7	70.9	29.3	29.2	37.3	13.2	7.8
LnGrp LOS	E	D	D	E	D	C	E	C	C	D	B	A
Approach Vol, veh/h		271			635			1050			1600	
Approach Delay, s/veh		51.1			37.1			33.3			17.2	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	40.5	64.0		25.5	14.3	90.2		25.5				
Change Period (Y+Rc), s	5.0	5.0		4.0	5.0	5.0		4.0				
Max Green Setting (Gmax), s	25.0	59.0		32.0	16.0	68.0		32.0				
Max Q Clear Time (g_c+I1), s	9.8	27.2		15.2	9.4	28.3		19.3				
Green Ext Time (p_c), s	0.8	6.8		1.1	0.1	13.7		2.2				

Intersection Summary			
HCM 6th Ctrl Delay		28.1	
HCM 6th LOS		C	

Lanes, Volumes, Timings
1: Harbor Blvd & Bastanchury Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	1114	125	133	833	300	189	1079	203	321	796	338
Future Volume (vph)	293	1114	125	133	833	300	189	1079	203	321	796	338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.985				0.850			0.850		0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4856	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4856	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				248			141		84	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			833			926	
Travel Time (s)		17.8			16.7			12.6			12.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	302	1148	129	137	859	309	195	1112	209	331	821	348
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	1277	0	137	859	309	195	1112	209	331	1169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
1: Harbor Blvd & Bastanchury Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	57.0		13.0	43.0	43.0	16.0	43.0	43.0	17.0	44.0	
Total Split (%)	20.8%	43.8%		10.0%	33.1%	33.1%	12.3%	33.1%	33.1%	13.1%	33.8%	
Maximum Green (s)	23.0	52.0		9.0	38.0	38.0	12.0	38.0	38.0	13.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	26.4	48.9		8.7	31.2	31.2	12.0	40.0	40.0	14.4	42.4	
Actuated g/C Ratio	0.20	0.38		0.07	0.24	0.24	0.09	0.31	0.31	0.11	0.33	
v/c Ratio	0.84	0.67		0.60	0.70	0.54	0.62	0.71	0.36	0.87	0.71	
Control Delay	70.5	35.1		70.1	48.2	12.7	45.7	24.5	3.9	80.0	39.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	70.5	35.1		70.1	48.2	12.7	45.7	24.5	3.9	80.0	39.2	
LOS	E	D		E	D	B	D	C	A	F	D	
Approach Delay		41.9			42.1			24.4			48.2	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	239	309		58	243	41	85	332	18	145	307	
Queue Length 95th (ft)	#438	360		93	272	121	m118	182	6	#241	364	
Internal Link Dist (ft)		963			901			753			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	360	2014		237	1486	638	316	1563	584	380	1639	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.84	0.63		0.58	0.58	0.48	0.62	0.71	0.36	0.87	0.71	

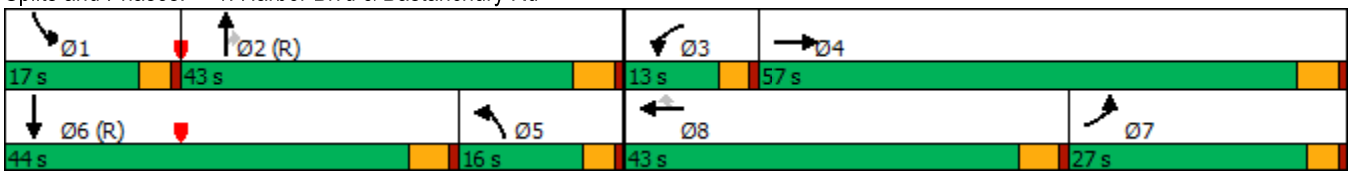
Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 5 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 39.0 Intersection LOS: D
Intersection Capacity Utilization 77.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

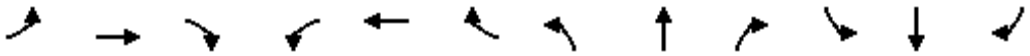
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



HCM 6th Signalized Intersection Summary
1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	1114	125	133	833	300	189	1079	203	321	796	338
Future Volume (veh/h)	293	1114	125	133	833	300	189	1079	203	321	796	338
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	302	1148	129	137	859	309	195	1112	209	331	821	348
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1629	183	188	1122	348	517	1824	566	346	1057	445
Arrive On Green	0.18	0.35	0.35	0.05	0.22	0.22	0.30	0.71	0.71	0.10	0.30	0.30
Sat Flow, veh/h	1781	4657	523	3456	5106	1585	3456	5106	1585	3456	3522	1485
Grp Volume(v), veh/h	302	839	438	137	859	309	195	1112	209	331	793	376
Grp Sat Flow(s),veh/h/ln	1781	1702	1776	1728	1702	1585	1728	1702	1585	1728	1702	1603
Q Serve(g_s), s	21.8	27.6	27.7	5.1	20.5	19.2	5.8	14.3	6.6	12.4	27.7	27.9
Cycle Q Clear(g_c), s	21.8	27.6	27.7	5.1	20.5	19.2	5.8	14.3	6.6	12.4	27.7	27.9
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.93
Lane Grp Cap(c), veh/h	315	1191	621	188	1122	348	517	1824	566	346	1021	481
V/C Ratio(X)	0.96	0.70	0.71	0.73	0.77	0.89	0.38	0.61	0.37	0.96	0.78	0.78
Avail Cap(c_a), veh/h	315	1362	710	239	1493	463	517	1824	566	346	1021	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	36.5	36.5	60.5	47.6	30.2	40.8	14.0	12.9	58.2	41.5	41.6
Incr Delay (d2), s/veh	39.5	1.4	2.7	7.9	1.7	15.0	0.4	1.3	1.6	37.3	5.8	11.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	11.5	12.2	2.4	8.7	8.6	2.3	3.8	2.2	7.0	11.9	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.5	37.9	39.2	68.4	49.3	45.2	41.2	15.3	14.5	95.5	47.3	53.5
LnGrp LOS	F	D	D	E	D	D	D	B	B	F	D	D
Approach Vol, veh/h		1579			1305			1516			1500	
Approach Delay, s/veh		48.7			50.3			18.5			59.5	
Approach LOS		D			D			B			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	51.4	11.1	50.5	24.4	44.0	28.0	33.6
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	5.0	* 5	5.0	* 5
Max Green Setting (Gmax), s	13.0	38.0	9.0	52.0	12.0	* 39	23.0	* 38
Max Q Clear Time (g_c+I1), s	14.4	16.3	7.1	29.7	7.8	29.9	23.8	22.5
Green Ext Time (p_c), s	0.0	8.3	0.1	8.8	0.2	4.6	0.0	6.0

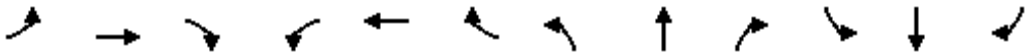
Intersection Summary	
HCM 6th Ctrl Delay	44.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lanes, Volumes, Timings
2: Harbor Blvd & Valencia Mesa

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	22	132	71	41	199	48	1153	54	86	881	82
Future Volume (vph)	119	22	132	71	41	199	48	1153	54	86	881	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	175		0	230		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850		0.876			0.993			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1632	0	1770	5050	0	1770	5019	0
Flt Permitted	0.293			0.742			0.950			0.950		
Satd. Flow (perm)	546	1863	1583	1382	1632	0	1770	5050	0	1770	5019	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		201			7			16	
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			3958			833	
Travel Time (s)		18.5			16.0			54.0			12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	23	139	75	43	209	51	1214	57	91	927	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	23	139	75	252	0	51	1271	0	91	1013	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	
Total Split (s)	48.0	48.0	15.0	48.0	48.0		15.0	61.0		21.0	67.0	
Total Split (%)	36.9%	36.9%	11.5%	36.9%	36.9%		11.5%	46.9%		16.2%	51.5%	
Maximum Green (s)	43.0	43.0	11.0	43.0	43.0		11.0	56.0		17.0	62.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	
Lead/Lag			Lag				Lag	Lead		Lag	Lead	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)	23.9	23.9	37.9	23.9	23.9		9.0	77.1		15.0	83.1	
Actuated g/C Ratio	0.18	0.18	0.29	0.18	0.18		0.07	0.59		0.12	0.64	
v/c Ratio	1.25	0.07	0.27	0.30	0.54		0.42	0.42		0.45	0.32	
Control Delay	213.3	39.9	14.4	46.0	14.7		72.1	3.0		55.0	5.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	213.3	39.9	14.4	46.0	14.7		72.1	3.0		55.0	5.8	
LOS	F	D	B	D	B		E	A		D	A	
Approach Delay		103.1			21.9			5.7			9.8	
Approach LOS		F			C			A			A	
Queue Length 50th (ft)	~131	16	35	55	37		45	23		75	54	
Queue Length 95th (ft)	#222	38	76	93	107		m89	39		m112	80	
Internal Link Dist (ft)		733			625			3878			753	
Turn Bay Length (ft)	55		85				175			230		
Base Capacity (vph)	180	616	512	457	674		149	2996		231	3213	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.69	0.04	0.27	0.16	0.37		0.34	0.42		0.39	0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

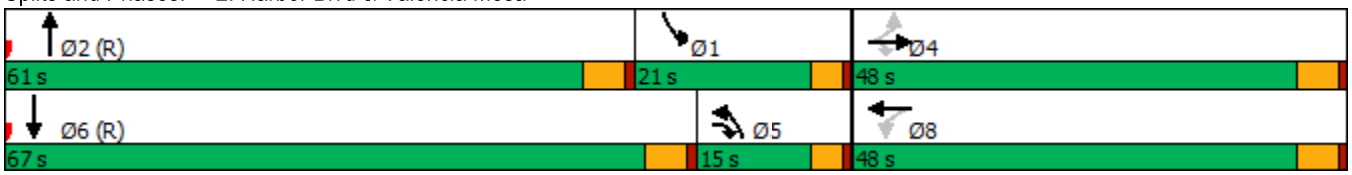
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

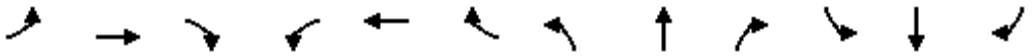
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa



HCM 6th Signalized Intersection Summary
2: Harbor Blvd & Valencia Mesa



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	22	132	71	41	199	48	1153	54	86	881	82
Future Volume (veh/h)	119	22	132	71	41	199	48	1153	54	86	881	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	23	139	75	43	209	51	1214	57	91	927	86
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	494	658	368	73	357	269	2153	101	351	2268	210
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.15	0.43	0.43	0.39	0.95	0.95
Sat Flow, veh/h	1128	1870	1585	1224	278	1350	1781	4998	235	1781	4755	440
Grp Volume(v), veh/h	125	23	139	75	0	252	51	827	444	91	663	350
Grp Sat Flow(s),veh/h/ln	1128	1870	1585	1224	0	1627	1781	1702	1828	1781	1702	1791
Q Serve(g_s), s	14.1	1.2	0.0	6.3	0.0	17.5	3.3	23.7	23.8	4.5	1.9	1.9
Cycle Q Clear(g_c), s	31.6	1.2	0.0	7.5	0.0	17.5	3.3	23.7	23.8	4.5	1.9	1.9
Prop In Lane	1.00		1.00	1.00		0.83	1.00		0.13	1.00		0.25
Lane Grp Cap(c), veh/h	201	494	658	368	0	430	269	1466	788	351	1623	854
V/C Ratio(X)	0.62	0.05	0.21	0.20	0.00	0.59	0.19	0.56	0.56	0.26	0.41	0.41
Avail Cap(c_a), veh/h	276	619	764	449	0	538	269	1466	788	351	1623	854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	0.65	0.65	0.65
Uniform Delay (d), s/veh	55.4	35.6	24.4	38.4	0.0	41.6	48.2	27.8	27.8	32.9	1.6	1.6
Incr Delay (d2), s/veh	3.1	0.0	0.2	0.3	0.0	1.3	0.3	1.4	2.6	0.3	0.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.6	2.8	1.9	0.0	7.2	1.4	9.4	10.4	1.8	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	35.7	24.5	38.7	0.0	42.9	48.5	29.2	30.4	33.2	2.1	2.6
LnGrp LOS	E	D	C	D	A	D	D	C	C	C	A	A
Approach Vol, veh/h		287			327			1322			1104	
Approach Delay, s/veh		40.2			41.9			30.3			4.8	
Approach LOS		D			D			C			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.6	61.0		39.4	23.6	67.0		39.4				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	17.0	56.0		43.0	11.0	62.0		43.0				
Max Q Clear Time (g_c+I1), s	6.5	25.8		33.6	5.3	3.9		19.5				
Green Ext Time (p_c), s	0.1	8.9		0.7	0.0	7.5		1.9				

Intersection Summary												
HCM 6th Ctrl Delay			23.3									
HCM 6th LOS			C									

Lanes, Volumes, Timings
3: Harbor Blvd & Valley View/Brea Blvd

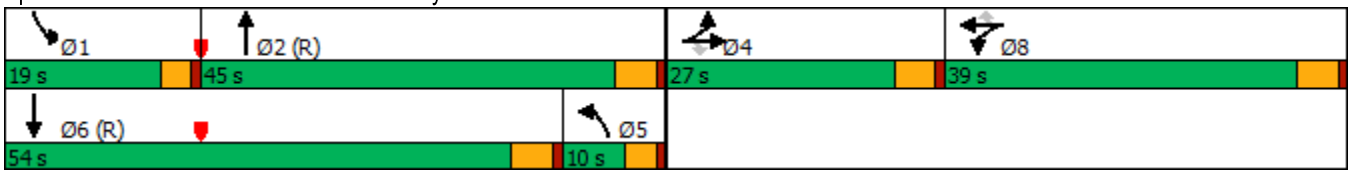
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	179	26	469	97	111	9	1024	605	97	1000	50
Future Volume (vph)	68	179	26	469	97	111	9	1024	605	97	1000	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.993	
Flt Protected	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1713	1583	1770	5085	1583	1770	5050	0
Flt Permitted	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1713	1583	1770	5085	1583	1770	5050	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			134			491		7	
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			3958	
Travel Time (s)		23.8			15.7			5.5			54.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	70	185	27	484	100	114	9	1056	624	100	1031	52
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	70	185	27	290	294	114	9	1056	624	100	1083	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			

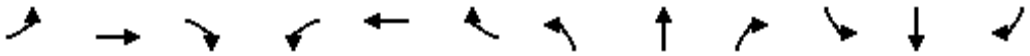
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	
Total Split (s)	27.0	27.0	27.0	39.0	39.0	39.0	10.0	45.0		19.0	54.0	
Total Split (%)	20.8%	20.8%	20.8%	30.0%	30.0%	30.0%	7.7%	34.6%		14.6%	41.5%	
Maximum Green (s)	22.0	22.0	22.0	34.0	34.0	34.0	6.0	40.0		15.0	49.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	
Pedestrian Calls (#/hr)				5	5	5		5			5	
Act Effct Green (s)	17.6	17.6	17.6	27.8	27.8	27.8	6.0	53.5	130.0	12.1	67.6	
Actuated g/C Ratio	0.14	0.14	0.14	0.21	0.21	0.21	0.05	0.41	1.00	0.09	0.52	
v/c Ratio	0.29	0.73	0.08	0.81	0.80	0.26	0.11	0.50	0.39	0.61	0.41	
Control Delay	52.5	70.6	0.5	65.6	64.9	5.3	50.8	21.3	0.8	78.7	13.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.5	70.6	0.5	65.6	64.9	5.3	50.8	21.3	0.8	78.7	13.5	
LOS	D	E	A	E	E	A	D	C	A	E	B	
Approach Delay		59.4			55.4			13.9			19.1	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	54	151	0	245	248	0	7	230	4	87	134	
Queue Length 95th (ft)	98	227	0	337	341	33	m18	276	13	126	236	
Internal Link Dist (ft)		791			959			200			3878	
Turn Bay Length (ft)	85						95			150		
Base Capacity (vph)	299	315	379	439	448	512	81	2092	1583	204	2630	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.23	0.59	0.07	0.66	0.66	0.22	0.11	0.50	0.39	0.49	0.41	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 72 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 26.4 Intersection LOS: C
Intersection Capacity Utilization 66.2% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	179	26	469	97	111	9	1024	605	97	1000	50
Future Volume (veh/h)	68	179	26	469	97	111	9	1024	605	97	1000	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	185	27	555	0	0	9	1056	0	100	1031	52
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	221	187	639	0		306	2486		124	1876	95
Arrive On Green	0.12	0.12	0.12	0.18	0.00	0.00	0.17	0.49	0.00	0.07	0.38	0.38
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	5106	1585	1781	4978	251
Grp Volume(v), veh/h	70	185	27	555	0	0	9	1056	0	100	705	378
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1702	1585	1781	1702	1825
Q Serve(g_s), s	4.7	12.6	2.0	19.7	0.0	0.0	0.5	17.4	0.0	7.2	21.1	21.2
Cycle Q Clear(g_c), s	4.7	12.6	2.0	19.7	0.0	0.0	0.5	17.4	0.0	7.2	21.1	21.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	210	221	187	639	0		306	2486		124	1283	688
V/C Ratio(X)	0.33	0.84	0.14	0.87	0.00		0.03	0.42		0.81	0.55	0.55
Avail Cap(c_a), veh/h	301	317	268	932	0		306	2486		206	1283	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.96	0.96	0.96
Uniform Delay (d), s/veh	52.6	56.1	51.4	51.8	0.0	0.0	44.8	21.6	0.0	59.6	31.8	31.8
Incr Delay (d2), s/veh	0.9	12.5	0.3	6.2	0.0	0.0	0.0	0.5	0.0	11.2	1.6	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	6.8	0.8	9.1	0.0	0.0	0.2	7.0	0.0	3.5	8.6	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	68.6	51.8	58.0	0.0	0.0	44.9	22.1	0.0	70.9	33.4	34.9
LnGrp LOS	D	E	D	E	A		D	C		E	C	C
Approach Vol, veh/h		282			555			1065			1183	
Approach Delay, s/veh		63.2			58.0			22.3			37.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	68.3		20.4	27.3	54.0		28.3				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	15.0	40.0		22.0	6.0	* 49		34.0				
Max Q Clear Time (g_c+I1), s	9.2	19.4		14.6	2.5	23.2		21.7				
Green Ext Time (p_c), s	0.1	7.4		0.8	0.0	6.9		1.6				

Intersection Summary			
HCM 6th Ctrl Delay		38.1	
HCM 6th LOS		D	

Notes

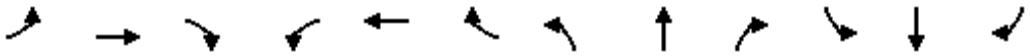
User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lanes, Volumes, Timings
5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	21	65	14	11	43	60	1608	24	48	1455	42
Future Volume (vph)	47	21	65	14	11	43	60	1608	24	48	1455	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.934				0.850		0.998			0.996	
Flt Protected		0.983			0.973		0.950			0.950		
Satd. Flow (prot)	0	1710	0	0	1812	1583	1770	5075	0	1770	3525	0
Flt Permitted		0.872			0.775		0.143			0.125		
Satd. Flow (perm)	0	1517	0	0	1444	1583	266	5075	0	233	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34				44		4			5	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			645			190			410	
Travel Time (s)		10.6			17.6			3.7			8.0	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	48	21	66	14	11	44	61	1641	24	49	1485	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	25	44	61	1665	0	49	1528	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

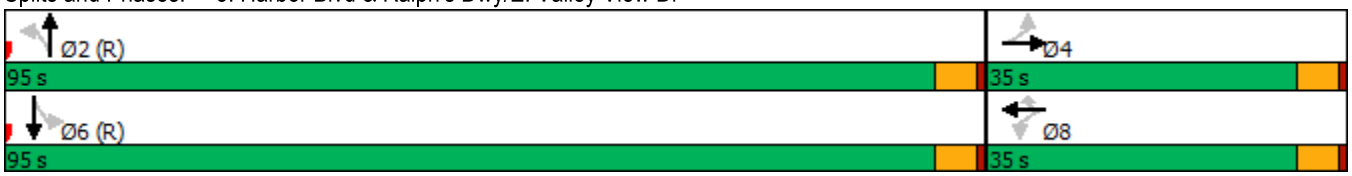


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	95.0	95.0		95.0	95.0	
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	73.1%	73.1%		73.1%	73.1%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	90.0	90.0		90.0	90.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		15.5			15.5	15.5	104.5	104.5		104.5	104.5	
Actuated g/C Ratio		0.12			0.12	0.12	0.80	0.80		0.80	0.80	
v/c Ratio		0.64			0.15	0.19	0.29	0.41		0.26	0.54	
Control Delay		53.0			49.2	14.4	6.0	3.2		3.5	2.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		53.0			49.2	14.4	6.0	3.2		3.5	2.4	
LOS		D			D	B	A	A		A	A	
Approach Delay		53.0			27.0			3.3			2.4	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)		83			19	0	8	91		0	31	
Queue Length 95th (ft)		136			42	32	m16	120		m1	88	
Internal Link Dist (ft)		310			565			110			330	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		376			333	399	213	4081		187	2835	
Starvation Cap Reductn		0			0	0	0	0		0	50	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.36			0.08	0.11	0.29	0.41		0.26	0.55	

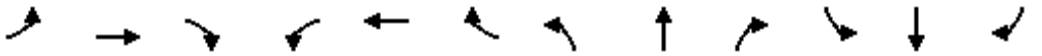
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 32 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr



HCM 6th Signalized Intersection Summary
5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

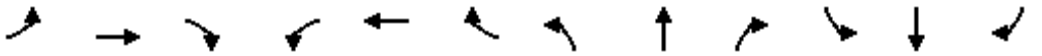


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	21	65	14	11	43	60	1608	24	48	1455	42
Future Volume (veh/h)	47	21	65	14	11	43	60	1608	24	48	1455	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	21	66	14	11	44	61	1641	24	49	1485	43
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	35	80	110	75	165	289	4247	62	275	2889	84
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.82	0.82	0.82	0.82	0.82	0.82
Sat Flow, veh/h	469	336	770	643	722	1585	341	5185	76	298	3527	102
Grp Volume(v), veh/h	135	0	0	25	0	44	61	1077	588	49	747	781
Grp Sat Flow(s),veh/h/ln	1576	0	0	1365	0	1585	341	1702	1857	298	1777	1852
Q Serve(g_s), s	8.9	0.0	0.0	0.0	0.0	3.3	8.9	10.9	10.9	6.8	17.1	17.1
Cycle Q Clear(g_c), s	10.9	0.0	0.0	1.6	0.0	3.3	26.0	10.9	10.9	17.6	17.1	17.1
Prop In Lane	0.36		0.49	0.56		1.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	201	0	0	185	0	165	289	2788	1521	275	1455	1517
V/C Ratio(X)	0.67	0.00	0.00	0.14	0.00	0.27	0.21	0.39	0.39	0.18	0.51	0.51
Avail Cap(c_a), veh/h	398	0	0	376	0	366	289	2788	1521	275	1455	1517
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	0.0	0.0	52.9	0.0	53.7	7.7	3.1	3.1	5.4	3.7	3.7
Incr Delay (d2), s/veh	3.8	0.0	0.0	0.3	0.0	0.9	1.7	0.4	0.7	1.4	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	0.0	0.8	0.0	1.4	0.7	2.9	3.3	0.5	4.9	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.8	0.0	0.0	53.2	0.0	54.5	9.4	3.5	3.9	6.9	5.0	4.9
LnGrp LOS	E	A	A	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		135			69			1726			1577	
Approach Delay, s/veh		60.8			54.1			3.8			5.0	
Approach LOS		E			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		111.5		18.5		111.5		18.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		90.0		30.0		90.0		30.0				
Max Q Clear Time (g_c+I1), s		28.0		12.9		19.6		5.3				
Green Ext Time (p_c), s		21.6		0.7		20.1		0.2				

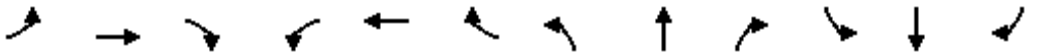
Intersection Summary												
HCM 6th Ctrl Delay			7.5									
HCM 6th LOS			A									

Lanes, Volumes, Timings
6: Harbor Blvd & Berkeley Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	147	81	56	168	460	87	1191	25	330	1252	21
Future Volume (vph)	28	147	81	56	168	460	87	1191	25	330	1252	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3529	0	3433	3539	1583
Flt Permitted	0.410			0.475			0.950			0.950		
Satd. Flow (perm)	764	1863	1583	885	1863	1583	1770	3529	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		2				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		538			720			654			541	
Travel Time (s)		10.5			14.0			12.7			10.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	29	153	84	58	175	479	91	1241	26	344	1304	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	153	84	58	175	479	91	1267	0	344	1304	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

Lanes, Volumes, Timings
6: Harbor Blvd & Berkeley Ave

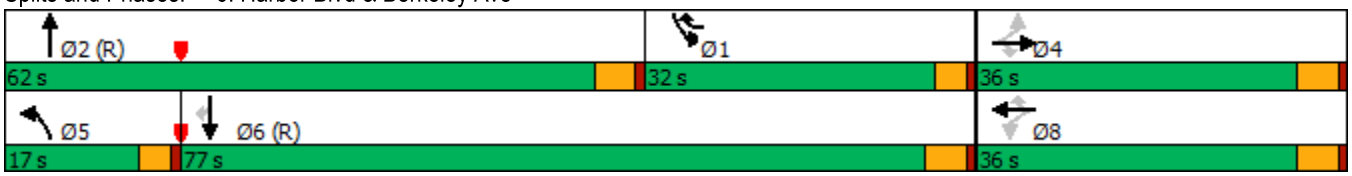


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	32.0	17.0	62.0		32.0	77.0	77.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	24.6%	13.1%	47.7%		24.6%	59.2%	59.2%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	28.0	13.0	57.0		28.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.0	19.0	19.0	19.0	19.0	52.0	11.3	69.0		28.0	85.7	85.7
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.40	0.09	0.53		0.22	0.66	0.66
v/c Ratio	0.26	0.56	0.27	0.45	0.64	0.72	0.59	0.68		0.47	0.56	0.02
Control Delay	51.9	58.3	9.1	59.5	62.1	35.3	72.9	25.8		31.1	3.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	51.9	58.3	9.1	59.5	62.1	35.3	72.9	25.8		31.1	3.9	0.1
LOS	D	E	A	E	E	D	E	C		C	A	A
Approach Delay		42.1			43.9			29.0			9.5	
Approach LOS		D			D			C			A	
Queue Length 50th (ft)	22	123	0	46	143	311	75	385		135	48	0
Queue Length 95th (ft)	48	173	37	83	196	367	133	579		145	188	m1
Internal Link Dist (ft)		458			640			574			461	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	182	444	447	211	444	663	179	1874		739	2334	1061
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	165	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.16	0.34	0.19	0.27	0.39	0.72	0.51	0.68		0.47	0.60	0.02

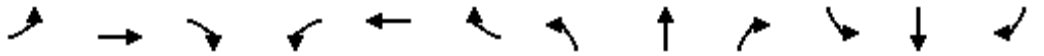
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 52 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



HCM 6th Signalized Intersection Summary
6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	147	81	56	168	460	87	1191	25	330	1252	21
Future Volume (veh/h)	28	147	81	56	168	460	87	1191	25	330	1252	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	153	84	58	175	479	91	1241	26	344	1304	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	291	247	155	291	707	114	1561	33	1004	2391	1067
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.06	0.44	0.44	0.29	0.67	0.67
Sat Flow, veh/h	1210	1870	1585	1234	1870	1585	1781	3559	75	3456	3554	1585
Grp Volume(v), veh/h	29	153	84	58	175	479	91	619	648	344	1304	22
Grp Sat Flow(s),veh/h/ln	1210	1870	1585	1234	1870	1585	1781	1777	1857	1728	1777	1585
Q Serve(g_s), s	3.0	9.8	6.1	5.9	11.3	0.0	6.6	39.1	39.1	10.2	24.6	0.6
Cycle Q Clear(g_c), s	14.3	9.8	6.1	15.7	11.3	0.0	6.6	39.1	39.1	10.2	24.6	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	138	291	247	155	291	707	114	779	814	1004	2391	1067
V/C Ratio(X)	0.21	0.53	0.34	0.38	0.60	0.68	0.80	0.79	0.80	0.34	0.55	0.02
Avail Cap(c_a), veh/h	238	446	378	257	446	839	178	779	814	1004	2391	1067
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.8	50.5	48.9	57.7	51.1	28.6	60.0	31.5	31.5	36.3	11.0	7.1
Incr Delay (d2), s/veh	0.7	1.5	0.8	1.5	2.0	1.7	13.0	8.2	7.9	0.2	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.7	2.5	1.9	5.4	11.9	3.4	18.1	18.9	4.3	9.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	51.9	49.8	59.2	53.1	30.3	73.0	39.7	39.4	36.5	11.9	7.1
LnGrp LOS	E	D	D	E	D	C	E	D	D	D	B	A
Approach Vol, veh/h		266			712			1358			1670	
Approach Delay, s/veh		52.0			38.3			41.8			16.9	
Approach LOS		D			D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	42.8	62.0		25.2	12.3	92.5		25.2				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	28.0	* 57		31.0	13.0	72.0		31.0				
Max Q Clear Time (g_c+I1), s	12.2	41.1		16.3	8.6	26.6		17.7				
Green Ext Time (p_c), s	1.1	7.6		1.0	0.1	13.3		2.6				

Intersection Summary			
HCM 6th Ctrl Delay		31.5	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX B-II

EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	311	848	163	263	927	216	182	621	110	349	941	297
Future Volume (vph)	311	848	163	263	927	216	182	621	110	349	941	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.976				0.850			0.850		0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4963	0	3433	5085	1583	3433	5085	1583	3433	4902	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4963	0	3433	5085	1583	3433	5085	1583	3433	4902	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				170			126		64	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			428			926	
Travel Time (s)		17.8			16.7			6.5			12.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	331	902	173	280	986	230	194	661	117	371	1001	316
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	1075	0	280	986	230	194	661	117	371	1317	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	49.0		21.0	43.0	43.0	14.0	43.0	43.0	17.0	46.0	
Total Split (%)	20.8%	37.7%		16.2%	33.1%	33.1%	10.8%	33.1%	33.1%	13.1%	35.4%	
Maximum Green (s)	23.0	44.0		17.0	38.0	38.0	10.0	38.0	38.0	13.0	41.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	23.0	35.9		20.9	33.9	33.9	10.0	42.1	42.1	13.0	45.1	
Actuated g/C Ratio	0.18	0.28		0.16	0.26	0.26	0.08	0.32	0.32	0.10	0.35	
v/c Ratio	1.06	0.77		0.51	0.74	0.43	0.73	0.40	0.20	1.08	0.76	
Control Delay	117.6	45.6		53.8	47.6	13.3	55.9	25.1	5.0	126.1	39.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	117.6	45.6		53.8	47.6	13.3	55.9	25.1	5.0	126.1	39.6	
LOS	F	D		D	D	B	E	C	A	F	D	
Approach Delay		62.5			43.5			28.8			58.6	
Approach LOS		E			D			C			E	
Queue Length 50th (ft)	~305	297		112	279	39	85	94	4	~179	344	
Queue Length 95th (ft)	#494	326		163	318	108	#134	137	35	#281	421	
Internal Link Dist (ft)		963			901			348			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	313	1701		552	1486	583	264	1648	598	343	1743	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.06	0.63		0.51	0.66	0.39	0.73	0.40	0.20	1.08	0.76	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 59 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 50.3 Intersection LOS: D
Intersection Capacity Utilization 80.1% ICU Level of Service D
Analysis Period (min) 15

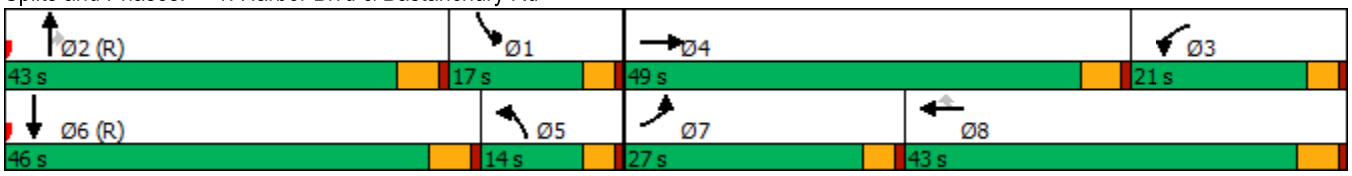
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	848	163	263	927	216	182	621	110	349	941	297
Future Volume (veh/h)	311	848	163	263	927	216	182	621	110	349	941	297
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	331	902	173	280	986	230	194	661	117	371	1001	316
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1123	214	518	1232	383	442	1493	463	522	1212	382
Arrive On Green	0.18	0.26	0.26	0.15	0.24	0.24	0.13	0.29	0.29	0.15	0.32	0.32
Sat Flow, veh/h	1781	4304	822	3456	5106	1585	3456	5106	1585	3456	3844	1212
Grp Volume(v), veh/h	331	712	363	280	986	230	194	661	117	371	886	431
Grp Sat Flow(s),veh/h/ln	1781	1702	1722	1728	1702	1585	1728	1702	1585	1728	1702	1652
Q Serve(g_s), s	23.0	25.4	25.6	9.7	23.6	11.9	6.7	13.7	7.3	13.3	31.3	31.4
Cycle Q Clear(g_c), s	23.0	25.4	25.6	9.7	23.6	11.9	6.7	13.7	7.3	13.3	31.3	31.4
Prop In Lane	1.00		0.48	1.00		1.00	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	315	888	449	518	1232	383	442	1493	463	522	1074	521
V/C Ratio(X)	1.05	0.80	0.81	0.54	0.80	0.60	0.44	0.44	0.25	0.71	0.83	0.83
Avail Cap(c_a), veh/h	315	1152	583	518	1493	463	442	1493	463	522	1074	521
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	44.9	45.0	51.1	46.4	22.0	52.4	37.4	35.1	52.5	41.2	41.2
Incr Delay (d2), s/veh	64.5	3.2	6.4	1.1	2.7	1.5	0.7	1.0	1.3	4.5	7.3	14.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.7	10.9	11.5	4.3	10.1	4.5	2.9	5.7	3.0	5.9	13.6	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.0	48.1	51.3	52.3	49.0	23.6	53.1	38.3	36.5	57.0	48.5	55.2
LnGrp LOS	F	D	D	D	D	C	D	D	D	E	D	E
Approach Vol, veh/h		1406			1496			972			1688	
Approach Delay, s/veh		65.4			45.7			41.1			52.0	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	43.0	24.5	38.9	20.6	46.0	27.0	36.4
Change Period (Y+Rc), s	4.0	5.0	5.0	* 5	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	13.0	38.0	17.0	* 44	10.0	41.0	23.0	38.0
Max Q Clear Time (g_c+I1), s	15.3	15.7	11.7	27.6	8.7	33.4	25.0	25.6
Green Ext Time (p_c), s	0.0	4.6	0.4	6.3	0.1	4.5	0.0	5.8

Intersection Summary	
HCM 6th Ctrl Delay	51.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

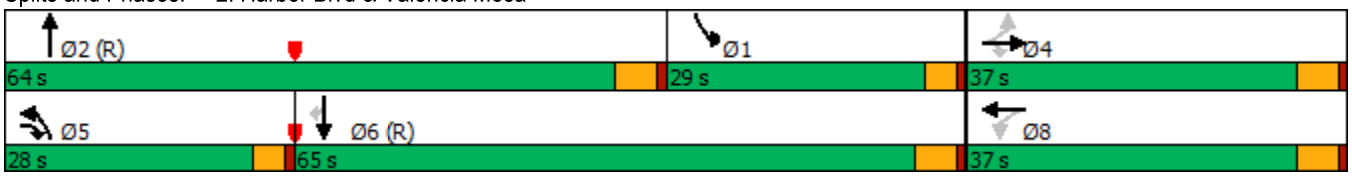
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	46	85	51	45	63	147	752	125	167	984	176
Future Volume (vph)	90	46	85	51	45	63	147	752	125	167	984	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	185		0	230		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.912			0.979				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1699	0	1770	3465	0	1770	3539	1583
Flt Permitted	0.583			0.726			0.950			0.950		
Satd. Flow (perm)	1086	1863	1583	1352	1699	0	1770	3465	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		52			19				185
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			616			406	
Travel Time (s)		18.5			16.0			8.4			6.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	48	89	54	47	66	155	792	132	176	1036	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	48	89	54	113	0	155	924	0	176	1036	185
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6

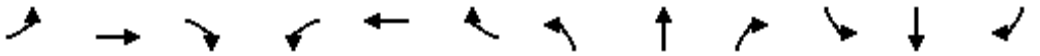
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	30.0
Total Split (s)	37.0	37.0	28.0	37.0	37.0		28.0	64.0		29.0	65.0	65.0
Total Split (%)	28.5%	28.5%	21.5%	28.5%	28.5%		21.5%	49.2%		22.3%	50.0%	50.0%
Maximum Green (s)	32.0	32.0	24.0	32.0	32.0		24.0	59.0		25.0	60.0	60.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag			Lead				Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5			5			5	5
Act Effct Green (s)	17.2	17.2	38.8	17.2	17.2		16.6	73.8		25.0	82.2	82.2
Actuated g/C Ratio	0.13	0.13	0.30	0.13	0.13		0.13	0.57		0.19	0.63	0.63
v/c Ratio	0.66	0.20	0.17	0.30	0.42		0.69	0.47		0.52	0.46	0.17
Control Delay	73.2	48.4	11.6	52.1	31.2		91.7	4.9		52.9	10.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	73.2	48.4	11.6	52.1	31.2		91.7	4.9		52.9	10.9	2.1
LOS	E	D	B	D	C		F	A		D	B	A
Approach Delay		44.5			37.9			17.4			15.0	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	78	37	18	42	48		134	42		150	133	8
Queue Length 95th (ft)	122	66	46	74	94		150	69		m207	534	m27
Internal Link Dist (ft)		733			625			536			326	
Turn Bay Length (ft)	55		85				185			230		
Base Capacity (vph)	267	458	600	332	457		326	1975		340	2237	1069
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.36	0.10	0.15	0.16	0.25		0.48	0.47		0.52	0.46	0.17

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 84 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 19.6 Intersection LOS: B
Intersection Capacity Utilization 58.7% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	46	85	51	45	63	147	752	125	167	984	176
Future Volume (veh/h)	90	46	85	51	45	63	147	752	125	167	984	176
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	48	89	54	47	66	155	792	132	176	1036	185
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	287	406	220	108	152	183	1383	231	494	2261	1008
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.45	0.45	0.28	0.64	0.64
Sat Flow, veh/h	1280	1870	1585	1252	704	988	1781	3048	508	1781	3554	1585
Grp Volume(v), veh/h	95	48	89	54	0	113	155	462	462	176	1036	185
Grp Sat Flow(s),veh/h/ln	1280	1870	1585	1252	0	1692	1781	1777	1779	1781	1777	1585
Q Serve(g_s), s	9.5	2.9	5.8	5.1	0.0	7.9	11.1	24.9	24.9	10.3	19.5	6.3
Cycle Q Clear(g_c), s	17.3	2.9	5.8	8.0	0.0	7.9	11.1	24.9	24.9	10.3	19.5	6.3
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	174	287	406	220	0	260	183	806	807	494	2261	1008
V/C Ratio(X)	0.54	0.17	0.22	0.25	0.00	0.43	0.85	0.57	0.57	0.36	0.46	0.18
Avail Cap(c_a), veh/h	293	460	553	336	0	417	329	806	807	494	2261	1008
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.8	47.8	38.1	51.3	0.0	49.9	57.3	26.2	26.2	37.7	12.1	9.7
Incr Delay (d2), s/veh	2.6	0.3	0.3	0.6	0.0	1.1	10.3	2.9	2.9	0.4	0.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.4	2.3	1.6	0.0	3.4	5.4	10.6	10.6	4.5	7.2	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	48.1	38.4	51.8	0.0	51.0	67.7	29.1	29.1	38.1	12.8	10.1
LnGrp LOS	E	D	D	D	A	D	E	C	C	D	B	B
Approach Vol, veh/h		232			167			1079			1397	
Approach Delay, s/veh		49.4			51.3			34.7			15.7	
Approach LOS		D			D			C			B	

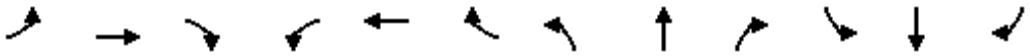
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	41.0	64.0		25.0	17.3	87.7		25.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	25.0	* 59		32.0	24.0	60.0		32.0				
Max Q Clear Time (g_c+I1), s	12.3	26.9		19.3	13.1	21.5		10.0				
Green Ext Time (p_c), s	0.3	5.8		0.6	0.3	9.1		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		27.6	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

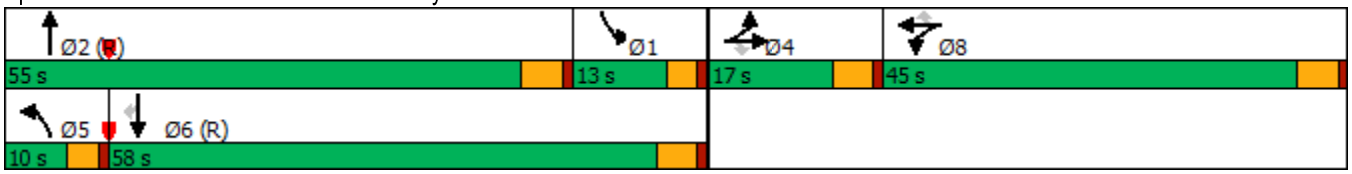
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	84	9	539	116	166	22	920	382	57	975	80
Future Volume (vph)	51	84	9	539	116	166	22	920	382	57	975	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	140		140
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.969		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1715	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950	0.969		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1715	1583	1770	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			171			241			92
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			363	
Travel Time (s)		23.8			15.7			5.5			5.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	53	87	9	556	120	171	23	948	394	59	1005	82
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	53	87	9	334	342	171	23	948	394	59	1005	82
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			6

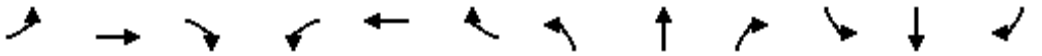


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	30.0
Total Split (s)	17.0	17.0	17.0	45.0	45.0	45.0	10.0	55.0		13.0	58.0	58.0
Total Split (%)	13.1%	13.1%	13.1%	34.6%	34.6%	34.6%	7.7%	42.3%		10.0%	44.6%	44.6%
Maximum Green (s)	12.0	12.0	12.0	40.0	40.0	40.0	6.0	50.0		9.0	53.0	53.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag							Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5	5		5			5	5
Act Effct Green (s)	10.4	10.4	10.4	32.1	32.1	32.1	6.7	62.1	130.0	8.4	65.9	65.9
Actuated g/C Ratio	0.08	0.08	0.08	0.25	0.25	0.25	0.05	0.48	1.00	0.06	0.51	0.51
v/c Ratio	0.38	0.58	0.04	0.81	0.81	0.33	0.26	0.56	0.25	0.52	0.56	0.10
Control Delay	63.8	73.3	0.2	60.6	60.6	6.5	79.7	18.4	0.4	63.9	15.9	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	73.3	0.2	60.6	60.6	6.5	79.7	18.4	0.4	63.9	15.9	7.5
LOS	E	E	A	E	E	A	E	B	A	E	B	A
Approach Delay		65.5			49.7			14.3			17.8	
Approach LOS		E			D			B			B	
Queue Length 50th (ft)	43	71	0	277	284	0	20	209	0	51	77	0
Queue Length 95th (ft)	86	128	0	369	376	52	43	254	0	86	332	46
Internal Link Dist (ft)		791			959			200			283	
Turn Bay Length (ft)	85						95			140		140
Base Capacity (vph)	163	171	267	517	527	605	90	1691	1583	122	1793	847
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.51	0.03	0.65	0.65	0.28	0.26	0.56	0.25	0.48	0.56	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	84	9	539	116	166	22	920	382	57	975	80
Future Volume (veh/h)	51	84	9	539	116	166	22	920	382	57	975	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	87	9	642	0	0	23	948	0	59	1005	82
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	117	99	734	0		46	1367		344	1988	887
Arrive On Green	0.06	0.06	0.06	0.21	0.00	0.00	0.03	0.38	0.00	0.19	0.56	0.56
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	53	87	9	642	0	0	23	948	0	59	1005	82
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.7	5.9	0.7	22.7	0.0	0.0	1.7	29.1	0.0	3.6	22.6	3.1
Cycle Q Clear(g_c), s	3.7	5.9	0.7	22.7	0.0	0.0	1.7	29.1	0.0	3.6	22.6	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	117	99	734	0		46	1367		344	1988	887
V/C Ratio(X)	0.48	0.75	0.09	0.87	0.00		0.50	0.69		0.17	0.51	0.09
Avail Cap(c_a), veh/h	164	173	146	1096	0		82	1367		344	1988	887
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.9	59.9	57.5	50.0	0.0	0.0	62.5	33.6	0.0	43.8	17.6	13.3
Incr Delay (d2), s/veh	3.2	9.3	0.4	5.5	0.0	0.0	8.0	2.9	0.0	0.2	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	3.1	0.3	10.4	0.0	0.0	0.9	12.9	0.0	1.6	8.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.1	69.3	57.9	55.5	0.0	0.0	70.4	36.5	0.0	44.0	18.5	13.5
LnGrp LOS	E	E	E	E	A		E	D		D	B	B
Approach Vol, veh/h		149			642			971			1146	
Approach Delay, s/veh		66.0			55.5			37.3			19.5	
Approach LOS		E			E			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.1	55.0		13.1	7.4	77.7		31.8				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	9.0	* 50		12.0	6.0	53.0		40.0				
Max Q Clear Time (g_c+I1), s	5.6	31.1		7.9	3.7	24.6		24.7				
Green Ext Time (p_c), s	0.0	6.4		0.2	0.0	7.4		2.1				

Intersection Summary			
HCM 6th Ctrl Delay		35.7	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

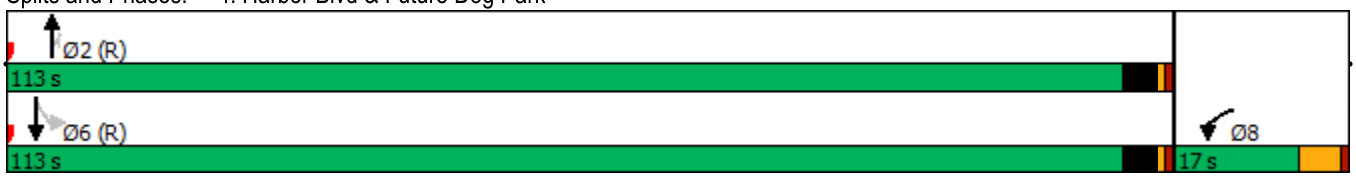


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	1132	5	5	1115
Future Volume (vph)	5	5	1132	5	5	1115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		200	250	
Storage Lanes	1	0		1	1	
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.932			0.850		
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	3539	1583	1770	3539
Flt Permitted	0.976				0.250	
Satd. Flow (perm)	1694	0	3539	1583	466	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			5		
Link Speed (mph)	30		50			50
Link Distance (ft)	484		960			1191
Travel Time (s)	11.0		13.1			16.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	5	1132	5	5	1115
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	1132	5	5	1115
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60		60	60	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases				2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8		2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0		6.0	6.0	6.0	6.0
Minimum Split (s)	11.0		11.0	11.0	11.0	11.0
Total Split (s)	17.0		113.0	113.0	113.0	113.0
Total Split (%)	13.1%		86.9%	86.9%	86.9%	86.9%
Maximum Green (s)	12.0		108.0	108.0	108.0	108.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.4		126.5	126.5	126.5	126.5
Actuated g/C Ratio	0.05		0.97	0.97	0.97	0.97
v/c Ratio	0.11		0.33	0.00	0.01	0.32
Control Delay	46.1		0.4	0.2	1.2	2.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.1		0.4	0.2	1.2	2.8
LOS	D		A	A	A	A
Approach Delay	46.1		0.4			2.8
Approach LOS	D		A			A
Queue Length 50th (ft)	4		3	0	0	0
Queue Length 95th (ft)	23		28	m0	m2	510
Internal Link Dist (ft)	404		880			1111
Turn Bay Length (ft)				200	250	
Base Capacity (vph)	160		3444	1541	453	3444
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.06		0.33	0.00	0.01	0.32

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 1.8		Intersection LOS: A	
Intersection Capacity Utilization 44.6%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Harbor Blvd & Future Dog Park



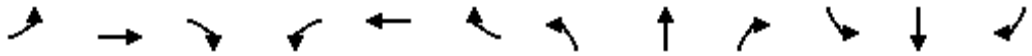


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	1132	5	5	1115
Future Volume (veh/h)	5	5	1132	5	5	1115
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	5	1132	5	5	1115
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12	12	3227	1439	485	3227
Arrive On Green	0.02	0.02	0.91	0.91	0.91	0.91
Sat Flow, veh/h	770	770	3647	1585	497	3647
Grp Volume(v), veh/h	11	0	1132	5	5	1115
Grp Sat Flow(s),veh/h/ln	1693	0	1777	1585	497	1777
Q Serve(g_s), s	0.8	0.0	5.6	0.0	0.2	5.5
Cycle Q Clear(g_c), s	0.8	0.0	5.6	0.0	5.8	5.5
Prop In Lane	0.45	0.45		1.00	1.00	
Lane Grp Cap(c), veh/h	26	0	3227	1439	485	3227
V/C Ratio(X)	0.43	0.00	0.35	0.00	0.01	0.35
Avail Cap(c_a), veh/h	156	0	3227	1439	485	3227
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	0.0	0.8	0.6	1.2	0.8
Incr Delay (d2), s/veh	11.0	0.0	0.3	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.1	0.0	0.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.4	0.0	1.1	0.6	1.2	1.1
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	11		1137			1120
Approach Delay, s/veh	74.4		1.1			1.1
Approach LOS	E		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		123.0			123.0	7.0
Change Period (Y+Rc), s		5.0			5.0	5.0
Max Green Setting (Gmax), s		108.0			108.0	12.0
Max Q Clear Time (g_c+I1), s		7.6			7.8	2.8
Green Ext Time (p_c), s		9.5			9.4	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.5
HCM 6th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	23	19	7	50	43	1242	26	36	1584	11
Future Volume (vph)	17	5	23	19	7	50	43	1242	26	36	1584	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.931				0.850		0.997			0.999	
Flt Protected		0.981			0.964		0.950			0.950		
Satd. Flow (prot)	0	1701	0	0	1796	1583	1770	5070	0	1770	3536	0
Flt Permitted		0.867			0.810		0.125			0.189		
Satd. Flow (perm)	0	1504	0	0	1509	1583	233	5070	0	352	3536	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				53		6			1	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		427			781			235			407	
Travel Time (s)		11.6			21.3			4.6			7.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	5	24	20	7	53	45	1307	27	38	1667	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	27	53	45	1334	0	38	1679	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

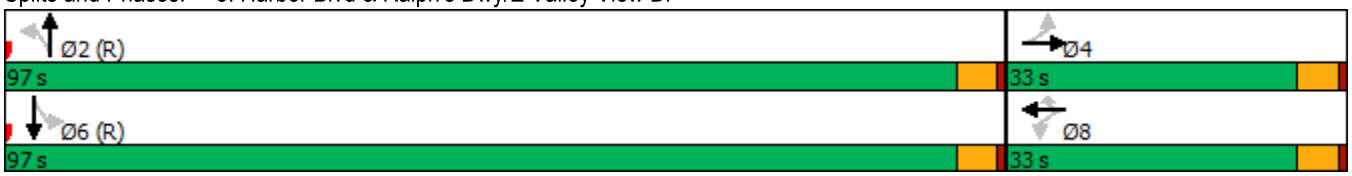


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		11.4			11.4	11.4	111.8	111.8		111.8	111.8	
Actuated g/C Ratio		0.09			0.09	0.09	0.86	0.86		0.86	0.86	
v/c Ratio		0.31			0.20	0.28	0.23	0.31		0.13	0.55	
Control Delay		34.5			54.6	15.7	5.8	2.6		1.8	1.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		34.5			54.6	15.7	5.8	2.6		1.8	1.8	
LOS		C			D	B	A	A		A	A	
Approach Delay		34.5			28.8			2.7			1.8	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		19			22	0	6	65		0	6	
Queue Length 95th (ft)		50			45	35	m18	108		m9	298	
Internal Link Dist (ft)		347			701			155			327	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		342			325	382	200	4360		302	3040	
Starvation Cap Reductn		0			0	0	0	0		0	75	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.14			0.08	0.14	0.23	0.31		0.13	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 105 (81%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 3.4		Intersection LOS: A	
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	5	23	19	7	50	43	1242	26	36	1584	11
Future Volume (veh/h)	17	5	23	19	7	50	43	1242	26	36	1584	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	5	24	20	7	53	45	1307	27	38	1667	12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	14	36	103	29	79	281	4497	93	396	3159	23
Arrive On Green	0.05	0.05	0.05	0.05	0.05	0.05	0.87	0.87	0.87	0.87	0.87	0.87
Sat Flow, veh/h	411	289	731	1114	590	1585	294	5149	106	410	3617	26
Grp Volume(v), veh/h	47	0	0	27	0	53	45	864	470	38	818	861
Grp Sat Flow(s),veh/h/ln	1431	0	0	1704	0	1585	294	1702	1851	410	1777	1866
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	4.3	5.5	5.6	5.6	2.3	14.1	14.1
Cycle Q Clear(g_c), s	4.3	0.0	0.0	1.9	0.0	4.3	19.6	5.6	5.6	7.8	14.1	14.1
Prop In Lane	0.38		0.51	0.74		1.00	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	109	0	0	133	0	79	281	2973	1617	396	1552	1630
V/C Ratio(X)	0.43	0.00	0.00	0.20	0.00	0.67	0.16	0.29	0.29	0.10	0.53	0.53
Avail Cap(c_a), veh/h	359	0	0	378	0	341	281	2973	1617	396	1552	1630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	0.0	0.0	59.6	0.0	60.7	4.2	1.4	1.4	2.1	1.9	1.9
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.7	0.0	9.6	1.2	0.2	0.5	0.5	1.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.9	0.0	1.9	0.4	1.0	1.1	0.2	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.4	0.0	0.0	60.3	0.0	70.3	5.5	1.6	1.9	2.5	3.2	3.2
LnGrp LOS	E	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		47			80			1379			1717	
Approach Delay, s/veh		63.4			66.9			1.8			3.2	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		118.5		11.5		118.5		11.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		21.6		6.3		16.1		6.3				
Green Ext Time (p_c), s		15.0		0.2		23.2		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			5.1									
HCM 6th LOS			A									

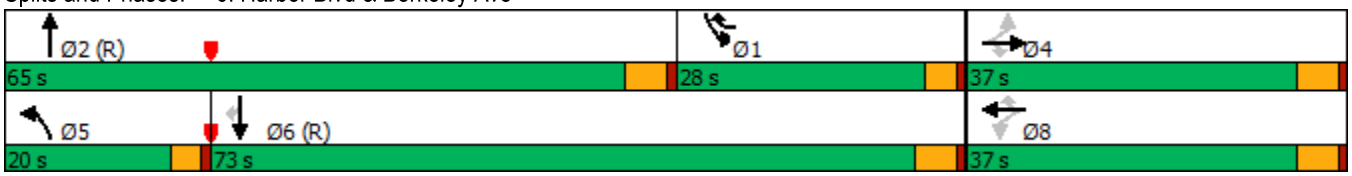
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	176	73	50	165	408	101	887	41	260	1290	19
Future Volume (vph)	17	176	73	50	165	408	101	887	41	260	1290	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.993				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3514	0	3433	3539	1583
Flt Permitted	0.435			0.400			0.950			0.950		
Satd. Flow (perm)	810	1863	1583	745	1863	1583	1770	3514	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			80		5				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		647			786			659			504	
Travel Time (s)		12.6			15.3			12.8			9.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	17	180	74	51	168	416	103	905	42	265	1316	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	180	74	51	168	416	103	947	0	265	1316	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	28.0	20.0	65.0		28.0	73.0	73.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	28.5%	21.5%	15.4%	50.0%		21.5%	56.2%	56.2%
Maximum Green (s)	32.0	32.0	32.0	32.0	32.0	24.0	16.0	60.0		24.0	68.0	68.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.3	19.3	19.3	19.3	19.3	48.3	12.7	72.7		24.0	84.0	84.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.37	0.10	0.56		0.18	0.65	0.65
v/c Ratio	0.14	0.65	0.24	0.46	0.61	0.65	0.60	0.48		0.42	0.58	0.02
Control Delay	47.1	62.3	6.7	61.9	60.1	31.3	69.8	19.2		41.0	9.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	47.1	62.3	6.7	61.9	60.1	31.3	69.8	19.2		41.0	9.9	0.4
LOS	D	E	A	E	E	C	E	B		D	A	A
Approach Delay		46.2			41.4			24.2			14.9	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	13	147	0	40	136	240	84	235		105	250	0
Queue Length 95th (ft)	33	200	27	76	188	300	142	363		142	386	m1
Internal Link Dist (ft)		567			706			579			424	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	199	458	459	183	458	638	220	1968		633	2287	1040
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	168	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.09	0.39	0.16	0.28	0.37	0.65	0.47	0.48		0.42	0.62	0.02

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 24.8 Intersection LOS: C
Intersection Capacity Utilization 71.4% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	176	73	50	165	408	101	887	41	260	1290	19
Future Volume (veh/h)	17	176	73	50	165	408	101	887	41	260	1290	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	180	74	51	168	416	103	905	42	265	1316	19
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	309	262	141	309	671	127	1596	74	891	2330	1039
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.07	0.46	0.46	0.26	0.66	0.66
Sat Flow, veh/h	831	1870	1585	1126	1870	1585	1781	3458	160	3456	3554	1585
Grp Volume(v), veh/h	17	180	74	51	168	416	103	465	482	265	1316	19
Grp Sat Flow(s),veh/h/ln	831	1870	1585	1126	1870	1585	1781	1777	1841	1728	1777	1585
Q Serve(g_s), s	2.5	11.6	5.3	5.7	10.7	0.0	7.4	24.8	24.8	8.0	26.3	0.5
Cycle Q Clear(g_c), s	13.2	11.6	5.3	17.3	10.7	0.0	7.4	24.8	24.8	8.0	26.3	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	124	309	262	141	309	671	127	820	850	891	2330	1039
V/C Ratio(X)	0.14	0.58	0.28	0.36	0.54	0.62	0.81	0.57	0.57	0.30	0.56	0.02
Avail Cap(c_a), veh/h	191	460	390	232	460	799	219	820	850	891	2330	1039
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.8	50.1	47.5	58.1	49.8	29.3	59.5	25.5	25.5	38.8	12.2	7.8
Incr Delay (d2), s/veh	0.5	1.7	0.6	1.5	1.5	1.1	11.5	2.8	2.7	0.2	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	5.5	2.1	1.7	5.1	10.2	3.7	10.9	11.3	3.4	10.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.3	51.9	48.1	59.6	51.3	30.4	70.9	28.4	28.3	39.0	13.2	7.8
LnGrp LOS	E	D	D	E	D	C	E	C	C	D	B	A
Approach Vol, veh/h		271			635			1050			1600	
Approach Delay, s/veh		51.1			38.3			32.5			17.4	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	38.5	65.0		26.5	13.3	90.2		26.5				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	24.0	* 60		32.0	16.0	68.0		32.0				
Max Q Clear Time (g_c+I1), s	10.0	26.8		15.2	9.4	28.3		19.3				
Green Ext Time (p_c), s	0.7	6.9		1.1	0.1	13.1		2.2				

Intersection Summary			
HCM 6th Ctrl Delay		28.2	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	1114	125	133	833	300	189	1079	203	321	796	338
Future Volume (vph)	293	1114	125	133	833	300	189	1079	203	321	796	338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.985				0.850			0.850		0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4856	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4856	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				248			141		84	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			428			926	
Travel Time (s)		17.8			16.7			6.5			12.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	302	1148	129	137	859	309	195	1112	209	331	821	348
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	1277	0	137	859	309	195	1112	209	331	1169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	57.0		13.0	43.0	43.0	16.0	43.0	43.0	17.0	44.0	
Total Split (%)	20.8%	43.8%		10.0%	33.1%	33.1%	12.3%	33.1%	33.1%	13.1%	33.8%	
Maximum Green (s)	23.0	52.0		9.0	38.0	38.0	12.0	38.0	38.0	13.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	26.4	48.9		8.7	31.2	31.2	12.0	40.0	40.0	14.4	42.4	
Actuated g/C Ratio	0.20	0.38		0.07	0.24	0.24	0.09	0.31	0.31	0.11	0.33	
v/c Ratio	0.84	0.67		0.60	0.70	0.54	0.62	0.71	0.36	0.87	0.71	
Control Delay	70.5	35.1		70.1	48.2	12.7	73.0	51.2	24.3	80.0	39.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	70.5	35.1		70.1	48.2	12.7	73.0	51.2	24.3	80.0	39.2	
LOS	E	D		E	D	B	E	D	C	F	D	
Approach Delay		41.9			42.1			50.3			48.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	239	309		58	243	41	80	329	69	145	307	
Queue Length 95th (ft)	#438	360		93	272	121	m130	362	m110	#241	364	
Internal Link Dist (ft)		963			901			348			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	360	2014		237	1486	638	316	1563	584	380	1639	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.84	0.63		0.58	0.58	0.48	0.62	0.71	0.36	0.87	0.71	

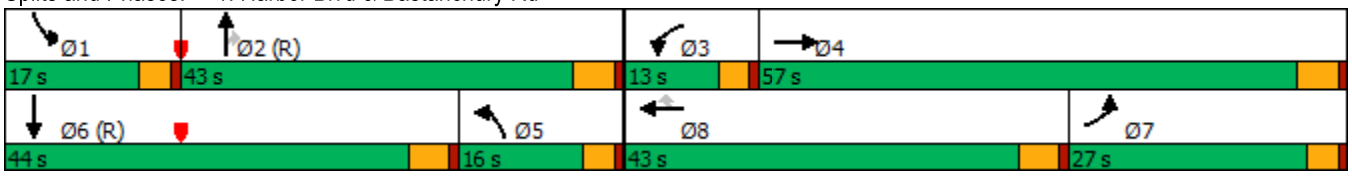
Intersection Summary

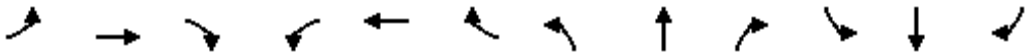
Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 5 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 45.7 Intersection LOS: D
Intersection Capacity Utilization 77.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	1114	125	133	833	300	189	1079	203	321	796	338
Future Volume (veh/h)	293	1114	125	133	833	300	189	1079	203	321	796	338
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	302	1148	129	137	859	309	195	1112	209	331	821	348
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1629	183	188	1122	348	517	1824	566	346	1057	445
Arrive On Green	0.18	0.35	0.35	0.05	0.22	0.22	0.15	0.36	0.36	0.10	0.30	0.30
Sat Flow, veh/h	1781	4657	523	3456	5106	1585	3456	5106	1585	3456	3522	1485
Grp Volume(v), veh/h	302	839	438	137	859	309	195	1112	209	331	793	376
Grp Sat Flow(s),veh/h/ln	1781	1702	1776	1728	1702	1585	1728	1702	1585	1728	1702	1603
Q Serve(g_s), s	21.8	27.6	27.7	5.1	20.5	19.2	6.6	23.3	12.7	12.4	27.7	27.9
Cycle Q Clear(g_c), s	21.8	27.6	27.7	5.1	20.5	19.2	6.6	23.3	12.7	12.4	27.7	27.9
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.93
Lane Grp Cap(c), veh/h	315	1191	621	188	1122	348	517	1824	566	346	1021	481
V/C Ratio(X)	0.96	0.70	0.71	0.73	0.77	0.89	0.38	0.61	0.37	0.96	0.78	0.78
Avail Cap(c_a), veh/h	315	1362	710	239	1493	463	517	1824	566	346	1021	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	36.5	36.5	60.5	47.6	30.2	49.8	34.3	30.9	58.2	41.5	41.6
Incr Delay (d2), s/veh	39.5	1.4	2.7	7.9	1.7	15.0	0.5	1.5	1.8	37.3	5.8	11.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	11.5	12.2	2.4	8.7	8.6	2.8	9.6	5.1	7.0	11.9	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.5	37.9	39.2	68.4	49.3	45.2	50.3	35.9	32.8	95.5	47.3	53.5
LnGrp LOS	F	D	D	E	D	D	D	D	C	F	D	D
Approach Vol, veh/h		1579			1305			1516			1500	
Approach Delay, s/veh		48.7			50.3			37.3			59.5	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	51.4	11.1	50.5	24.4	44.0	28.0	33.6
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	5.0	* 5	5.0	* 5
Max Green Setting (Gmax), s	13.0	38.0	9.0	52.0	12.0	* 39	23.0	* 38
Max Q Clear Time (g_c+I1), s	14.4	25.3	7.1	29.7	8.6	29.9	23.8	22.5
Green Ext Time (p_c), s	0.0	6.3	0.1	8.8	0.2	4.6	0.0	6.0

Intersection Summary	
HCM 6th Ctrl Delay	48.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	22	132	71	41	199	48	1153	54	86	881	82
Future Volume (vph)	119	22	132	71	41	199	48	1153	54	86	881	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	185		0	230		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.876			0.993				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1632	0	1770	3514	0	1770	3539	1583
Flt Permitted	0.314			0.742			0.950			0.950		
Satd. Flow (perm)	585	1863	1583	1382	1632	0	1770	3514	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			112		169			5				86
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			616			406	
Travel Time (s)		18.5			16.0			8.4			6.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	23	139	75	43	209	51	1214	57	91	927	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	23	139	75	252	0	51	1271	0	91	927	86
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	30.0
Total Split (s)	42.0	42.0	13.0	42.0	42.0		13.0	71.0		17.0	75.0	75.0
Total Split (%)	32.3%	32.3%	10.0%	32.3%	32.3%		10.0%	54.6%		13.1%	57.7%	57.7%
Maximum Green (s)	37.0	37.0	9.0	37.0	37.0		9.0	66.0		13.0	70.0	70.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag			Lag				Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5			5			5	5
Act Effct Green (s)	25.2	25.2	38.3	25.2	25.2		8.1	78.7		12.1	82.7	82.7
Actuated g/C Ratio	0.19	0.19	0.29	0.19	0.19		0.06	0.61		0.09	0.64	0.64
v/c Ratio	1.12	0.06	0.26	0.28	0.56		0.46	0.60		0.55	0.41	0.08
Control Delay	164.9	38.7	8.9	44.5	19.4		49.9	9.4		64.1	4.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	164.9	38.7	8.9	44.5	19.4		49.9	9.4		64.1	4.6	0.1
LOS	F	D	A	D	B		D	A		E	A	A
Approach Delay		79.2			25.1			11.0			9.2	
Approach LOS		E			C			B			A	
Queue Length 50th (ft)	~119	16	16	54	60		43	91		79	58	0
Queue Length 95th (ft)	#206	37	57	91	131		88	215		m116	73	m0
Internal Link Dist (ft)		733			625			536			326	
Turn Bay Length (ft)	55		85				185			230		
Base Capacity (vph)	166	530	536	393	585		122	2129		177	2251	1038
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.75	0.04	0.26	0.19	0.43		0.42	0.60		0.51	0.41	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

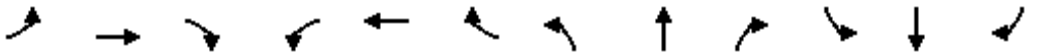
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa



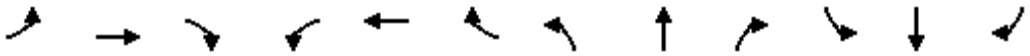


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	22	132	71	41	199	48	1153	54	86	881	82
Future Volume (veh/h)	119	22	132	71	41	199	48	1153	54	86	881	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	23	139	75	43	209	51	1214	57	91	927	86
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	490	561	365	73	354	164	1755	82	218	1914	853
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.09	0.51	0.51	0.12	0.54	0.54
Sat Flow, veh/h	1128	1870	1585	1224	278	1350	1781	3456	162	1781	3554	1585
Grp Volume(v), veh/h	125	23	139	75	0	252	51	624	647	91	927	86
Grp Sat Flow(s),veh/h/ln	1128	1870	1585	1224	0	1627	1781	1777	1841	1781	1777	1585
Q Serve(g_s), s	14.2	1.2	0.0	6.3	0.0	17.6	3.5	34.6	34.7	6.1	21.2	3.4
Cycle Q Clear(g_c), s	31.7	1.2	0.0	7.5	0.0	17.6	3.5	34.6	34.7	6.1	21.2	3.4
Prop In Lane	1.00		1.00	1.00		0.83	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	198	490	561	365	0	426	164	902	935	218	1914	853
V/C Ratio(X)	0.63	0.05	0.25	0.21	0.00	0.59	0.31	0.69	0.69	0.42	0.48	0.10
Avail Cap(c_a), veh/h	224	532	597	393	0	463	164	902	935	218	1914	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.7	35.8	29.7	38.7	0.0	41.9	55.2	24.3	24.3	52.7	18.7	14.6
Incr Delay (d2), s/veh	4.6	0.0	0.2	0.3	0.0	1.7	1.1	4.3	4.2	1.3	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.6	3.1	2.0	0.0	7.3	1.6	14.5	15.0	2.8	8.4	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	35.9	30.0	38.9	0.0	43.6	56.3	28.6	28.5	54.0	19.6	14.9
LnGrp LOS	E	D	C	D	A	D	E	C	C	D	B	B
Approach Vol, veh/h		287			327			1322			1104	
Approach Delay, s/veh		43.7			42.5			29.6			22.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.9	71.0		39.1	15.9	75.0		39.1				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	13.0	66.0		37.0	9.0	70.0		37.0				
Max Q Clear Time (g_c+I1), s	8.1	36.7		33.7	5.5	23.2		19.6				
Green Ext Time (p_c), s	0.1	8.9		0.3	0.0	7.6		1.7				

Intersection Summary												
HCM 6th Ctrl Delay			29.6									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	179	26	469	97	111	9	1024	605	97	1000	50
Future Volume (vph)	68	179	26	469	97	111	9	1024	605	97	1000	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	140		140
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1713	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1713	1583	1770	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			134			342			101
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			363	
Travel Time (s)		23.8			15.7			5.5			5.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	70	185	27	484	100	114	9	1056	624	100	1031	52
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	70	185	27	290	294	114	9	1056	624	100	1031	52
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	30.0
Total Split (s)	24.0	24.0	24.0	37.0	37.0	37.0	10.0	53.0		16.0	59.0	59.0
Total Split (%)	18.5%	18.5%	18.5%	28.5%	28.5%	28.5%	7.7%	40.8%		12.3%	45.4%	45.4%
Maximum Green (s)	19.0	19.0	19.0	32.0	32.0	32.0	6.0	48.0		12.0	54.0	54.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5	5		5			5	5
Act Effct Green (s)	16.7	16.7	16.7	27.2	27.2	27.2	6.0	56.0	130.0	11.1	69.0	69.0
Actuated g/C Ratio	0.13	0.13	0.13	0.21	0.21	0.21	0.05	0.43	1.00	0.09	0.53	0.53
v/c Ratio	0.31	0.77	0.08	0.82	0.82	0.26	0.11	0.69	0.39	0.67	0.55	0.06
Control Delay	54.2	75.8	0.5	68.0	67.2	5.5	50.4	25.0	0.8	89.8	15.5	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.2	75.8	0.5	68.0	67.2	5.5	50.4	25.0	0.8	89.8	15.5	1.6
LOS	D	E	A	E	E	A	D	C	A	F	B	A
Approach Delay		63.3			57.4			16.2			21.2	
Approach LOS		E			E			B			C	
Queue Length 50th (ft)	54	151	0	245	248	0	7	433	1	89	151	0
Queue Length 95th (ft)	101	#234	0	345	348	34	m19	447	10	#155	316	9
Internal Link Dist (ft)		791			959			200			283	
Turn Bay Length (ft)	85						95			140		140
Base Capacity (vph)	258	272	345	413	421	490	81	1523	1583	165	1879	887
Starvation Cap Reductn	0	0	0	0	0	0	0	15	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.68	0.08	0.70	0.70	0.23	0.11	0.70	0.39	0.61	0.55	0.06

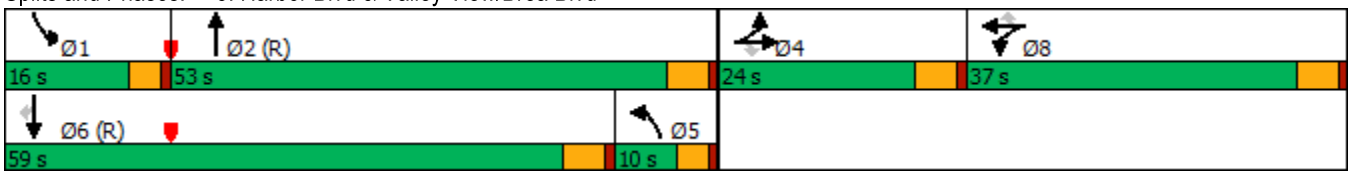
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 72 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	179	26	469	97	111	9	1024	605	97	1000	50
Future Volume (veh/h)	68	179	26	469	97	111	9	1024	605	97	1000	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	185	27	555	0	0	9	1056	0	100	1031	52
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	218	185	636	0		242	1740		123	1476	658
Arrive On Green	0.12	0.12	0.12	0.18	0.00	0.00	0.14	0.49	0.00	0.07	0.42	0.42
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	70	185	27	555	0	0	9	1056	0	100	1031	52
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.7	12.6	2.0	19.7	0.0	0.0	0.6	28.1	0.0	7.2	31.1	2.6
Cycle Q Clear(g_c), s	4.7	12.6	2.0	19.7	0.0	0.0	0.6	28.1	0.0	7.2	31.1	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	218	185	636	0		242	1740		123	1476	658
V/C Ratio(X)	0.34	0.85	0.15	0.87	0.00		0.04	0.61		0.81	0.70	0.08
Avail Cap(c_a), veh/h	260	273	232	877	0		242	1740		164	1476	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	56.3	51.6	51.9	0.0	0.0	48.8	24.1	0.0	59.7	31.3	23.0
Incr Delay (d2), s/veh	1.0	18.2	0.4	7.3	0.0	0.0	0.1	1.6	0.0	19.7	2.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	7.1	0.8	9.2	0.0	0.0	0.3	11.9	0.0	3.8	13.2	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	74.5	52.0	59.2	0.0	0.0	48.9	25.7	0.0	79.3	34.1	23.2
LnGrp LOS	D	E	D	E	A		D	C		E	C	C
Approach Vol, veh/h		282			555			1065			1183	
Approach Delay, s/veh		67.2			59.2			25.9			37.4	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	68.7		20.1	22.6	59.0		28.2				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	12.0	48.0		19.0	6.0	* 54		32.0				
Max Q Clear Time (g_c+I1), s	9.2	30.1		14.6	2.6	33.1		21.7				
Green Ext Time (p_c), s	0.0	7.1		0.5	0.0	6.9		1.5				

Intersection Summary		
HCM 6th Ctrl Delay		40.1
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

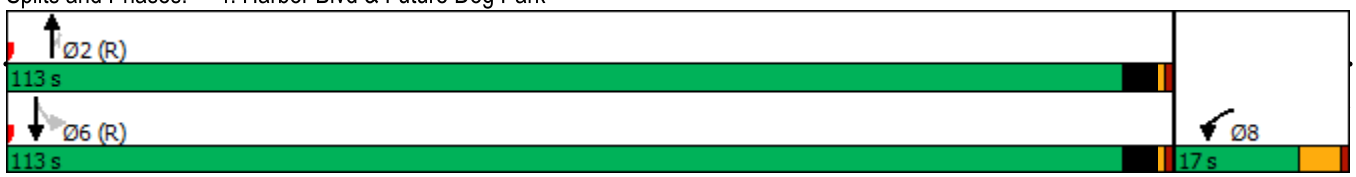


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	1198	5	5	1079
Future Volume (vph)	5	5	1198	5	5	1079
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		200	250	
Storage Lanes	1	0		1	1	
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.932			0.850		
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	3539	1583	1770	3539
Flt Permitted	0.976				0.233	
Satd. Flow (perm)	1694	0	3539	1583	434	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			5		
Link Speed (mph)	30		30			30
Link Distance (ft)	484		960			1191
Travel Time (s)	11.0		21.8			27.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	5	1198	5	5	1079
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	1198	5	5	1079
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60		60	60	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases				2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8		2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0		6.0	6.0	6.0	6.0
Minimum Split (s)	11.0		11.0	11.0	11.0	11.0
Total Split (s)	17.0		113.0	113.0	113.0	113.0
Total Split (%)	13.1%		86.9%	86.9%	86.9%	86.9%
Maximum Green (s)	12.0		108.0	108.0	108.0	108.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.4		126.5	126.5	126.5	126.5
Actuated g/C Ratio	0.05		0.97	0.97	0.97	0.97
v/c Ratio	0.11		0.35	0.00	0.01	0.31
Control Delay	46.1		1.2	0.0	0.8	0.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.1		1.2	0.0	0.8	0.6
LOS	D		A	A	A	A
Approach Delay	46.1		1.2			0.6
Approach LOS	D		A			A
Queue Length 50th (ft)	4		0	0	0	0
Queue Length 95th (ft)	23		3	m1	m1	65
Internal Link Dist (ft)	404		880			1111
Turn Bay Length (ft)				200	250	
Base Capacity (vph)	160		3444	1541	422	3444
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.06		0.35	0.00	0.01	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 1.1		Intersection LOS: A	
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Harbor Blvd & Future Dog Park



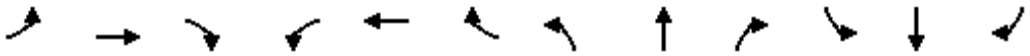


Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Lane Configurations							
Traffic Volume (veh/h)	5	5	1198	5	5	1079	
Future Volume (veh/h)	5	5	1198	5	5	1079	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach	No		No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	5	5	1198	5	5	1079	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Percent Heavy Veh, %	2	2	2	2	2	2	
Cap, veh/h	12	12	3227	1439	458	3227	
Arrive On Green	0.02	0.02	0.91	0.91	0.91	0.91	
Sat Flow, veh/h	770	770	3647	1585	467	3647	
Grp Volume(v), veh/h	11	0	1198	5	5	1079	
Grp Sat Flow(s),veh/h/ln	1693	0	1777	1585	467	1777	
Q Serve(g_s), s	0.8	0.0	6.1	0.0	0.2	5.2	
Cycle Q Clear(g_c), s	0.8	0.0	6.1	0.0	6.3	5.2	
Prop In Lane	0.45	0.45		1.00	1.00		
Lane Grp Cap(c), veh/h	26	0	3227	1439	458	3227	
V/C Ratio(X)	0.43	0.00	0.37	0.00	0.01	0.33	
Avail Cap(c_a), veh/h	156	0	3227	1439	458	3227	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	63.5	0.0	0.8	0.6	1.3	0.8	
Incr Delay (d2), s/veh	11.0	0.0	0.3	0.0	0.0	0.3	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	0.0	0.0	0.5	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	74.4	0.0	1.2	0.6	1.3	1.1	
LnGrp LOS	E	A	A	A	A	A	
Approach Vol, veh/h	11		1203			1084	
Approach Delay, s/veh	74.4		1.2			1.1	
Approach LOS	E		A			A	

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		123.0			123.0	7.0
Change Period (Y+Rc), s		5.0			5.0	5.0
Max Green Setting (Gmax), s		108.0			108.0	12.0
Max Q Clear Time (g_c+I1), s		8.1			8.3	2.8
Green Ext Time (p_c), s		13.1			11.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.5
HCM 6th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	21	65	14	11	43	60	1608	24	48	1455	42
Future Volume (vph)	47	21	65	14	11	43	60	1608	24	48	1455	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.934				0.850		0.998			0.996	
Flt Protected		0.983			0.973		0.950			0.950		
Satd. Flow (prot)	0	1710	0	0	1812	1583	1770	5075	0	1770	3525	0
Flt Permitted		0.872			0.775		0.143			0.125		
Satd. Flow (perm)	0	1517	0	0	1444	1583	266	5075	0	233	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34				44		4			5	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		427			781			235			407	
Travel Time (s)		11.6			21.3			4.6			7.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	48	21	66	14	11	44	61	1641	24	49	1485	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	25	44	61	1665	0	49	1528	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

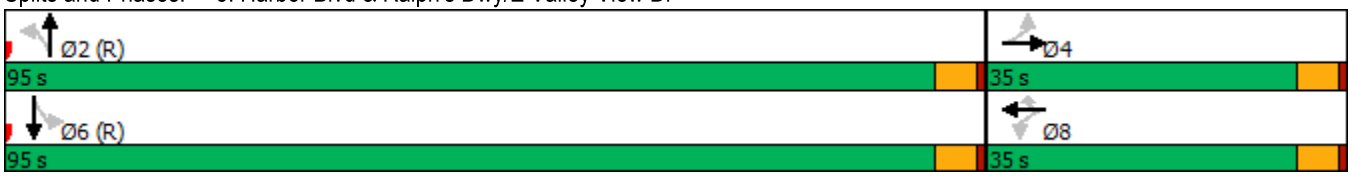


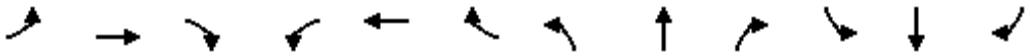
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	95.0	95.0		95.0	95.0	
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	73.1%	73.1%		73.1%	73.1%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	90.0	90.0		90.0	90.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		15.5			15.5	15.5	104.5	104.5		104.5	104.5	
Actuated g/C Ratio		0.12			0.12	0.12	0.80	0.80		0.80	0.80	
v/c Ratio		0.64			0.15	0.19	0.29	0.41		0.26	0.54	
Control Delay		53.0			49.2	14.4	5.8	2.9		3.5	1.3	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		53.0			49.2	14.4	5.8	2.9		3.5	1.3	
LOS		D			D	B	A	A		A	A	
Approach Delay		53.0			27.0			3.0			1.4	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)		83			19	0	8	79		1	16	
Queue Length 95th (ft)		136			42	32	m15	112		m1	14	
Internal Link Dist (ft)		347			701			155			327	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		376			333	399	213	4081		187	2835	
Starvation Cap Reductn		0			0	0	0	0		0	86	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.36			0.08	0.11	0.29	0.41		0.26	0.56	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 41 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr



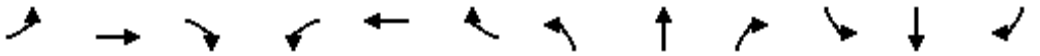


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	21	65	14	11	43	60	1608	24	48	1455	42
Future Volume (veh/h)	47	21	65	14	11	43	60	1608	24	48	1455	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	21	66	14	11	44	61	1641	24	49	1485	43
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	35	80	110	75	165	289	4247	62	275	2889	84
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.82	0.82	0.82	0.82	0.82	0.82
Sat Flow, veh/h	469	336	770	643	722	1585	341	5185	76	298	3527	102
Grp Volume(v), veh/h	135	0	0	25	0	44	61	1077	588	49	747	781
Grp Sat Flow(s),veh/h/ln	1576	0	0	1365	0	1585	341	1702	1857	298	1777	1852
Q Serve(g_s), s	8.9	0.0	0.0	0.0	0.0	3.3	8.9	10.9	10.9	6.8	17.1	17.1
Cycle Q Clear(g_c), s	10.9	0.0	0.0	1.6	0.0	3.3	26.0	10.9	10.9	17.6	17.1	17.1
Prop In Lane	0.36		0.49	0.56		1.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	201	0	0	185	0	165	289	2788	1521	275	1455	1517
V/C Ratio(X)	0.67	0.00	0.00	0.14	0.00	0.27	0.21	0.39	0.39	0.18	0.51	0.51
Avail Cap(c_a), veh/h	398	0	0	376	0	366	289	2788	1521	275	1455	1517
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	0.0	0.0	52.9	0.0	53.7	7.7	3.1	3.1	5.4	3.7	3.7
Incr Delay (d2), s/veh	3.8	0.0	0.0	0.3	0.0	0.9	1.7	0.4	0.7	1.4	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	0.0	0.8	0.0	1.4	0.7	2.9	3.3	0.5	4.9	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.8	0.0	0.0	53.2	0.0	54.5	9.4	3.5	3.9	6.9	5.0	4.9
LnGrp LOS	E	A	A	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		135			69			1726			1577	
Approach Delay, s/veh		60.8			54.1			3.8			5.0	
Approach LOS		E			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		111.5		18.5		111.5		18.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		90.0		30.0		90.0		30.0				
Max Q Clear Time (g_c+I1), s		28.0		12.9		19.6		5.3				
Green Ext Time (p_c), s		21.6		0.7		20.1		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			7.5									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	147	81	56	168	460	87	1191	25	330	1252	21
Future Volume (vph)	28	147	81	56	168	460	87	1191	25	330	1252	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3529	0	3433	3539	1583
Flt Permitted	0.400			0.467			0.950			0.950		
Satd. Flow (perm)	745	1863	1583	870	1863	1583	1770	3529	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		2				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		647			786			659			504	
Travel Time (s)		12.6			15.3			12.8			9.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	29	153	84	58	175	479	91	1241	26	344	1304	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	153	84	58	175	479	91	1267	0	344	1304	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

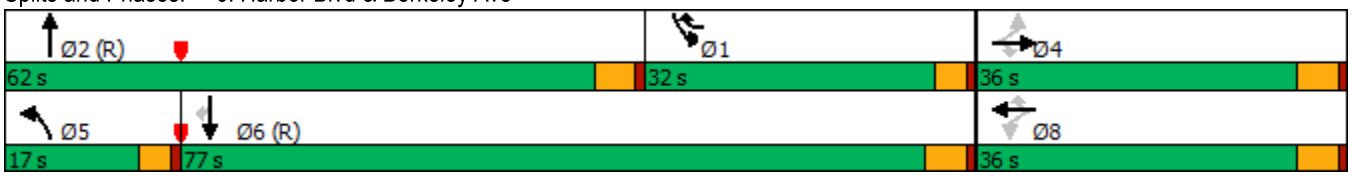


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	33.0	33.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	32.0	17.0	62.0		32.0	77.0	77.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	24.6%	13.1%	47.7%		24.6%	59.2%	59.2%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	28.0	13.0	57.0		28.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	21.0	21.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	18.4	18.4	18.4	18.4	18.4	51.4	11.9	69.6		28.0	85.7	85.7
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.40	0.09	0.54		0.22	0.66	0.66
v/c Ratio	0.28	0.58	0.28	0.47	0.67	0.73	0.57	0.67		0.47	0.56	0.02
Control Delay	53.9	60.0	9.5	62.1	64.3	36.2	69.6	25.1		36.6	8.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	53.9	60.0	9.5	62.1	64.3	36.2	69.6	25.1		36.6	8.0	0.3
LOS	D	E	A	E	E	D	E	C		D	A	A
Approach Delay		43.4			45.2			28.1			13.8	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	22	123	0	46	143	311	75	385		116	100	0
Queue Length 95th (ft)	50	178	38	86	202	386	129	553		172	313	m1
Internal Link Dist (ft)		567			706			579			424	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	177	444	447	207	444	656	187	1890		739	2334	1061
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	165	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.16	0.34	0.19	0.28	0.39	0.73	0.49	0.67		0.47	0.60	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 55 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	147	81	56	168	460	87	1191	25	330	1252	21
Future Volume (veh/h)	28	147	81	56	168	460	87	1191	25	330	1252	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	153	84	58	175	479	91	1241	26	344	1304	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	291	247	155	291	707	114	1561	33	1004	2391	1067
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.06	0.44	0.44	0.29	0.67	0.67
Sat Flow, veh/h	1210	1870	1585	1234	1870	1585	1781	3559	75	3456	3554	1585
Grp Volume(v), veh/h	29	153	84	58	175	479	91	619	648	344	1304	22
Grp Sat Flow(s),veh/h/ln	1210	1870	1585	1234	1870	1585	1781	1777	1857	1728	1777	1585
Q Serve(g_s), s	3.0	9.8	6.1	5.9	11.3	0.0	6.6	39.1	39.1	10.2	24.6	0.6
Cycle Q Clear(g_c), s	14.3	9.8	6.1	15.7	11.3	0.0	6.6	39.1	39.1	10.2	24.6	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	138	291	247	155	291	707	114	779	814	1004	2391	1067
V/C Ratio(X)	0.21	0.53	0.34	0.38	0.60	0.68	0.80	0.79	0.80	0.34	0.55	0.02
Avail Cap(c_a), veh/h	238	446	378	257	446	839	178	779	814	1004	2391	1067
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.8	50.5	48.9	57.7	51.1	28.6	60.0	31.5	31.5	36.3	11.0	7.1
Incr Delay (d2), s/veh	0.7	1.5	0.8	1.5	2.0	1.7	13.0	8.2	7.9	0.2	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.7	2.5	1.9	5.4	11.9	3.4	18.1	18.9	4.3	9.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	51.9	49.8	59.2	53.1	30.3	73.0	39.7	39.4	36.5	11.9	7.1
LnGrp LOS	E	D	D	E	D	C	E	D	D	D	B	A
Approach Vol, veh/h		266			712			1358			1670	
Approach Delay, s/veh		52.0			38.3			41.8			16.9	
Approach LOS		D			D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	42.8	62.0		25.2	12.3	92.5		25.2				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	28.0	* 57		31.0	13.0	72.0		31.0				
Max Q Clear Time (g_c+I1), s	12.2	41.1		16.3	8.6	26.6		17.7				
Green Ext Time (p_c), s	1.1	7.6		1.0	0.1	13.3		2.6				

Intersection Summary			
HCM 6th Ctrl Delay		31.5	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX B-III

YEAR 2045 BUILDOUT TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Future Volume (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.981				0.850			0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4989	0	3433	5085	1583	3433	5085	1583	3433	4943	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4989	0	3433	5085	1583	3433	5085	1583	3433	4943	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				165			150		43	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			833			926	
Travel Time (s)		17.8			16.7			12.6			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	327	1382	0	276	973	221	198	714	150	450	1852	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	25.0	48.0		20.0	43.0	43.0	12.0	43.0	43.0	19.0	50.0	
Total Split (%)	19.2%	36.9%		15.4%	33.1%	33.1%	9.2%	33.1%	33.1%	14.6%	38.5%	
Maximum Green (s)	21.0	43.0		16.0	38.0	38.0	8.0	38.0	38.0	15.0	45.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	21.0	41.7		14.6	35.4	35.4	8.0	38.0	38.0	17.6	47.6	
Actuated g/C Ratio	0.16	0.32		0.11	0.27	0.27	0.06	0.29	0.29	0.14	0.37	
v/c Ratio	1.15	0.86		0.72	0.70	0.40	0.94	0.48	0.26	0.97	1.01	
Control Delay	147.2	46.8		66.4	45.4	12.6	88.4	18.7	3.2	90.0	63.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	147.2	46.8		66.4	45.4	12.6	88.4	18.7	3.2	90.0	63.0	
LOS	F	D		E	D	B	F	B	A	F	E	
Approach Delay		66.0			44.4			29.5			68.3	
Approach LOS		E			D			C			E	
Queue Length 50th (ft)	~322	387		116	264	35	89	79	5	~223	~618	
Queue Length 95th (ft)	#513	449		164	313	103	#165	154	30	#336	#720	
Internal Link Dist (ft)		963			901			753			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	285	1664		422	1486	579	211	1486	568	466	1838	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.15	0.83		0.65	0.65	0.38	0.94	0.48	0.26	0.97	1.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 55 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 56.0		Intersection LOS: E	
Intersection Capacity Utilization 94.4%		ICU Level of Service F	
Analysis Period (min) 15			

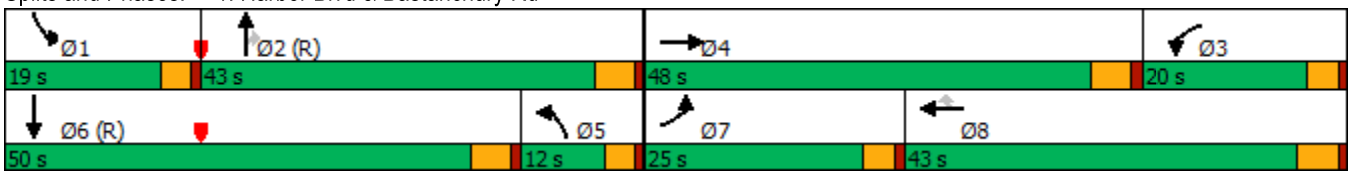
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



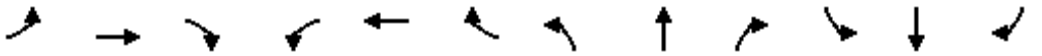
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	327	1211	171	276	973	221	198	714	150	450	1511	341
Future Volume (veh/h)	327	1211	171	276	973	221	198	714	150	450	1511	341
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	327	1211	171	276	973	221	198	714	150	450	1511	341
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1391	196	333	1277	396	332	1708	530	399	1443	324
Arrive On Green	0.16	0.31	0.31	0.10	0.25	0.25	0.19	0.67	0.67	0.12	0.35	0.35
Sat Flow, veh/h	1781	4521	638	3456	5106	1585	3456	5106	1585	3456	4170	936
Grp Volume(v), veh/h	327	912	470	276	973	221	198	714	150	450	1232	620
Grp Sat Flow(s),veh/h/ln	1781	1702	1755	1728	1702	1585	1728	1702	1585	1728	1702	1702
Q Serve(g_s), s	21.0	32.9	32.9	10.2	23.0	15.8	6.8	8.4	3.7	15.0	45.0	45.0
Cycle Q Clear(g_c), s	21.0	32.9	32.9	10.2	23.0	15.8	6.8	8.4	3.7	15.0	45.0	45.0
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	288	1047	540	333	1277	396	332	1708	530	399	1178	589
V/C Ratio(X)	1.14	0.87	0.87	0.83	0.76	0.56	0.60	0.42	0.28	1.13	1.05	1.05
Avail Cap(c_a), veh/h	288	1126	581	425	1493	463	332	1708	530	399	1178	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	42.6	42.6	57.7	45.2	42.5	50.2	15.7	8.3	57.5	42.5	42.5
Incr Delay (d2), s/veh	95.0	7.2	12.9	10.4	2.0	1.2	2.7	0.7	1.2	84.9	39.0	51.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.8	14.5	15.9	4.9	9.8	6.2	2.8	2.7	1.8	11.0	24.2	26.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	149.5	49.8	55.5	68.0	47.2	43.7	52.9	16.4	9.5	142.4	81.5	94.1
LnGrp LOS	F	D	E	E	D	D	D	B	A	F	F	F
Approach Vol, veh/h		1709			1470			1062			2302	
Approach Delay, s/veh		70.5			50.6			22.2			96.8	
Approach LOS		E			D			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	48.5	17.5	45.0	17.5	50.0	25.0	37.5
Change Period (Y+Rc), s	4.0	5.0	5.0	* 5	5.0	* 5	4.0	5.0
Max Green Setting (Gmax), s	15.0	38.0	16.0	* 43	8.0	* 45	21.0	38.0
Max Q Clear Time (g_c+I1), s	17.0	10.4	12.2	34.9	8.8	47.0	23.0	25.0
Green Ext Time (p_c), s	0.0	5.3	0.3	5.0	0.0	0.0	0.0	5.9

Intersection Summary	
HCM 6th Ctrl Delay	67.4
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



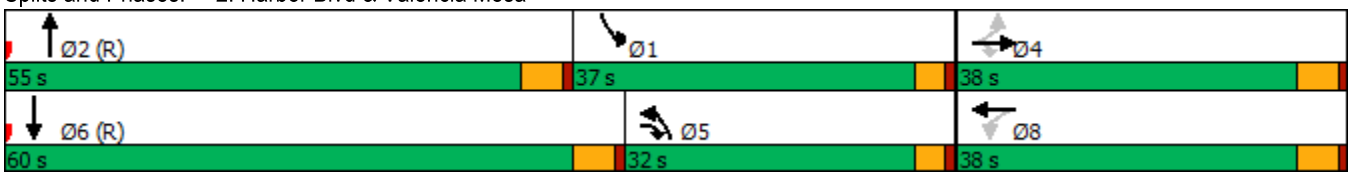
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Future Volume (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	175		0	230		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850		0.913			0.981			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1701	0	1770	4989	0	1770	4999	0
Flt Permitted	0.589			0.726			0.950			0.950		
Satd. Flow (perm)	1097	1863	1583	1352	1701	0	1770	4989	0	1770	4999	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			17		51			23			22	
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			3958			833	
Travel Time (s)		18.5			16.0			54.0			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	48	87	59	112	0	154	1016	0	244	1633	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								

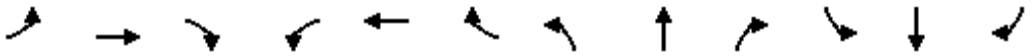
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	
Total Split (s)	38.0	38.0	32.0	38.0	38.0		32.0	55.0		37.0	60.0	
Total Split (%)	29.2%	29.2%	24.6%	29.2%	29.2%		24.6%	42.3%		28.5%	46.2%	
Maximum Green (s)	33.0	33.0	28.0	33.0	33.0		28.0	50.0		33.0	55.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	
Lead/Lag			Lag				Lag	Lead		Lag	Lead	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)	17.6	17.6	40.8	17.6	17.6		18.1	75.2		23.1	80.2	
Actuated g/C Ratio	0.14	0.14	0.31	0.14	0.14		0.14	0.58		0.18	0.62	
v/c Ratio	0.68	0.19	0.17	0.32	0.41		0.63	0.35		0.77	0.53	
Control Delay	73.9	48.0	23.0	52.4	30.8		50.9	9.2		45.4	5.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.9	48.0	23.0	52.4	30.8		50.9	9.2		45.4	5.9	
LOS	E	D	C	D	C		D	A		D	A	
Approach Delay		49.9			38.3			14.7			11.0	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	83	37	43	46	47		131	53		220	85	
Queue Length 95th (ft)	129	66	64	80	94		199	116		m231	m118	
Internal Link Dist (ft)		733			625			3878			753	
Turn Bay Length (ft)	55		85				175			230		
Base Capacity (vph)	278	472	512	343	469		381	2896		449	3093	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.36	0.10	0.17	0.17	0.24		0.40	0.35		0.54	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 33 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	48	87	59	47	65	154	889	127	244	1448	185
Future Volume (veh/h)	101	48	87	59	47	65	154	889	127	244	1448	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	48	87	59	47	65	154	889	127	244	1448	185
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	294	744	225	112	155	555	1737	247	624	1939	248
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.31	0.38	0.38	0.70	0.85	0.85
Sat Flow, veh/h	1281	1870	1585	1254	711	983	1781	4516	642	1781	4584	585
Grp Volume(v), veh/h	101	48	87	59	0	112	154	669	347	244	1075	558
Grp Sat Flow(s),veh/h/ln	1281	1870	1585	1254	0	1693	1781	1702	1755	1781	1702	1765
Q Serve(g_s), s	10.0	2.9	0.0	5.5	0.0	7.8	8.5	19.6	19.7	7.3	17.1	17.2
Cycle Q Clear(g_c), s	17.8	2.9	0.0	8.4	0.0	7.8	8.5	19.6	19.7	7.3	17.1	17.2
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.37	1.00		0.33
Lane Grp Cap(c), veh/h	181	294	744	225	0	267	555	1309	675	624	1440	747
V/C Ratio(X)	0.56	0.16	0.12	0.26	0.00	0.42	0.28	0.51	0.51	0.39	0.75	0.75
Avail Cap(c_a), veh/h	304	475	897	346	0	430	555	1309	675	624	1440	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.90	0.90	0.90	0.16	0.16	0.16
Uniform Delay (d), s/veh	57.4	47.4	19.4	51.0	0.0	49.4	33.7	30.6	30.7	13.7	7.1	7.1
Incr Delay (d2), s/veh	2.7	0.3	0.1	0.6	0.0	1.1	0.2	1.3	2.5	0.1	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	1.4	1.5	1.8	0.0	3.4	3.6	7.9	8.4	2.4	2.8	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.1	47.6	19.4	51.6	0.0	50.5	33.9	31.9	33.2	13.8	7.7	8.2
LnGrp LOS	E	D	B	D	A	D	C	C	C	B	A	A
Approach Vol, veh/h		236			171			1170			1877	
Approach Delay, s/veh		42.6			50.9			32.6			8.6	
Approach LOS		D			D			C			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	49.5	55.0		25.5	44.5	60.0		25.5				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	33.0	50.0		33.0	28.0	55.0		33.0				
Max Q Clear Time (g_c+I1), s	9.3	21.7		19.8	10.5	19.2		10.4				
Green Ext Time (p_c), s	0.6	6.6		0.7	0.3	14.2		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		21.2	
HCM 6th LOS		C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Future Volume (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.992	
Flt Protected	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1706	1583	1770	5085	1583	1770	5045	0
Flt Permitted	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1706	1583	1770	5085	1583	1770	5045	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			169			388		8	
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			3958	
Travel Time (s)		23.8			15.7			5.5			54.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Shared Lane Traffic (%)				43%								
Lane Group Flow (vph)	51	84	9	441	448	174	22	1059	494	60	1544	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	
Total Split (s)	12.0	12.0	12.0	44.0	44.0	44.0	10.0	60.0		14.0	64.0	
Total Split (%)	9.2%	9.2%	9.2%	33.8%	33.8%	33.8%	7.7%	46.2%		10.8%	49.2%	
Maximum Green (s)	7.0	7.0	7.0	39.0	39.0	39.0	6.0	55.0		10.0	59.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	
Pedestrian Calls (#/hr)				5	5	5		5			5	
Act Effct Green (s)	7.0	7.0	7.0	37.3	37.3	37.3	6.0	59.9	130.0	8.8	64.7	
Actuated g/C Ratio	0.05	0.05	0.05	0.29	0.29	0.29	0.05	0.46	1.00	0.07	0.50	
v/c Ratio	0.54	0.84	0.04	0.92	0.92	0.30	0.27	0.45	0.31	0.50	0.61	
Control Delay	80.6	114.8	0.3	69.6	69.6	6.8	55.7	16.0	0.5	72.8	18.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	80.6	114.8	0.3	69.6	69.6	6.8	55.7	16.0	0.5	72.8	18.9	
LOS	F	F	A	E	E	A	E	B	A	E	B	
Approach Delay		95.6			59.3			11.7			20.9	
Approach LOS		F			E			B			C	
Queue Length 50th (ft)	43	72	0	371	377	3	19	216	0	44	409	
Queue Length 95th (ft)	#95	#170	0	#569	#574	56	45	143	2	m89	539	
Internal Link Dist (ft)		791			959			200			3878	
Turn Bay Length (ft)	85						95			150		
Base Capacity (vph)	95	100	212	504	511	593	81	2343	1583	136	2516	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	59	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.54	0.84	0.04	0.88	0.88	0.29	0.27	0.45	0.31	0.44	0.63	

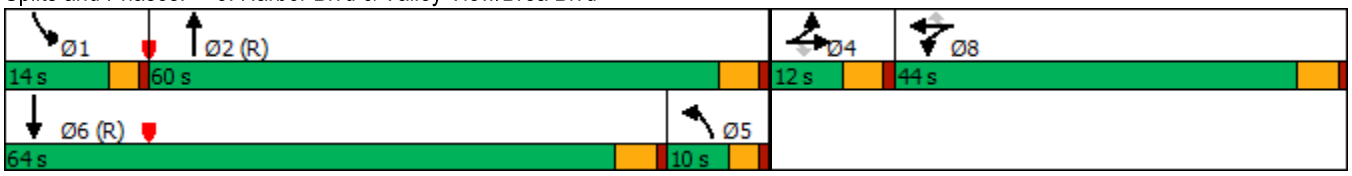
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 120 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

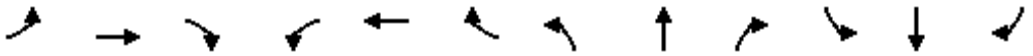
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	84	9	773	116	174	22	1059	494	60	1464	80
Future Volume (veh/h)	51	84	9	773	116	174	22	1059	494	60	1464	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	84	9	856	0	0	22	1059	0	60	1464	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	101	85	939	0		134	2518		77	2249	123
Arrive On Green	0.05	0.05	0.05	0.26	0.00	0.00	0.07	0.49	0.00	0.04	0.45	0.45
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	5106	1585	1781	4955	271
Grp Volume(v), veh/h	51	84	9	856	0	0	22	1059	0	60	1006	538
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1702	1585	1781	1702	1822
Q Serve(g_s), s	3.6	5.8	0.7	30.3	0.0	0.0	1.5	17.2	0.0	4.3	29.8	29.8
Cycle Q Clear(g_c), s	3.6	5.8	0.7	30.3	0.0	0.0	1.5	17.2	0.0	4.3	29.8	29.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	96	101	85	939	0		134	2518		77	1545	827
V/C Ratio(X)	0.53	0.83	0.11	0.91	0.00		0.16	0.42		0.78	0.65	0.65
Avail Cap(c_a), veh/h	96	101	85	1069	0		134	2518		137	1545	827
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.86	0.86	0.86
Uniform Delay (d), s/veh	59.9	60.9	58.5	46.4	0.0	0.0	56.3	21.1	0.0	61.6	27.5	27.5
Incr Delay (d2), s/veh	5.5	42.4	0.5	10.7	0.0	0.0	0.6	0.5	0.0	13.4	1.8	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.0	0.3	14.4	0.0	0.0	0.7	6.9	0.0	2.2	11.8	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.4	103.3	59.1	57.1	0.0	0.0	56.9	21.6	0.0	74.9	29.4	30.9
LnGrp LOS	E	F	E	E	A		E	C		E	C	C
Approach Vol, veh/h		144			856			1081			1604	
Approach Delay, s/veh		87.1			57.1			22.3			31.6	
Approach LOS		F			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	69.1		12.0	14.7	64.0		39.3				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	10.0	55.0		7.0	6.0	* 59		39.0				
Max Q Clear Time (g_c+I1), s	6.3	19.2		7.8	3.5	31.8		32.3				
Green Ext Time (p_c), s	0.0	8.9		0.0	0.0	11.2		2.0				

Intersection Summary			
HCM 6th Ctrl Delay		37.0	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Future Volume (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.949				0.850		0.997			0.997	
Flt Protected		0.979			0.968		0.950			0.950		
Satd. Flow (prot)	0	1731	0	0	1803	1583	1770	5070	0	1770	3529	0
Flt Permitted		0.845			0.743		0.043			0.154		
Satd. Flow (perm)	0	1494	0	0	1384	1583	80	5070	0	287	3529	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				53		6			4	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			645			190			410	
Travel Time (s)		10.6			17.6			3.7			8.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	35	53	80	1494	0	63	2291	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		15.4			15.4	15.4	104.6	104.6		104.6	104.6	
Actuated g/C Ratio		0.12			0.12	0.12	0.80	0.80		0.80	0.80	
v/c Ratio		0.59			0.21	0.23	1.25	0.37		0.27	0.81	
Control Delay		58.5			51.4	13.7	204.0	3.2		2.8	7.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		58.5			51.4	13.7	204.0	3.2		2.8	7.4	
LOS		E			D	B	F	A		A	A	
Approach Delay		58.5			28.7			13.4			7.3	
Approach LOS		E			C			B			A	
Queue Length 50th (ft)		80			28	0	~84	78		0	200	
Queue Length 95th (ft)		129			54	35	m#168	107		m7	286	
Internal Link Dist (ft)		310			565			110			330	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		332			298	382	64	4080		230	2840	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	28	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.34			0.12	0.14	1.25	0.37		0.27	0.81	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 87 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

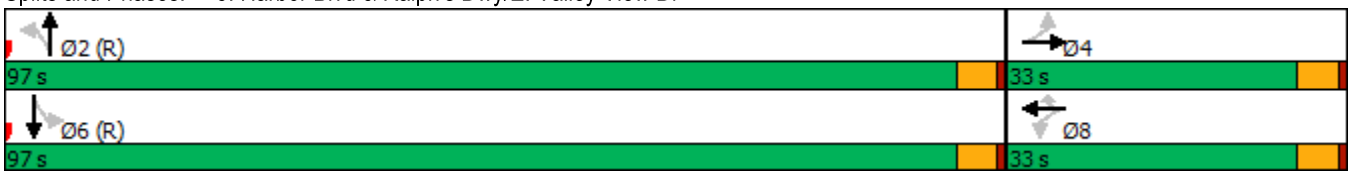
Queue shown is maximum after two cycles.

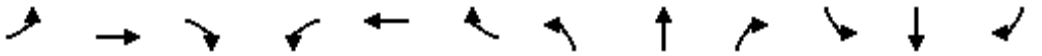
\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr



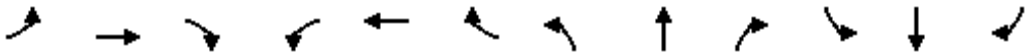


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	22	42	23	12	53	80	1461	33	63	2242	49
Future Volume (veh/h)	48	22	42	23	12	53	80	1461	33	63	2242	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	22	42	23	12	53	80	1461	33	63	2242	49
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	35	52	116	52	138	145	4296	97	327	2973	65
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.84	0.84	0.84	0.84	0.84	0.84
Sat Flow, veh/h	599	405	602	811	596	1585	162	5137	116	352	3556	77
Grp Volume(v), veh/h	112	0	0	35	0	53	80	968	526	63	1116	1175
Grp Sat Flow(s),veh/h/ln	1606	0	0	1407	0	1585	162	1702	1849	352	1777	1856
Q Serve(g_s), s	6.0	0.0	0.0	0.0	0.0	4.1	56.9	8.5	8.5	6.5	36.0	36.7
Cycle Q Clear(g_c), s	8.8	0.0	0.0	2.8	0.0	4.1	93.6	8.5	8.5	14.9	36.0	36.7
Prop In Lane	0.43		0.37	0.66		1.00	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	179	0	0	168	0	138	145	2847	1547	327	1486	1552
V/C Ratio(X)	0.63	0.00	0.00	0.21	0.00	0.38	0.55	0.34	0.34	0.19	0.75	0.76
Avail Cap(c_a), veh/h	378	0	0	359	0	341	145	2847	1547	327	1486	1552
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.1	0.0	0.0	55.4	0.0	56.1	25.6	2.4	2.4	4.1	4.7	4.7
Incr Delay (d2), s/veh	3.6	0.0	0.0	0.6	0.0	1.8	14.3	0.3	0.6	1.3	3.5	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.0	1.1	0.0	1.7	2.6	2.0	2.3	0.5	9.9	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	0.0	56.0	0.0	57.8	39.9	2.8	3.0	5.5	8.2	8.2
LnGrp LOS	E	A	A	E	A	E	D	A	A	A	A	A
Approach Vol, veh/h		112			88			1574			2354	
Approach Delay, s/veh		61.6			57.1			4.7			8.2	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		113.7		16.3		113.7		16.3				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		95.6		10.8		38.7		6.1				
Green Ext Time (p_c), s		0.0		0.5		39.1		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			9.4									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Future Volume (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3518	0	3433	3539	1583
Flt Permitted	0.440			0.407			0.950			0.950		
Satd. Flow (perm)	820	1863	1583	758	1863	1583	1770	3518	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		4				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		538			720			654			541	
Travel Time (s)		10.5			14.0			12.7			10.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	176	73	53	165	466	101	1135	0	639	1592	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

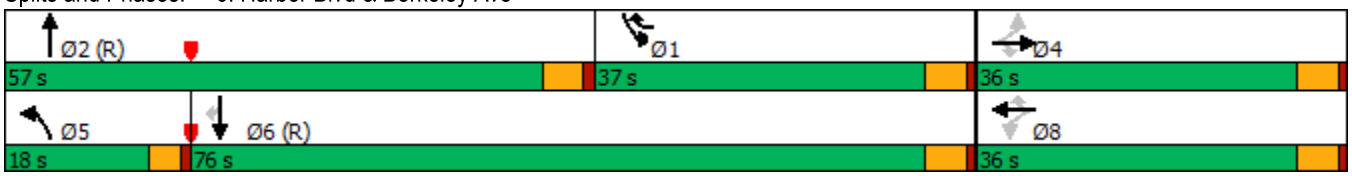


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	11.0	10.0	30.0		11.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	37.0	18.0	57.0		37.0	76.0	76.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	28.5%	13.8%	43.8%		28.5%	58.5%	58.5%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	32.0	14.0	52.0		32.0	71.0	71.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.0	19.0	19.0	19.0	19.0	56.0	12.0	64.0		32.0	85.0	85.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.43	0.09	0.49		0.25	0.65	0.65
v/c Ratio	0.14	0.65	0.24	0.48	0.61	0.66	0.62	0.66		0.76	0.69	0.02
Control Delay	47.1	62.2	6.5	63.0	60.1	30.0	73.1	28.2		35.9	7.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.0
Total Delay	47.1	62.2	6.5	63.0	60.1	30.0	73.1	28.2		35.9	7.8	0.2
LOS	D	E	A	E	E	C	E	C		D	A	A
Approach Delay		45.9			39.8			31.8			15.7	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	13	144	0	42	134	281	83	357		230	178	0
Queue Length 95th (ft)	33	197	27	78	185	330	143	530		310	468	m0
Internal Link Dist (ft)		458			640			574			461	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	195	444	447	180	444	710	192	1732		845	2313	1052
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	240	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.09	0.40	0.16	0.29	0.37	0.66	0.53	0.66		0.76	0.77	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 115 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 80.7%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	176	73	53	165	466	101	1092	43	639	1592	19
Future Volume (veh/h)	17	176	73	53	165	466	101	1092	43	639	1592	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	176	73	53	165	466	101	1092	43	639	1592	19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	304	258	147	304	768	125	1394	55	1112	2344	1045
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.40	0.40	0.32	0.66	0.66
Sat Flow, veh/h	1221	1870	1585	1209	1870	1585	1781	3485	137	3456	3554	1585
Grp Volume(v), veh/h	17	176	73	53	165	466	101	557	578	639	1592	19
Grp Sat Flow(s),veh/h/ln	1221	1870	1585	1209	1870	1585	1781	1777	1846	1728	1777	1585
Q Serve(g_s), s	1.7	11.3	5.3	5.5	10.5	0.0	7.3	35.6	35.6	20.0	35.9	0.5
Cycle Q Clear(g_c), s	12.2	11.3	5.3	16.8	10.5	0.0	7.3	35.6	35.6	20.0	35.9	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	155	304	258	147	304	768	125	711	738	1112	2344	1045
V/C Ratio(X)	0.11	0.58	0.28	0.36	0.54	0.61	0.81	0.78	0.78	0.57	0.68	0.02
Avail Cap(c_a), veh/h	248	446	378	238	446	888	192	711	738	1112	2344	1045
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	50.3	47.8	58.1	50.0	24.5	59.6	34.1	34.1	36.7	13.7	7.6
Incr Delay (d2), s/veh	0.3	1.7	0.6	1.5	1.5	0.9	13.6	8.4	8.1	0.7	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	5.4	2.1	1.7	5.0	10.4	3.7	16.7	17.3	8.5	13.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.9	52.0	48.4	59.5	51.5	25.4	73.2	42.5	42.2	37.4	15.3	7.7
LnGrp LOS	E	D	D	E	D	C	E	D	D	D	B	A
Approach Vol, veh/h		266			684			1236			2250	
Approach Delay, s/veh		51.3			34.3			44.9			21.5	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	46.8	57.0		26.2	13.1	90.7		26.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	32.0	52.0		31.0	14.0	71.0		31.0				
Max Q Clear Time (g_c+I1), s	22.0	37.6		14.2	9.3	37.9		18.8				
Green Ext Time (p_c), s	1.8	6.3		1.1	0.1	16.2		2.3				

Intersection Summary			
HCM 6th Ctrl Delay		31.8	
HCM 6th LOS		C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Future Volume (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.985				0.850			0.850		0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4872	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4872	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				206			126		79	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			833			926	
Travel Time (s)		17.8			16.7			12.6			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Shared Lane Traffic (%)												
Lane Group Flow (vph)	373	1325	0	169	1048	338	198	1564	229	379	1361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	55.0		15.0	43.0	43.0	14.0	45.0	45.0	15.0	46.0	
Total Split (%)	20.8%	42.3%		11.5%	33.1%	33.1%	10.8%	34.6%	34.6%	11.5%	35.4%	
Maximum Green (s)	23.0	50.0		11.0	38.0	38.0	10.0	40.0	40.0	11.0	41.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	25.5	43.8		17.2	35.5	35.5	10.0	40.0	40.0	11.0	41.0	
Actuated g/C Ratio	0.20	0.34		0.13	0.27	0.27	0.08	0.31	0.31	0.08	0.32	
v/c Ratio	1.07	0.78		0.37	0.75	0.58	0.75	1.00	0.40	1.31	0.86	
Control Delay	119.2	41.5		55.9	46.9	19.1	52.6	45.1	3.7	206.3	45.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	119.2	41.5		55.9	46.9	19.1	52.6	45.1	3.7	206.3	45.6	
LOS	F	D		E	D	B	D	D	A	F	D	
Approach Delay		58.6			41.9			41.1			80.6	
Approach LOS		E			D			D			F	
Queue Length 50th (ft)	~369	361		68	291	90	88	~500	1	~210	373	
Queue Length 95th (ft)	#577	389		110	341	189	m#135	m#593	m9	#313	436	
Internal Link Dist (ft)		963			901			753			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	347	1937		453	1486	608	264	1564	574	290	1590	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.07	0.68		0.37	0.71	0.56	0.75	1.00	0.40	1.31	0.86	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 85 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.31
Intersection Signal Delay: 55.4 Intersection LOS: E
Intersection Capacity Utilization 96.9% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.

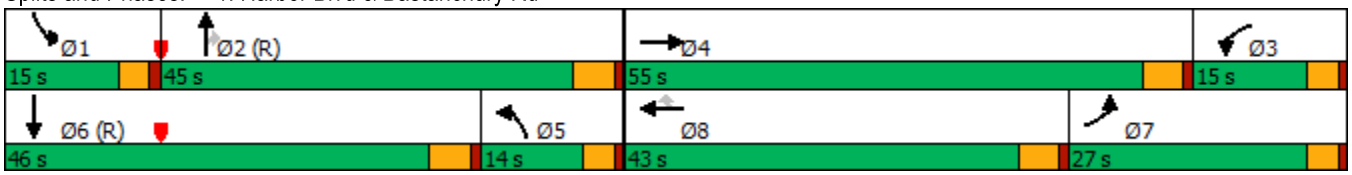
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Future Volume (veh/h)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	373	1194	131	169	1048	338	198	1564	229	379	979	382
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1464	161	404	1294	402	373	1769	549	292	1139	444
Arrive On Green	0.18	0.31	0.31	0.12	0.25	0.25	0.22	0.69	0.69	0.08	0.32	0.32
Sat Flow, veh/h	1781	4670	512	3456	5106	1585	3456	5106	1585	3456	3612	1409
Grp Volume(v), veh/h	373	870	455	169	1048	338	198	1564	229	379	923	438
Grp Sat Flow(s),veh/h/ln	1781	1702	1778	1728	1702	1585	1728	1702	1585	1728	1702	1617
Q Serve(g_s), s	23.0	30.6	30.7	5.9	25.1	20.9	6.6	31.6	5.8	11.0	33.1	33.1
Cycle Q Clear(g_c), s	23.0	30.6	30.7	5.9	25.1	20.9	6.6	31.6	5.8	11.0	33.1	33.1
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.87
Lane Grp Cap(c), veh/h	315	1067	558	404	1294	402	373	1769	549	292	1074	510
V/C Ratio(X)	1.18	0.82	0.82	0.42	0.81	0.84	0.53	0.88	0.42	1.30	0.86	0.86
Avail Cap(c_a), veh/h	315	1309	684	404	1493	463	373	1769	549	292	1074	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.70	0.70	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	41.1	41.2	53.3	45.6	29.0	48.0	17.9	7.3	59.5	41.8	41.8
Incr Delay (d2), s/veh	110.2	3.4	6.3	0.7	3.0	11.7	1.0	5.0	1.6	156.2	9.0	17.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.7	13.0	14.1	2.6	10.7	9.1	2.7	6.5	2.5	11.0	14.6	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	163.7	44.5	47.5	54.0	48.6	40.8	49.0	22.8	8.9	215.7	50.8	58.8
LnGrp LOS	F	D	D	D	D	D	D	C	A	F	D	E
Approach Vol, veh/h		1698			1555			1991			1740	
Approach Delay, s/veh		71.5			47.5			23.8			88.7	
Approach LOS		E			D			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	50.0	19.2	45.8	19.0	46.0	27.0	38.0
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	5.0	* 5	4.0	5.0
Max Green Setting (Gmax), s	11.0	40.0	11.0	50.0	10.0	* 41	23.0	38.0
Max Q Clear Time (g_c+I1), s	13.0	33.6	7.9	32.7	8.6	35.1	25.0	27.1
Green Ext Time (p_c), s	0.0	4.9	0.1	8.1	0.1	3.8	0.0	5.9

Intersection Summary	
HCM 6th Ctrl Delay	56.9
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Future Volume (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	175		0	230		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850		0.869			0.995			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1619	0	1770	5060	0	1770	5019	0
Flt Permitted	0.195			0.742			0.950			0.950		
Satd. Flow (perm)	363	1863	1583	1382	1619	0	1770	5060	0	1770	5019	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			63		253			5			16	
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			3958			833	
Travel Time (s)		18.5			16.0			54.0			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	23	139	76	349	0	50	1625	0	119	1115	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	
Total Split (s)	50.0	50.0	13.0	50.0	50.0		13.0	60.0		20.0	67.0	
Total Split (%)	38.5%	38.5%	10.0%	38.5%	38.5%		10.0%	46.2%		15.4%	51.5%	
Maximum Green (s)	45.0	45.0	9.0	45.0	45.0		9.0	55.0		16.0	62.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)	29.6	29.6	43.3	29.6	29.6		8.7	70.4		16.0	77.7	
Actuated g/C Ratio	0.23	0.23	0.33	0.23	0.23		0.07	0.54		0.12	0.60	
v/c Ratio	1.52	0.05	0.24	0.24	0.62		0.42	0.59		0.55	0.37	
Control Delay	321.1	34.3	15.3	39.5	16.1		96.9	6.5		50.3	5.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	321.1	34.3	15.3	39.5	16.1		96.9	6.5		50.3	5.6	
LOS	F	C	B	D	B		F	A		D	A	
Approach Delay		150.0			20.3			9.2			9.9	
Approach LOS		F			C			A			A	
Queue Length 50th (ft)	~146	15	44	53	67		44	53		106	69	
Queue Length 95th (ft)	#244	34	78	84	147		m63	82		m134	112	
Internal Link Dist (ft)		733			625			3878			753	
Turn Bay Length (ft)	55		85				175			230		
Base Capacity (vph)	125	644	579	478	725		130	2743		217	3006	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	1.00	0.04	0.24	0.16	0.48		0.38	0.59		0.55	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 81 (62%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.52			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 82.1%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

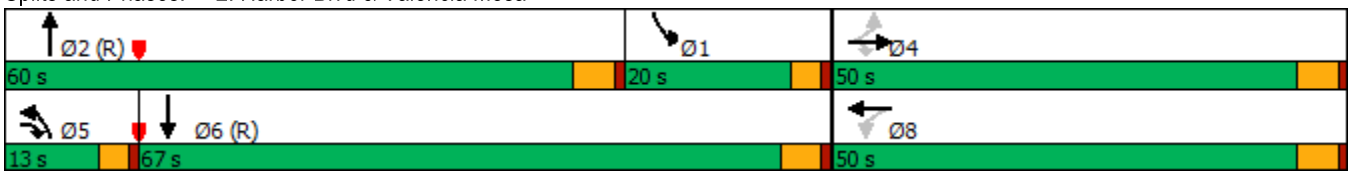
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	23	139	76	44	305	50	1569	56	119	1020	95
Future Volume (veh/h)	125	23	139	76	44	305	50	1569	56	119	1020	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	23	139	76	44	305	50	1569	56	119	1020	95
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	605	574	441	66	457	69	2141	76	246	2521	234
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.04	0.42	0.42	0.28	1.00	1.00
Sat Flow, veh/h	1032	1870	1585	1224	204	1412	1781	5061	181	1781	4753	442
Grp Volume(v), veh/h	125	23	139	76	0	349	50	1055	570	119	730	385
Grp Sat Flow(s),veh/h/ln	1032	1870	1585	1224	0	1616	1781	1702	1838	1781	1702	1791
Q Serve(g_s), s	15.5	1.1	8.0	5.9	0.0	24.2	3.6	33.7	33.7	7.3	0.0	0.0
Cycle Q Clear(g_c), s	39.7	1.1	8.0	7.0	0.0	24.2	3.6	33.7	33.7	7.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.10	1.00		0.25
Lane Grp Cap(c), veh/h	197	605	574	441	0	523	69	1440	778	246	1805	950
V/C Ratio(X)	0.64	0.04	0.24	0.17	0.00	0.67	0.73	0.73	0.73	0.48	0.40	0.41
Avail Cap(c_a), veh/h	220	647	610	469	0	559	123	1440	778	246	1805	950
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.77	0.77	0.77	0.50	0.50	0.50
Uniform Delay (d), s/veh	55.1	30.1	29.0	32.5	0.0	37.9	61.8	31.4	31.4	43.2	0.0	0.0
Incr Delay (d2), s/veh	5.0	0.0	0.2	0.2	0.0	2.8	10.7	2.6	4.7	0.7	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.5	3.1	1.8	0.0	10.0	1.8	13.5	15.1	3.0	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.0	30.1	29.2	32.7	0.0	40.7	72.5	33.9	36.1	43.9	0.3	0.6
LnGrp LOS	E	C	C	C	A	D	E	C	D	D	A	A
Approach Vol, veh/h		287			425			1675			1234	
Approach Delay, s/veh		42.7			39.3			35.8			4.6	
Approach LOS		D			D			D			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	60.0		47.0	9.0	73.9		47.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	* 55		45.0	9.0	62.0		45.0				
Max Q Clear Time (g_c+I1), s	9.3	35.7		41.7	5.6	2.0		26.2				
Green Ext Time (p_c), s	0.1	10.1		0.4	0.0	8.6		2.5				

Intersection Summary			
HCM 6th Ctrl Delay		26.1	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Future Volume (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.994	
Flt Protected	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1708	1583	1770	5085	1583	1770	5055	0
Flt Permitted	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1708	1583	1770	5085	1583	1770	5055	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			134			453		7	
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			3958	
Travel Time (s)		23.8			15.7			5.5			54.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	68	179	26	340	344	117	9	1447	788	102	1201	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	
Total Split (s)	19.0	19.0	19.0	36.0	36.0	36.0	10.0	62.0		13.0	65.0	
Total Split (%)	14.6%	14.6%	14.6%	27.7%	27.7%	27.7%	7.7%	47.7%		10.0%	50.0%	
Maximum Green (s)	14.0	14.0	14.0	31.0	31.0	31.0	6.0	57.0		9.0	60.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	
Pedestrian Calls (#/hr)				5	5	5		5			5	
Act Effct Green (s)	14.0	14.0	14.0	29.2	29.2	29.2	6.0	58.5	130.0	9.3	69.8	
Actuated g/C Ratio	0.11	0.11	0.11	0.22	0.22	0.22	0.05	0.45	1.00	0.07	0.54	
v/c Ratio	0.36	0.90	0.09	0.90	0.90	0.25	0.11	0.63	0.50	0.80	0.44	
Control Delay	59.8	99.0	0.6	76.2	75.2	5.9	50.8	19.1	1.3	110.5	10.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.8	99.0	0.6	76.2	75.2	5.9	50.8	19.1	1.3	110.5	10.7	
LOS	E	F	A	E	E	A	D	B	A	F	B	
Approach Delay		79.8			65.5			13.0			18.5	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	54	151	0	289	292	0	8	363	0	83	154	
Queue Length 95th (ft)	103	#290	0	#460	#463	38	m12	288	0	#183	82	
Internal Link Dist (ft)		791			959			200			3878	
Turn Bay Length (ft)	85						95			150		
Base Capacity (vph)	190	200	290	400	407	479	81	2288	1583	127	2719	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.36	0.90	0.09	0.85	0.85	0.24	0.11	0.63	0.50	0.80	0.44	

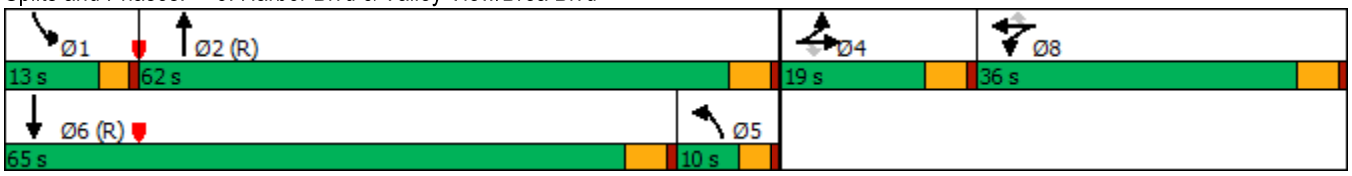
Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 16 (12%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 27.6 Intersection LOS: C
Intersection Capacity Utilization 77.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	179	26	587	97	117	9	1447	788	102	1151	50
Future Volume (veh/h)	68	179	26	587	97	117	9	1447	788	102	1151	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	179	26	656	0	0	9	1447	0	102	1151	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	201	171	730	0		128	2410		123	2316	101
Arrive On Green	0.11	0.11	0.11	0.20	0.00	0.00	0.07	0.47	0.00	0.07	0.46	0.46
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	5106	1585	1781	5017	218
Grp Volume(v), veh/h	68	179	26	656	0	0	9	1447	0	102	781	420
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1702	1585	1781	1702	1831
Q Serve(g_s), s	4.6	12.3	1.9	23.3	0.0	0.0	0.6	27.1	0.0	7.3	20.8	20.9
Cycle Q Clear(g_c), s	4.6	12.3	1.9	23.3	0.0	0.0	0.6	27.1	0.0	7.3	20.8	20.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	192	201	171	730	0		128	2410		123	1571	845
V/C Ratio(X)	0.35	0.89	0.15	0.90	0.00		0.07	0.60		0.83	0.50	0.50
Avail Cap(c_a), veh/h	192	201	171	850	0		128	2410		123	1571	845
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	53.8	57.2	52.6	50.4	0.0	0.0	56.3	25.3	0.0	59.7	24.5	24.5
Incr Delay (d2), s/veh	1.1	34.8	0.4	11.3	0.0	0.0	0.2	1.1	0.0	33.7	1.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	7.8	0.8	11.3	0.0	0.0	0.3	11.0	0.0	4.4	8.1	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.9	92.0	53.0	61.6	0.0	0.0	56.5	26.4	0.0	93.5	25.5	26.4
LnGrp LOS	D	F	D	E	A		E	C		F	C	C
Approach Vol, veh/h		273			656			1456			1303	
Approach Delay, s/veh		79.0			61.6			26.6			31.1	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	66.4		19.0	14.4	65.0		31.6				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	9.0	57.0		14.0	6.0	* 60		31.0				
Max Q Clear Time (g_c+I1), s	9.3	29.1		14.3	2.6	22.9		25.3				
Green Ext Time (p_c), s	0.0	12.4		0.0	0.0	8.6		1.3				

Intersection Summary			
HCM 6th Ctrl Delay		38.3	
HCM 6th LOS		D	

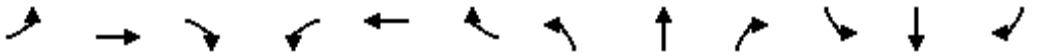
Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Future Volume (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.954				0.850		0.998			0.995	
Flt Protected		0.974			0.977		0.950			0.950		
Satd. Flow (prot)	0	1731	0	0	1820	1583	1770	5075	0	1770	3522	0
Flt Permitted		0.795			0.780		0.087			0.063		
Satd. Flow (perm)	0	1413	0	0	1453	1583	162	5075	0	117	3522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				19		3			6	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			645			190			410	
Travel Time (s)		10.6			17.6			3.7			8.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	252	0	0	66	62	96	2130	0	50	1766	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		25.1			25.1	25.1	94.9	94.9		94.9	94.9	
Actuated g/C Ratio		0.19			0.19	0.19	0.73	0.73		0.73	0.73	
v/c Ratio		0.88			0.24	0.19	0.81	0.58		0.59	0.69	
Control Delay		76.3			45.3	32.0	40.5	6.1		31.7	4.1	
Queue Delay		0.0			0.0	0.0	0.0	0.3		0.0	0.0	
Total Delay		76.3			45.3	32.0	40.5	6.4		31.7	4.1	
LOS		E			D	C	D	A		C	A	
Approach Delay		76.3			38.9			7.9			4.8	
Approach LOS		E			D			A			A	
Queue Length 50th (ft)		190			46	30	73	203		2	116	
Queue Length 95th (ft)		#322			89	70	m29	m167		m#34	91	
Internal Link Dist (ft)		310			565			110			330	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		318			312	355	118	3704		85	2572	
Starvation Cap Reductn		0			0	0	0	731		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.79			0.21	0.17	0.81	0.72		0.59	0.69	

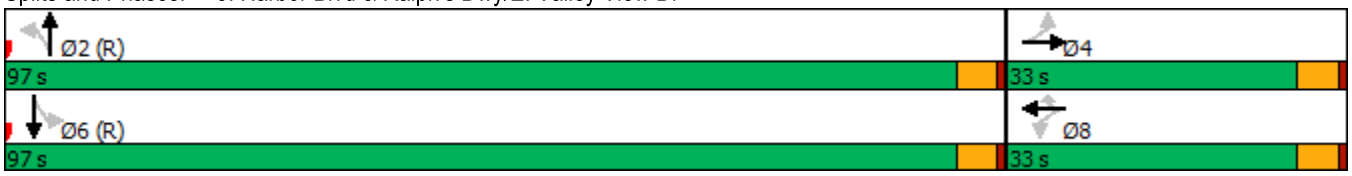
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 111 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 11.4		Intersection LOS: B	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	29	86	31	35	62	96	2104	26	50	1713	53
Future Volume (veh/h)	137	29	86	31	35	62	96	2104	26	50	1713	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	137	29	86	31	35	62	96	2104	26	50	1713	53
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	34	95	146	152	286	190	3861	48	163	2613	81
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	826	186	524	585	841	1585	271	5199	64	189	3519	109
Grp Volume(v), veh/h	252	0	0	66	0	62	96	1377	753	50	862	904
Grp Sat Flow(s),veh/h/ln	1537	0	0	1426	0	1585	271	1702	1859	189	1777	1851
Q Serve(g_s), s	16.2	0.0	0.0	0.0	0.0	4.3	36.0	22.7	22.8	20.2	31.5	31.9
Cycle Q Clear(g_c), s	20.8	0.0	0.0	4.6	0.0	4.3	67.9	22.7	22.8	42.9	31.5	31.9
Prop In Lane	0.54		0.34	0.47		1.00	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	320	0	0	298	0	286	190	2528	1380	163	1320	1375
V/C Ratio(X)	0.79	0.00	0.00	0.22	0.00	0.22	0.51	0.54	0.55	0.31	0.65	0.66
Avail Cap(c_a), veh/h	372	0	0	352	0	341	190	2528	1380	163	1320	1375
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	0.0	0.0	45.4	0.0	45.4	25.5	7.2	7.2	16.5	8.4	8.4
Incr Delay (d2), s/veh	9.4	0.0	0.0	0.4	0.0	0.4	9.3	0.8	1.6	4.8	2.5	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	0.0	1.9	0.0	1.8	2.7	7.5	8.4	1.1	11.3	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	0.0	45.7	0.0	45.8	34.8	8.1	8.8	21.3	10.9	10.9
LnGrp LOS	E	A	A	D	A	D	C	A	A	C	B	B
Approach Vol, veh/h		252			128			2226			1816	
Approach Delay, s/veh		61.3			45.8			9.5			11.2	
Approach LOS		E			D			A			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		101.5		28.5		101.5		28.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		69.9		22.8		44.9		6.6				
Green Ext Time (p_c), s		17.5		0.7		24.9		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			14.2									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Future Volume (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3529	0	3433	3539	1583
Flt Permitted	0.425			0.488			0.950			0.950		
Satd. Flow (perm)	792	1863	1583	909	1863	1583	1770	3529	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		2				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		538			720			654			541	
Travel Time (s)		10.5			14.0			12.7			10.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	147	81	59	168	750	87	1464	0	412	1467	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	35.0	16.0	59.0		35.0	78.0	78.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	26.9%	12.3%	45.4%		26.9%	60.0%	60.0%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	31.0	12.0	54.0		31.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	18.6	18.6	18.6	18.6	18.6	54.6	10.9	66.4		31.0	86.5	86.5
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.42	0.08	0.51		0.24	0.67	0.67
v/c Ratio	0.25	0.55	0.27	0.46	0.63	1.08	0.59	0.81		0.50	0.62	0.02
Control Delay	51.6	58.3	8.6	59.9	61.9	92.1	73.4	32.1		28.9	4.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	51.6	58.3	8.6	59.9	61.9	92.1	73.4	32.1		28.9	4.4	0.1
LOS	D	E	A	E	E	F	E	C		C	A	A
Approach Delay		41.8			84.9			34.4			9.7	
Approach LOS		D			F			C			A	
Queue Length 50th (ft)	22	119	0	47	137	~698	71	511		141	55	0
Queue Length 95th (ft)	47	167	34	83	188	#799	128	#814		m178	291	m0
Internal Link Dist (ft)		458			640			574			461	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	188	444	447	216	444	693	167	1803		818	2355	1070
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	190	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.15	0.33	0.18	0.27	0.38	1.08	0.52	0.81		0.50	0.68	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 6 (5%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 35.3		Intersection LOS: D	
Intersection Capacity Utilization 103.7%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

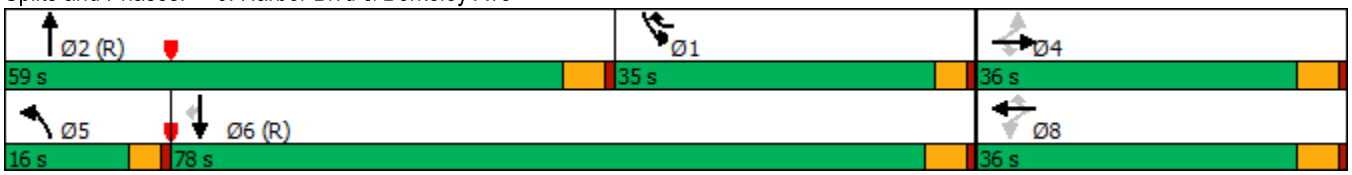
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	147	81	59	168	750	87	1438	26	412	1467	21
Future Volume (veh/h)	28	147	81	59	168	750	87	1438	26	412	1467	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	147	81	59	168	750	87	1438	26	412	1467	21
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	446	378	271	446	744	109	1483	27	797	2106	939
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.06	0.42	0.42	0.23	0.59	0.59
Sat Flow, veh/h	1217	1870	1585	1241	1870	1585	1781	3571	65	3456	3554	1585
Grp Volume(v), veh/h	28	147	81	59	168	750	87	715	749	412	1467	21
Grp Sat Flow(s),veh/h/ln	1217	1870	1585	1241	1870	1585	1781	1777	1859	1728	1777	1585
Q Serve(g_s), s	2.6	8.4	5.3	5.4	9.8	31.0	6.3	51.2	51.3	13.5	37.2	0.7
Cycle Q Clear(g_c), s	12.3	8.4	5.3	13.8	9.8	31.0	6.3	51.2	51.3	13.5	37.2	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	254	446	378	271	446	744	109	738	772	797	2106	939
V/C Ratio(X)	0.11	0.33	0.21	0.22	0.38	1.01	0.80	0.97	0.97	0.52	0.70	0.02
Avail Cap(c_a), veh/h	254	446	378	271	446	744	164	738	772	824	2106	939
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.6	40.9	39.7	46.6	41.4	34.5	60.2	37.2	37.2	43.7	18.4	10.9
Incr Delay (d2), s/veh	0.2	0.4	0.3	0.4	0.5	35.1	14.7	26.3	25.9	0.5	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.9	2.1	1.7	4.6	16.5	3.3	26.9	28.1	5.8	15.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	41.3	40.0	47.0	41.9	69.6	74.9	63.5	63.1	44.2	20.3	11.0
LnGrp LOS	D	D	D	D	D	F	E	E	E	D	C	B
Approach Vol, veh/h		256			977			1551			1900	
Approach Delay, s/veh		41.5			63.5			63.9			25.4	
Approach LOS		D			E			E			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	35.0	59.0		36.0	12.0	82.0		36.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	31.0	* 54		31.0	12.0	73.0		31.0				
Max Q Clear Time (g_c+I1), s	15.5	53.3		14.3	8.3	39.2		33.0				
Green Ext Time (p_c), s	1.3	0.6		1.0	0.1	14.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		47.0	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX B-IV

YEAR 2045 BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Future Volume (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.981				0.850			0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4989	0	3433	5085	1583	3433	5085	1583	3433	4943	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4989	0	3433	5085	1583	3433	5085	1583	3433	4943	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				165			150		43	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			428			926	
Travel Time (s)		17.8			16.7			6.5			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	327	1382	0	276	973	221	198	714	150	450	1852	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	25.0	48.0		20.0	43.0	43.0	12.0	43.0	43.0	19.0	50.0	
Total Split (%)	19.2%	36.9%		15.4%	33.1%	33.1%	9.2%	33.1%	33.1%	14.6%	38.5%	
Maximum Green (s)	21.0	43.0		16.0	38.0	38.0	8.0	38.0	38.0	15.0	45.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	21.0	41.7		14.6	35.4	35.4	8.0	38.0	38.0	17.6	47.6	
Actuated g/C Ratio	0.16	0.32		0.11	0.27	0.27	0.06	0.29	0.29	0.14	0.37	
v/c Ratio	1.15	0.86		0.72	0.70	0.40	0.94	0.48	0.26	0.97	1.01	
Control Delay	147.2	46.8		66.4	45.4	12.6	100.9	35.2	6.4	90.0	63.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	147.2	46.8		66.4	45.4	12.6	100.9	35.2	6.4	90.0	63.0	
LOS	F	D		E	D	B	F	D	A	F	E	
Approach Delay		66.0			44.4			43.4			68.3	
Approach LOS		E			D			D			E	
Queue Length 50th (ft)	~322	387		116	264	35	84	216	42	~223	~618	
Queue Length 95th (ft)	#513	449		164	313	103	#162	167	18	#336	#720	
Internal Link Dist (ft)		963			901			348			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	285	1664		422	1486	579	211	1486	568	466	1838	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.15	0.83		0.65	0.65	0.38	0.94	0.48	0.26	0.97	1.01	

Intersection Summary

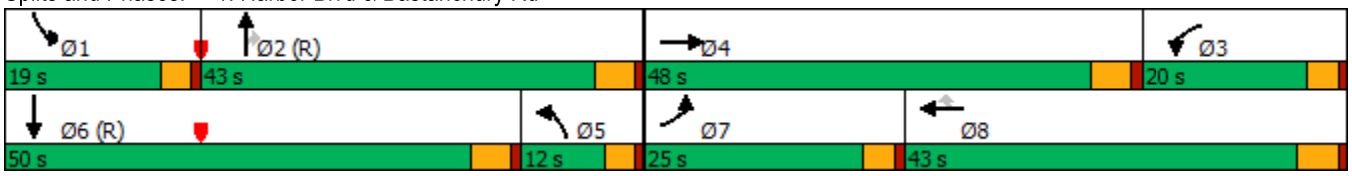
Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 55 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 58.3 Intersection LOS: E
Intersection Capacity Utilization 94.4% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



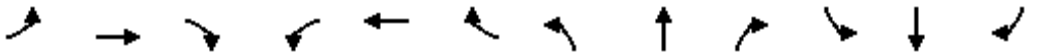
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	327	1211	171	276	973	221	198	714	150	450	1511	341
Future Volume (veh/h)	327	1211	171	276	973	221	198	714	150	450	1511	341
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	327	1211	171	276	973	221	198	714	150	450	1511	341
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1391	196	333	1277	396	332	1708	530	399	1443	324
Arrive On Green	0.16	0.31	0.31	0.10	0.25	0.25	0.10	0.33	0.33	0.12	0.35	0.35
Sat Flow, veh/h	1781	4521	638	3456	5106	1585	3456	5106	1585	3456	4170	936
Grp Volume(v), veh/h	327	912	470	276	973	221	198	714	150	450	1232	620
Grp Sat Flow(s),veh/h/ln	1781	1702	1755	1728	1702	1585	1728	1702	1585	1728	1702	1702
Q Serve(g_s), s	21.0	32.9	32.9	10.2	23.0	15.8	7.1	14.1	6.7	15.0	45.0	45.0
Cycle Q Clear(g_c), s	21.0	32.9	32.9	10.2	23.0	15.8	7.1	14.1	6.7	15.0	45.0	45.0
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	288	1047	540	333	1277	396	332	1708	530	399	1178	589
V/C Ratio(X)	1.14	0.87	0.87	0.83	0.76	0.56	0.60	0.42	0.28	1.13	1.05	1.05
Avail Cap(c_a), veh/h	288	1126	581	425	1493	463	332	1708	530	399	1178	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	42.6	42.6	57.7	45.2	42.5	56.3	33.5	17.4	57.5	42.5	42.5
Incr Delay (d2), s/veh	95.0	7.2	12.9	10.4	2.0	1.2	2.9	0.8	1.3	84.9	39.0	51.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.8	14.5	15.9	4.9	9.8	6.2	3.2	5.8	3.5	11.0	24.2	26.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	149.5	49.8	55.5	68.0	47.2	43.7	59.2	34.2	18.7	142.4	81.5	94.1
LnGrp LOS	F	D	E	E	D	D	E	C	B	F	F	F
Approach Vol, veh/h		1709			1470			1062			2302	
Approach Delay, s/veh		70.5			50.6			36.7			96.8	
Approach LOS		E			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	48.5	17.5	45.0	17.5	50.0	25.0	37.5
Change Period (Y+Rc), s	4.0	5.0	5.0	* 5	5.0	* 5	4.0	5.0
Max Green Setting (Gmax), s	15.0	38.0	16.0	* 43	8.0	* 45	21.0	38.0
Max Q Clear Time (g_c+I1), s	17.0	16.1	12.2	34.9	9.1	47.0	23.0	25.0
Green Ext Time (p_c), s	0.0	5.0	0.3	5.0	0.0	0.0	0.0	5.9

Intersection Summary	
HCM 6th Ctrl Delay	69.8
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



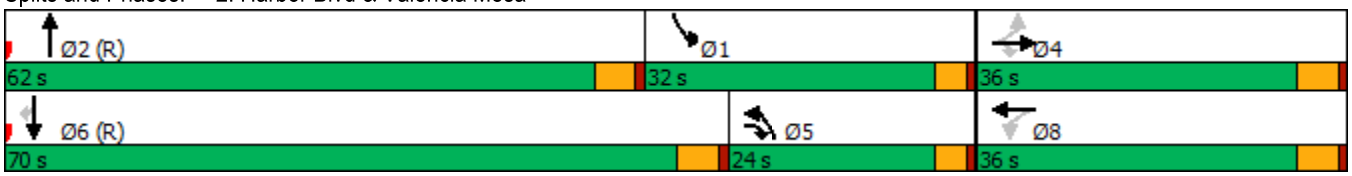
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Future Volume (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	185		0	230		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.913			0.981				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1701	0	1770	3472	0	1770	3539	1583
Flt Permitted	0.590			0.726			0.950			0.950		
Satd. Flow (perm)	1099	1863	1583	1352	1701	0	1770	3472	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		50			15				148
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			616			406	
Travel Time (s)		18.5			16.0			8.4			6.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	48	87	59	112	0	154	1016	0	244	1448	185
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	24.0	36.0	36.0		24.0	62.0		32.0	70.0	70.0
Total Split (%)	27.7%	27.7%	18.5%	27.7%	27.7%		18.5%	47.7%		24.6%	53.8%	53.8%
Maximum Green (s)	31.0	31.0	20.0	31.0	31.0		20.0	57.0		28.0	65.0	65.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag			Lag				Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5			5			5	5
Act Effct Green (s)	17.7	17.7	38.7	17.7	17.7		16.0	74.3		24.0	82.3	82.3
Actuated g/C Ratio	0.14	0.14	0.30	0.14	0.14		0.12	0.57		0.18	0.63	0.63
v/c Ratio	0.68	0.19	0.17	0.32	0.41		0.71	0.51		0.75	0.65	0.18
Control Delay	73.5	48.0	11.4	52.4	31.2		48.5	29.8		47.2	3.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.1	0.0
Total Delay	73.5	48.0	11.4	52.4	31.2		48.5	29.8		47.2	3.2	0.1
LOS	E	D	B	D	C		D	C		D	A	A
Approach Delay		45.4			38.5			32.3			8.6	
Approach LOS		D			D			C			A	
Queue Length 50th (ft)	83	37	17	46	48		121	296		217	53	0
Queue Length 95th (ft)	129	66	46	80	95		185	380		m231	m72	m1
Internal Link Dist (ft)		733			625			536			326	
Turn Bay Length (ft)	55		85				185			230		
Base Capacity (vph)	262	444	504	322	443		272	1990		381	2240	1056
Starvation Cap Reductn	0	0	0	0	0		0	0		0	94	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.39	0.11	0.17	0.18	0.25		0.57	0.51		0.64	0.67	0.18

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 33 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 72.5%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	48	87	59	47	65	154	889	127	244	1448	185
Future Volume (veh/h)	101	48	87	59	47	65	154	889	127	244	1448	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	48	87	59	47	65	154	889	127	244	1448	185
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	294	622	225	112	154	419	1368	195	529	1777	793
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.24	0.44	0.44	0.30	0.50	0.50
Sat Flow, veh/h	1281	1870	1585	1254	711	983	1781	3121	446	1781	3554	1585
Grp Volume(v), veh/h	101	48	87	59	0	112	154	506	510	244	1448	185
Grp Sat Flow(s),veh/h/ln	1281	1870	1585	1254	0	1693	1781	1777	1790	1781	1777	1585
Q Serve(g_s), s	10.0	2.9	0.0	5.6	0.0	7.8	9.4	29.1	29.1	14.5	44.7	8.6
Cycle Q Clear(g_c), s	17.8	2.9	0.0	8.4	0.0	7.8	9.4	29.1	29.1	14.5	44.7	8.6
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	180	294	622	225	0	266	419	779	785	529	1777	793
V/C Ratio(X)	0.56	0.16	0.14	0.26	0.00	0.42	0.37	0.65	0.65	0.46	0.81	0.23
Avail Cap(c_a), veh/h	284	446	751	327	0	404	419	779	785	529	1777	793
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	47.4	25.4	51.0	0.0	49.5	41.6	28.7	28.7	37.2	27.4	18.4
Incr Delay (d2), s/veh	2.7	0.3	0.1	0.6	0.0	1.1	0.5	4.2	4.1	0.6	4.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	1.4	1.8	1.8	0.0	3.4	4.1	12.6	12.6	6.3	18.7	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.2	47.7	25.5	51.7	0.0	50.5	42.2	32.8	32.8	37.9	31.7	19.1
LnGrp LOS	E	D	C	D	A	D	D	C	C	D	C	B
Approach Vol, veh/h		236			171			1170			1877	
Approach Delay, s/veh		44.9			50.9			34.0			31.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	42.6	62.0		25.4	34.6	70.0		25.4				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	28.0	57.0		31.0	20.0	65.0		31.0				
Max Q Clear Time (g_c+I1), s	16.5	31.1		19.8	11.4	46.7		10.4				
Green Ext Time (p_c), s	0.5	6.3		0.6	0.2	10.3		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			34.1									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Future Volume (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	140		140
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1706	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1706	1583	1770	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			169			270			101
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			363	
Travel Time (s)		23.8			15.7			5.5			5.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Shared Lane Traffic (%)				43%								
Lane Group Flow (vph)	51	84	9	441	448	174	22	1059	494	60	1464	80
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			6

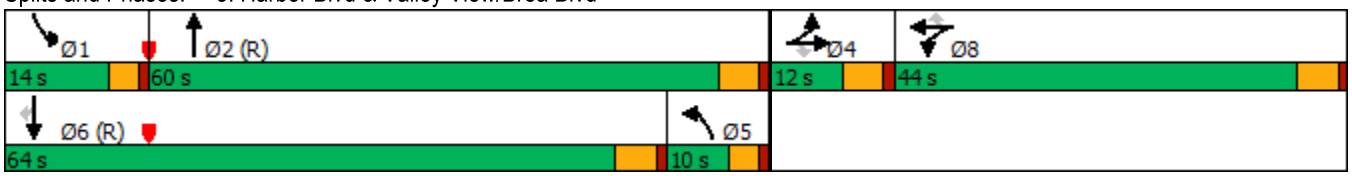
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	30.0
Total Split (s)	12.0	12.0	12.0	44.0	44.0	44.0	10.0	60.0		14.0	64.0	64.0
Total Split (%)	9.2%	9.2%	9.2%	33.8%	33.8%	33.8%	7.7%	46.2%		10.8%	49.2%	49.2%
Maximum Green (s)	7.0	7.0	7.0	39.0	39.0	39.0	6.0	55.0		10.0	59.0	59.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5	5		5			5	5
Act Effct Green (s)	7.0	7.0	7.0	37.3	37.3	37.3	6.0	59.9	130.0	8.8	64.7	64.7
Actuated g/C Ratio	0.05	0.05	0.05	0.29	0.29	0.29	0.05	0.46	1.00	0.07	0.50	0.50
v/c Ratio	0.54	0.84	0.04	0.92	0.92	0.30	0.27	0.65	0.31	0.50	0.83	0.10
Control Delay	80.6	114.8	0.3	69.6	69.6	6.8	55.6	20.5	0.5	87.3	26.1	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Total Delay	80.6	114.8	0.3	69.6	69.6	6.8	55.6	20.6	0.5	87.3	26.2	5.0
LOS	F	F	A	E	E	A	E	C	A	F	C	A
Approach Delay		95.6			59.3			14.8			27.4	
Approach LOS		F			E			B			C	
Queue Length 50th (ft)	43	72	0	371	377	3	19	424	0	52	403	5
Queue Length 95th (ft)	#95	#170	0	#569	#574	56	46	272	2	102	#773	29
Internal Link Dist (ft)		791			959			200			283	
Turn Bay Length (ft)	85						95			140		140
Base Capacity (vph)	95	100	212	504	511	593	81	1631	1583	136	1762	839
Starvation Cap Reductn	0	0	0	0	0	0	0	47	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	17	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.84	0.04	0.88	0.88	0.29	0.27	0.67	0.31	0.44	0.84	0.10

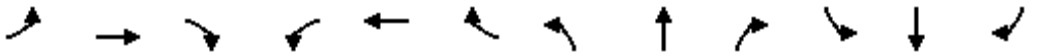
Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 120 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 32.9 Intersection LOS: C
Intersection Capacity Utilization 88.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	84	9	773	116	174	22	1059	494	60	1464	80
Future Volume (veh/h)	51	84	9	773	116	174	22	1059	494	60	1464	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	84	9	856	0	0	22	1059	0	60	1464	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	101	85	939	0		134	1753		77	1613	719
Arrive On Green	0.05	0.05	0.05	0.26	0.00	0.00	0.07	0.49	0.00	0.04	0.45	0.45
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	51	84	9	856	0	0	22	1059	0	60	1464	80
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.6	5.8	0.7	30.3	0.0	0.0	1.5	28.0	0.0	4.3	49.7	3.8
Cycle Q Clear(g_c), s	3.6	5.8	0.7	30.3	0.0	0.0	1.5	28.0	0.0	4.3	49.7	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	96	101	85	939	0		134	1753		77	1613	719
V/C Ratio(X)	0.53	0.83	0.11	0.91	0.00		0.16	0.60		0.78	0.91	0.11
Avail Cap(c_a), veh/h	96	101	85	1069	0		134	1753		137	1613	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.9	60.9	58.5	46.4	0.0	0.0	56.3	23.8	0.0	61.6	33.0	20.4
Incr Delay (d2), s/veh	5.5	42.4	0.5	10.7	0.0	0.0	0.6	1.6	0.0	15.3	9.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.0	0.3	14.4	0.0	0.0	0.7	11.8	0.0	2.2	21.9	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.4	103.3	59.1	57.1	0.0	0.0	56.9	25.3	0.0	76.8	42.0	20.7
LnGrp LOS	E	F	E	E	A		E	C		E	D	C
Approach Vol, veh/h		144			856			1081			1604	
Approach Delay, s/veh		87.1			57.1			26.0			42.2	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	69.1		12.0	14.7	64.0		39.3				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	10.0	55.0		7.0	6.0	* 59		39.0				
Max Q Clear Time (g_c+I1), s	6.3	30.0		7.8	3.5	51.7		32.3				
Green Ext Time (p_c), s	0.0	8.2		0.0	0.0	5.0		2.0				

Intersection Summary			
HCM 6th Ctrl Delay		42.7	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

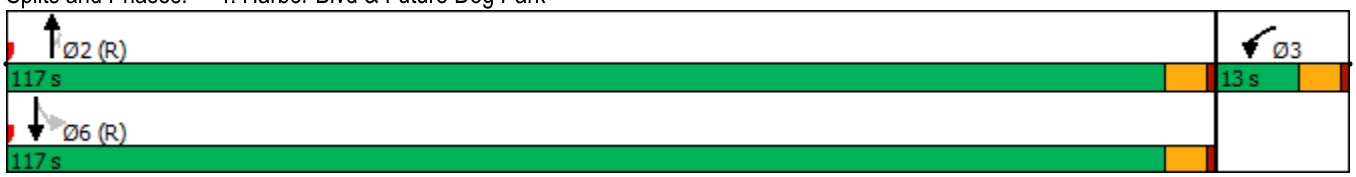


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	1279	5	5	1589
Future Volume (vph)	5	5	1279	5	5	1589
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		200	250	
Storage Lanes	1	0		1	1	
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.932			0.850		
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	3539	1583	1770	3539
Flt Permitted	0.976				0.213	
Satd. Flow (perm)	1694	0	3539	1583	397	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			5		
Link Speed (mph)	30		30			30
Link Distance (ft)	484		960			1191
Travel Time (s)	11.0		21.8			27.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	5	1279	5	5	1589
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	1279	5	5	1589
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	3		2			6
Permitted Phases				2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3		2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0		6.0	6.0	6.0	6.0
Minimum Split (s)	11.0		11.0	11.0	11.0	11.0
Total Split (s)	13.0		117.0	117.0	117.0	117.0
Total Split (%)	10.0%		90.0%	90.0%	90.0%	90.0%
Maximum Green (s)	8.0		112.0	112.0	112.0	112.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.4		126.5	126.5	126.5	126.5
Actuated g/C Ratio	0.05		0.97	0.97	0.97	0.97
v/c Ratio	0.11		0.37	0.00	0.01	0.46
Control Delay	46.1		0.8	0.2	1.6	2.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.1		0.8	0.2	1.6	2.1
LOS	D		A	A	A	A
Approach Delay	46.1		0.8			2.0
Approach LOS	D		A			A
Queue Length 50th (ft)	4		17	0	0	1
Queue Length 95th (ft)	23		28	m0	m1	347
Internal Link Dist (ft)	404		880			1111
Turn Bay Length (ft)				200	250	
Base Capacity (vph)	108		3444	1541	386	3444
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.09		0.37	0.00	0.01	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 1.6		Intersection LOS: A	
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Harbor Blvd & Future Dog Park





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	1279	5	5	1589
Future Volume (veh/h)	5	5	1279	5	5	1589
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	5	1279	5	5	1589
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12	12	3227	1439	424	3227
Arrive On Green	0.02	0.02	0.91	0.91	0.91	0.91
Sat Flow, veh/h	770	770	3647	1585	430	3647
Grp Volume(v), veh/h	11	0	1279	5	5	1589
Grp Sat Flow(s),veh/h/ln	1693	0	1777	1585	430	1777
Q Serve(g_s), s	0.8	0.0	6.7	0.0	0.2	9.7
Cycle Q Clear(g_c), s	0.8	0.0	6.7	0.0	6.9	9.7
Prop In Lane	0.45	0.45		1.00	1.00	
Lane Grp Cap(c), veh/h	26	0	3227	1439	424	3227
V/C Ratio(X)	0.43	0.00	0.40	0.00	0.01	0.49
Avail Cap(c_a), veh/h	104	0	3227	1439	424	3227
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	0.0	0.9	0.6	1.4	1.0
Incr Delay (d2), s/veh	11.0	0.0	0.4	0.0	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.6	0.0	0.0	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.4	0.0	1.2	0.6	1.4	1.5
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	11		1284			1594
Approach Delay, s/veh	74.4		1.2			1.5
Approach LOS	E		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		123.0			123.0	7.0
Change Period (Y+Rc), s		5.0			5.0	5.0
Max Green Setting (Gmax), s		112.0			112.0	8.0
Max Q Clear Time (g_c+I1), s		8.7			11.7	2.8
Green Ext Time (p_c), s		14.8			23.3	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.7
HCM 6th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Future Volume (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.949				0.850		0.997			0.997	
Flt Protected		0.979			0.968		0.950			0.950		
Satd. Flow (prot)	0	1731	0	0	1803	1583	1770	5070	0	1770	3529	0
Flt Permitted		0.845			0.743		0.043			0.154		
Satd. Flow (perm)	0	1494	0	0	1384	1583	80	5070	0	287	3529	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				53		6			4	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		427			781			235			407	
Travel Time (s)		11.6			21.3			4.6			7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	35	53	80	1494	0	63	2291	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		15.4			15.4	15.4	104.6	104.6		104.6	104.6	
Actuated g/C Ratio		0.12			0.12	0.12	0.80	0.80		0.80	0.80	
v/c Ratio		0.59			0.21	0.23	1.25	0.37		0.27	0.81	
Control Delay		58.5			51.4	13.7	204.2	3.2		2.5	3.6	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		58.5			51.4	13.7	204.2	3.2		2.5	3.7	
LOS		E			D	B	F	A		A	A	
Approach Delay		58.5			28.7			13.4			3.6	
Approach LOS		E			C			B			A	
Queue Length 50th (ft)		80			28	0	~84	77		1	10	
Queue Length 95th (ft)		129			54	35	m#170	106		m5	298	
Internal Link Dist (ft)		347			701			155			327	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		332			298	382	64	4080		230	2840	
Starvation Cap Reductn		0			0	0	0	0		0	6	
Spillback Cap Reductn		0			0	0	0	0		0	28	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.34			0.12	0.14	1.25	0.37		0.27	0.81	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 87 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

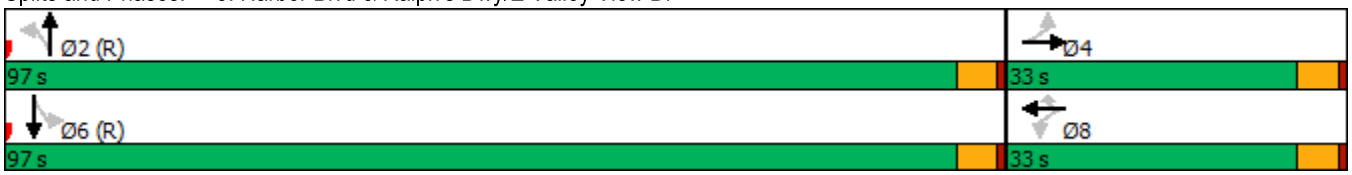
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

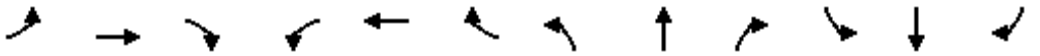


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	22	42	23	12	53	80	1461	33	63	2242	49
Future Volume (veh/h)	48	22	42	23	12	53	80	1461	33	63	2242	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	22	42	23	12	53	80	1461	33	63	2242	49
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	35	52	116	52	138	145	4296	97	327	2973	65
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.84	0.84	0.84	0.84	0.84	0.84
Sat Flow, veh/h	599	405	602	811	596	1585	162	5137	116	352	3556	77
Grp Volume(v), veh/h	112	0	0	35	0	53	80	968	526	63	1116	1175
Grp Sat Flow(s),veh/h/ln	1606	0	0	1407	0	1585	162	1702	1849	352	1777	1856
Q Serve(g_s), s	6.0	0.0	0.0	0.0	0.0	4.1	56.9	8.5	8.5	6.5	36.0	36.7
Cycle Q Clear(g_c), s	8.8	0.0	0.0	2.8	0.0	4.1	93.6	8.5	8.5	14.9	36.0	36.7
Prop In Lane	0.43		0.37	0.66		1.00	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	179	0	0	168	0	138	145	2847	1547	327	1486	1552
V/C Ratio(X)	0.63	0.00	0.00	0.21	0.00	0.38	0.55	0.34	0.34	0.19	0.75	0.76
Avail Cap(c_a), veh/h	378	0	0	359	0	341	145	2847	1547	327	1486	1552
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.1	0.0	0.0	55.4	0.0	56.1	25.6	2.4	2.4	4.1	4.7	4.7
Incr Delay (d2), s/veh	3.6	0.0	0.0	0.6	0.0	1.8	14.3	0.3	0.6	1.3	3.5	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.0	1.1	0.0	1.7	2.6	2.0	2.3	0.5	9.9	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	0.0	56.0	0.0	57.8	39.9	2.8	3.0	5.5	8.2	8.2
LnGrp LOS	E	A	A	E	A	E	D	A	A	A	A	A
Approach Vol, veh/h		112			88			1574			2354	
Approach Delay, s/veh		61.6			57.1			4.7			8.2	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		113.7		16.3		113.7		16.3				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		95.6		10.8		38.7		6.1				
Green Ext Time (p_c), s		0.0		0.5		39.1		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			9.4									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Future Volume (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3518	0	3433	3539	1583
Flt Permitted	0.440			0.407			0.950			0.950		
Satd. Flow (perm)	820	1863	1583	758	1863	1583	1770	3518	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		4				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		647			786			659			504	
Travel Time (s)		12.6			15.3			12.8			9.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	176	73	53	165	466	101	1135	0	639	1592	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

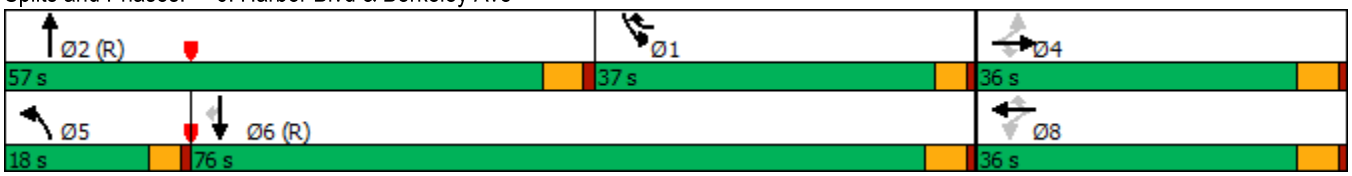


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	37.0	18.0	57.0		37.0	76.0	76.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	28.5%	13.8%	43.8%		28.5%	58.5%	58.5%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	33.0	14.0	52.0		33.0	71.0	71.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.0	19.0	19.0	19.0	19.0	57.0	12.0	64.0		33.0	85.0	85.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.44	0.09	0.49		0.25	0.65	0.65
v/c Ratio	0.14	0.65	0.24	0.48	0.61	0.65	0.62	0.66		0.73	0.69	0.02
Control Delay	47.1	62.2	6.5	63.0	60.1	29.0	73.1	28.2		36.0	8.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.0
Total Delay	47.1	62.2	6.5	63.0	60.1	29.0	73.1	28.2		36.0	8.5	0.2
LOS	D	E	A	E	E	C	E	C		D	A	A
Approach Delay		45.9			39.1			31.8			16.2	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	13	144	0	42	134	277	83	357		227	180	0
Queue Length 95th (ft)	33	197	27	78	185	324	143	530		305	470	m0
Internal Link Dist (ft)		567			706			579			424	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	195	444	447	180	444	722	192	1732		871	2313	1052
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	240	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.09	0.40	0.16	0.29	0.37	0.65	0.53	0.66		0.73	0.77	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 115 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 25.9		Intersection LOS: C	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	176	73	53	165	466	101	1092	43	639	1592	19
Future Volume (veh/h)	17	176	73	53	165	466	101	1092	43	639	1592	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	176	73	53	165	466	101	1092	43	639	1592	19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	304	258	147	304	768	125	1394	55	1112	2344	1045
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.40	0.40	0.32	0.66	0.66
Sat Flow, veh/h	1221	1870	1585	1209	1870	1585	1781	3485	137	3456	3554	1585
Grp Volume(v), veh/h	17	176	73	53	165	466	101	557	578	639	1592	19
Grp Sat Flow(s),veh/h/ln	1221	1870	1585	1209	1870	1585	1781	1777	1846	1728	1777	1585
Q Serve(g_s), s	1.7	11.3	5.3	5.5	10.5	0.0	7.3	35.6	35.6	20.0	35.9	0.5
Cycle Q Clear(g_c), s	12.2	11.3	5.3	16.8	10.5	0.0	7.3	35.6	35.6	20.0	35.9	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	155	304	258	147	304	768	125	711	738	1112	2344	1045
V/C Ratio(X)	0.11	0.58	0.28	0.36	0.54	0.61	0.81	0.78	0.78	0.57	0.68	0.02
Avail Cap(c_a), veh/h	248	446	378	238	446	888	192	711	738	1112	2344	1045
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	50.3	47.8	58.1	50.0	24.5	59.6	34.1	34.1	36.7	13.7	7.6
Incr Delay (d2), s/veh	0.3	1.7	0.6	1.5	1.5	0.9	13.6	8.4	8.1	0.7	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	5.4	2.1	1.7	5.0	10.4	3.7	16.7	17.3	8.5	13.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.9	52.0	48.4	59.5	51.5	25.4	73.2	42.5	42.2	37.4	15.3	7.7
LnGrp LOS	E	D	D	E	D	C	E	D	D	D	B	A
Approach Vol, veh/h		266			684			1236			2250	
Approach Delay, s/veh		51.3			34.3			44.9			21.5	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	46.8	57.0		26.2	13.1	90.7		26.2				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	33.0	* 52		31.0	14.0	71.0		31.0				
Max Q Clear Time (g_c+I1), s	22.0	37.6		14.2	9.3	37.9		18.8				
Green Ext Time (p_c), s	1.9	6.3		1.1	0.1	16.2		2.3				

Intersection Summary			
HCM 6th Ctrl Delay		31.8	
HCM 6th LOS		C	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Future Volume (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.985				0.850			0.850		0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4872	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4872	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				223			126		79	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			428			926	
Travel Time (s)		17.8			16.7			6.5			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Shared Lane Traffic (%)												
Lane Group Flow (vph)	373	1325	0	169	1048	338	198	1564	229	379	1361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	55.0		15.0	43.0	43.0	14.0	44.0	44.0	16.0	46.0	
Total Split (%)	20.8%	42.3%		11.5%	33.1%	33.1%	10.8%	33.8%	33.8%	12.3%	35.4%	
Maximum Green (s)	23.0	50.0		11.0	38.0	38.0	10.0	39.0	39.0	12.0	41.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	25.5	43.8		17.2	35.5	35.5	10.0	39.0	39.0	12.0	41.0	
Actuated g/C Ratio	0.20	0.34		0.13	0.27	0.27	0.08	0.30	0.30	0.09	0.32	
v/c Ratio	1.07	0.78		0.37	0.75	0.57	0.75	1.03	0.41	1.20	0.86	
Control Delay	119.2	41.5		55.9	46.9	17.0	63.9	63.5	15.9	165.4	45.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	119.2	41.5		55.9	46.9	17.0	63.9	63.5	15.9	165.4	45.6	
LOS	F	D		E	D	B	E	E	B	F	D	
Approach Delay		58.6			41.4			58.0			71.7	
Approach LOS		E			D			E			E	
Queue Length 50th (ft)	~369	361		68	291	76	79	~471	46	~198	373	
Queue Length 95th (ft)	#577	389		110	341	174	m102	m#598	m55	#302	436	
Internal Link Dist (ft)		963			901			348			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	347	1937		453	1486	620	264	1525	563	316	1590	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.07	0.68		0.37	0.71	0.55	0.75	1.03	0.41	1.20	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 85 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 57.9		Intersection LOS: E	
Intersection Capacity Utilization 96.9%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

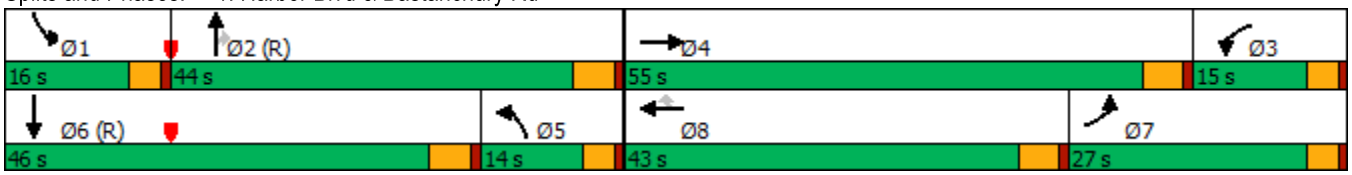
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Future Volume (veh/h)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	373	1194	131	169	1048	338	198	1564	229	379	979	382
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1464	161	404	1294	402	373	1730	537	319	1139	444
Arrive On Green	0.18	0.31	0.31	0.12	0.25	0.25	0.11	0.34	0.34	0.09	0.32	0.32
Sat Flow, veh/h	1781	4670	512	3456	5106	1585	3456	5106	1585	3456	3612	1409
Grp Volume(v), veh/h	373	870	455	169	1048	338	198	1564	229	379	923	438
Grp Sat Flow(s),veh/h/ln	1781	1702	1778	1728	1702	1585	1728	1702	1585	1728	1702	1617
Q Serve(g_s), s	23.0	30.6	30.7	5.9	25.1	20.6	7.0	38.0	10.4	12.0	33.1	33.1
Cycle Q Clear(g_c), s	23.0	30.6	30.7	5.9	25.1	20.6	7.0	38.0	10.4	12.0	33.1	33.1
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.87
Lane Grp Cap(c), veh/h	315	1067	558	404	1294	402	373	1730	537	319	1074	510
V/C Ratio(X)	1.18	0.82	0.82	0.42	0.81	0.84	0.53	0.90	0.43	1.19	0.86	0.86
Avail Cap(c_a), veh/h	315	1309	684	404	1493	463	373	1730	537	319	1074	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	41.1	41.2	53.3	45.6	28.3	54.9	41.0	17.1	59.0	41.8	41.8
Incr Delay (d2), s/veh	110.2	3.4	6.3	0.7	3.0	11.7	1.4	8.2	2.5	111.7	9.0	17.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.7	13.0	14.1	2.6	10.7	8.9	3.1	16.6	4.1	10.0	14.6	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	163.7	44.5	47.5	54.0	48.6	40.0	56.3	49.2	19.6	170.7	50.8	58.8
LnGrp LOS	F	D	D	D	D	D	E	D	B	F	D	E
Approach Vol, veh/h		1698			1555			1991			1740	
Approach Delay, s/veh		71.5			47.3			46.5			78.9	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	49.0	19.2	45.8	19.0	46.0	27.0	38.0
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	5.0	* 5	4.0	5.0
Max Green Setting (Gmax), s	12.0	39.0	11.0	50.0	10.0	* 41	23.0	38.0
Max Q Clear Time (g_c+I1), s	14.0	40.0	7.9	32.7	9.0	35.1	25.0	27.1
Green Ext Time (p_c), s	0.0	0.0	0.1	8.1	0.1	3.8	0.0	5.9

Intersection Summary	
HCM 6th Ctrl Delay	60.8
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Future Volume (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	185		0	230		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.869			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1619	0	1770	3522	0	1770	3539	1583
Flt Permitted	0.232			0.742			0.950			0.950		
Satd. Flow (perm)	432	1863	1583	1382	1619	0	1770	3522	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85		178			4				95
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			616			406	
Travel Time (s)		18.5			16.0			8.4			6.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	23	139	76	349	0	50	1625	0	119	1020	95
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	30.0
Total Split (s)	43.0	43.0	13.0	43.0	43.0		13.0	71.0		16.0	74.0	74.0
Total Split (%)	33.1%	33.1%	10.0%	33.1%	33.1%		10.0%	54.6%		12.3%	56.9%	56.9%
Maximum Green (s)	38.0	38.0	9.0	38.0	38.0		9.0	66.0		12.0	69.0	69.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag			Lead				Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5			5			5	5
Act Effct Green (s)	32.0	32.0	45.1	32.0	32.0		8.1	72.0		12.0	75.9	75.9
Actuated g/C Ratio	0.25	0.25	0.35	0.25	0.25		0.06	0.55		0.09	0.58	0.58
v/c Ratio	1.18	0.05	0.23	0.22	0.66		0.45	0.83		0.73	0.49	0.10
Control Delay	184.9	34.3	11.8	38.5	26.0		94.5	12.7		67.3	7.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	184.9	34.3	11.8	38.5	26.0		94.5	12.7		67.3	7.6	0.7
LOS	F	C	B	D	C		F	B		E	A	A
Approach Delay		89.0			28.3			15.1			12.8	
Approach LOS		F			C			B			B	
Queue Length 50th (ft)	~114	14	29	49	124		44	102		105	116	0
Queue Length 95th (ft)	#240	36	73	90	225		90	221		m132	152	m3
Internal Link Dist (ft)		733			625			536			326	
Turn Bay Length (ft)	55		85				185			230		
Base Capacity (vph)	126	544	615	403	599		122	1952		163	2065	963
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.99	0.04	0.23	0.19	0.58		0.41	0.83		0.73	0.49	0.10

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 81 (62%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 21.7 Intersection LOS: C
Intersection Capacity Utilization 95.6% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

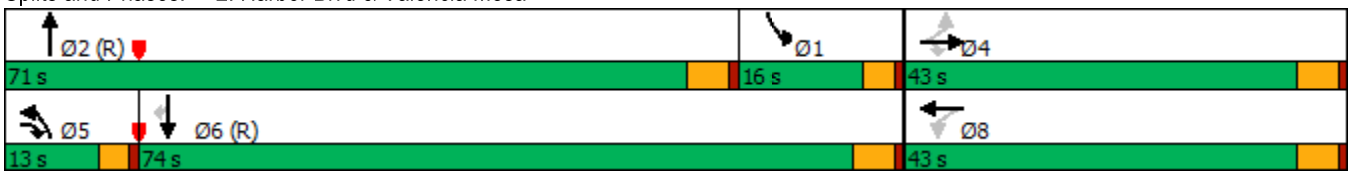
Queue shown is maximum after two cycles.

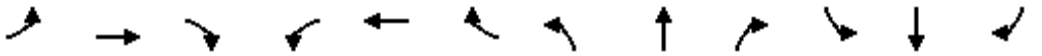
\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	23	139	76	44	305	50	1569	56	119	1020	95
Future Volume (veh/h)	125	23	139	76	44	305	50	1569	56	119	1020	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	125	23	139	76	44	305	50	1569	56	119	1020	95
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	547	524	402	60	413	69	1777	63	151	1995	890
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.04	0.51	0.51	0.08	0.56	0.56
Sat Flow, veh/h	1032	1870	1585	1224	204	1412	1781	3500	125	1781	3554	1585
Grp Volume(v), veh/h	125	23	139	76	0	349	50	794	831	119	1020	95
Grp Sat Flow(s),veh/h/ln	1032	1870	1585	1224	0	1616	1781	1777	1848	1781	1777	1585
Q Serve(g_s), s	12.7	1.1	8.4	6.2	0.0	25.3	3.6	51.7	52.3	8.5	23.0	3.6
Cycle Q Clear(g_c), s	38.0	1.1	8.4	7.3	0.0	25.3	3.6	51.7	52.3	8.5	23.0	3.6
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	156	547	524	402	0	472	69	902	938	151	1995	890
V/C Ratio(X)	0.80	0.04	0.27	0.19	0.00	0.74	0.73	0.88	0.89	0.79	0.51	0.11
Avail Cap(c_a), veh/h	156	547	524	402	0	472	123	902	938	164	1995	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.9	33.0	31.9	35.6	0.0	41.5	61.8	28.5	28.6	58.4	17.5	13.3
Incr Delay (d2), s/veh	25.1	0.0	0.3	0.2	0.0	6.1	13.6	12.0	12.0	20.8	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.5	3.3	1.9	0.0	10.9	1.9	23.1	24.2	4.6	9.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.0	33.0	32.2	35.8	0.0	47.6	75.4	40.5	40.6	79.2	18.5	13.5
LnGrp LOS	F	C	C	D	A	D	E	D	D	E	B	B
Approach Vol, veh/h		287			425			1675			1234	
Approach Delay, s/veh		55.3			45.5			41.6			23.9	
Approach LOS		E			D			D			C	

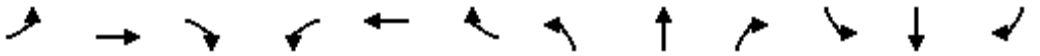
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	71.0		43.0	9.0	78.0		43.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	12.0	* 66		38.0	9.0	69.0		38.0				
Max Q Clear Time (g_c+I1), s	10.5	54.3		40.0	5.6	25.0		27.3				
Green Ext Time (p_c), s	0.0	7.5		0.0	0.0	8.6		1.9				

Intersection Summary			
HCM 6th Ctrl Delay		37.1	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Future Volume (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	140		140
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1708	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1708	1583	1770	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			134			315			101
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			363	
Travel Time (s)		23.8			15.7			5.5			5.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	68	179	26	340	344	117	9	1447	788	102	1151	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	30.0
Total Split (s)	19.0	19.0	19.0	36.0	36.0	36.0	10.0	62.0		13.0	65.0	65.0
Total Split (%)	14.6%	14.6%	14.6%	27.7%	27.7%	27.7%	7.7%	47.7%		10.0%	50.0%	50.0%
Maximum Green (s)	14.0	14.0	14.0	31.0	31.0	31.0	6.0	57.0		9.0	60.0	60.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5	5		5			5	5
Act Effct Green (s)	14.0	14.0	14.0	29.2	29.2	29.2	6.0	58.5	130.0	9.3	69.8	69.8
Actuated g/C Ratio	0.11	0.11	0.11	0.22	0.22	0.22	0.05	0.45	1.00	0.07	0.54	0.54
v/c Ratio	0.36	0.90	0.09	0.90	0.90	0.25	0.11	0.91	0.50	0.80	0.61	0.06
Control Delay	59.8	99.0	0.6	76.2	75.2	5.9	51.0	31.6	1.2	108.1	17.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	59.8	99.0	0.6	76.2	75.2	5.9	51.0	32.1	1.2	108.1	17.2	4.3
LOS	E	F	A	E	E	A	D	C	A	F	B	A
Approach Delay		79.8			65.5			21.3			23.9	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	54	151	0	289	292	0	8	643	16	91	120	0
Queue Length 95th (ft)	103	#290	0	#460	#463	38	m12	#747	18	#196	414	21
Internal Link Dist (ft)		791			959			200			283	
Turn Bay Length (ft)	85						95			140		140
Base Capacity (vph)	190	200	290	400	407	479	81	1592	1583	127	1901	897
Starvation Cap Reductn	0	0	0	0	0	0	0	22	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.90	0.09	0.85	0.85	0.24	0.11	0.92	0.50	0.80	0.61	0.06

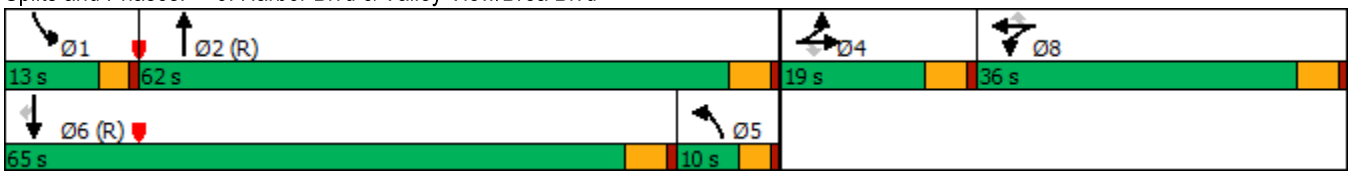
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 16 (12%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 33.2		Intersection LOS: C	
Intersection Capacity Utilization 89.7%		ICU Level of Service E	
Analysis Period (min) 15			

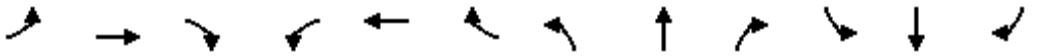
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	179	26	587	97	117	9	1447	788	102	1151	50
Future Volume (veh/h)	68	179	26	587	97	117	9	1447	788	102	1151	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	179	26	656	0	0	9	1447	0	102	1151	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	201	171	730	0		128	1677		123	1640	732
Arrive On Green	0.11	0.11	0.11	0.20	0.00	0.00	0.07	0.47	0.00	0.07	0.46	0.46
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	68	179	26	656	0	0	9	1447	0	102	1151	50
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.6	12.3	1.9	23.3	0.0	0.0	0.6	47.1	0.0	7.3	33.5	2.3
Cycle Q Clear(g_c), s	4.6	12.3	1.9	23.3	0.0	0.0	0.6	47.1	0.0	7.3	33.5	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	192	201	171	730	0		128	1677		123	1640	732
V/C Ratio(X)	0.35	0.89	0.15	0.90	0.00		0.07	0.86		0.83	0.70	0.07
Avail Cap(c_a), veh/h	192	201	171	850	0		128	1677		123	1640	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	57.2	52.6	50.4	0.0	0.0	56.3	30.6	0.0	59.7	27.9	19.5
Incr Delay (d2), s/veh	1.1	34.8	0.4	11.3	0.0	0.0	0.2	6.1	0.0	35.1	2.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	7.8	0.8	11.3	0.0	0.0	0.3	20.9	0.0	4.4	13.9	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.9	92.0	53.0	61.6	0.0	0.0	56.5	36.7	0.0	94.8	30.4	19.6
LnGrp LOS	D	F	D	E	A		E	D		F	C	B
Approach Vol, veh/h		273			656			1456			1303	
Approach Delay, s/veh		79.0			61.6			36.8			35.0	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	66.4		19.0	14.4	65.0		31.6				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	9.0	57.0		14.0	6.0	* 60		31.0				
Max Q Clear Time (g_c+I1), s	9.3	49.1		14.3	2.6	35.5		25.3				
Green Ext Time (p_c), s	0.0	5.5		0.0	0.0	8.3		1.3				

Intersection Summary												
HCM 6th Ctrl Delay			43.7									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

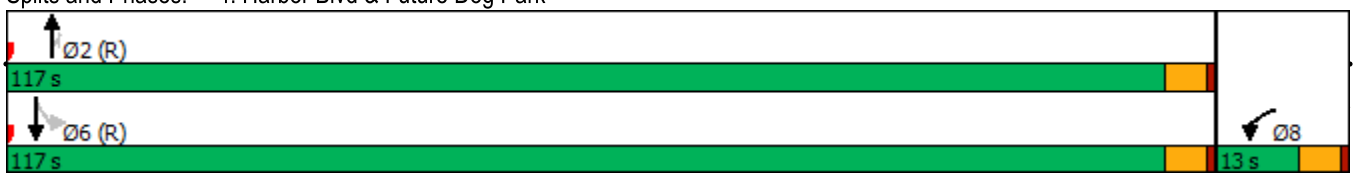


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	1627	5	5	1230
Future Volume (vph)	5	5	1627	5	5	1230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		200	250	
Storage Lanes	1	0		1	1	
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.932			0.850		
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	3539	1583	1770	3539
Flt Permitted	0.976				0.145	
Satd. Flow (perm)	1694	0	3539	1583	270	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			5		
Link Speed (mph)	30		30			30
Link Distance (ft)	484		960			1191
Travel Time (s)	11.0		21.8			27.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	5	1627	5	5	1230
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	1627	5	5	1230
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60		60	60	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases				2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8		2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0		6.0	6.0	6.0	6.0
Minimum Split (s)	11.0		11.0	11.0	11.0	11.0
Total Split (s)	13.0		117.0	117.0	117.0	117.0
Total Split (%)	10.0%		90.0%	90.0%	90.0%	90.0%
Maximum Green (s)	8.0		112.0	112.0	112.0	112.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.4		126.5	126.5	126.5	126.5
Actuated g/C Ratio	0.05		0.97	0.97	0.97	0.97
v/c Ratio	0.11		0.47	0.00	0.02	0.36
Control Delay	46.1		2.1	0.4	0.6	1.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.1		2.1	0.4	0.6	1.9
LOS	D		A	A	A	A
Approach Delay	46.1		2.1			1.8
Approach LOS	D		A			A
Queue Length 50th (ft)	4		18	0	0	4
Queue Length 95th (ft)	23		101	m0	m0	355
Internal Link Dist (ft)	404		880			1111
Turn Bay Length (ft)				200	250	
Base Capacity (vph)	108		3444	1541	263	3444
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.09		0.47	0.00	0.02	0.36

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 2.2		Intersection LOS: A	
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Harbor Blvd & Future Dog Park



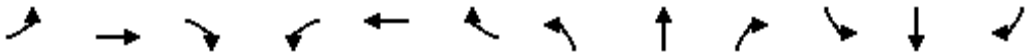


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	1627	5	5	1230
Future Volume (veh/h)	5	5	1627	5	5	1230
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	5	1627	5	5	1230
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12	12	3227	1439	312	3227
Arrive On Green	0.02	0.02	0.91	0.91	0.91	0.91
Sat Flow, veh/h	770	770	3647	1585	310	3647
Grp Volume(v), veh/h	11	0	1627	5	5	1230
Grp Sat Flow(s),veh/h/ln	1693	0	1777	1585	310	1777
Q Serve(g_s), s	0.8	0.0	10.1	0.0	0.4	6.3
Cycle Q Clear(g_c), s	0.8	0.0	10.1	0.0	10.5	6.3
Prop In Lane	0.45	0.45		1.00	1.00	
Lane Grp Cap(c), veh/h	26	0	3227	1439	312	3227
V/C Ratio(X)	0.43	0.00	0.50	0.00	0.02	0.38
Avail Cap(c_a), veh/h	104	0	3227	1439	312	3227
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	0.0	1.0	0.6	1.9	0.8
Incr Delay (d2), s/veh	11.0	0.0	0.6	0.0	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.9	0.0	0.0	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.4	0.0	1.6	0.6	2.0	1.2
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	11		1632			1235
Approach Delay, s/veh	74.4		1.6			1.2
Approach LOS	E		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		123.0			123.0	7.0
Change Period (Y+Rc), s		5.0			5.0	5.0
Max Green Setting (Gmax), s		112.0			112.0	8.0
Max Q Clear Time (g_c+I1), s		12.1			12.5	2.8
Green Ext Time (p_c), s		24.4			14.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.7
HCM 6th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Future Volume (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.954				0.850		0.998			0.995	
Flt Protected		0.974			0.977		0.950			0.950		
Satd. Flow (prot)	0	1731	0	0	1820	1583	1770	5075	0	1770	3522	0
Flt Permitted		0.795			0.780		0.087			0.063		
Satd. Flow (perm)	0	1413	0	0	1453	1583	162	5075	0	117	3522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				19		3			6	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		427			781			235			407	
Travel Time (s)		11.6			21.3			4.6			7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	252	0	0	66	62	96	2130	0	50	1766	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		25.1			25.1	25.1	94.9	94.9		94.9	94.9	
Actuated g/C Ratio		0.19			0.19	0.19	0.73	0.73		0.73	0.73	
v/c Ratio		0.88			0.24	0.19	0.81	0.58		0.59	0.69	
Control Delay		76.3			45.3	32.0	39.7	6.1		30.5	6.1	
Queue Delay		0.0			0.0	0.0	0.0	0.2		0.0	0.0	
Total Delay		76.3			45.3	32.0	39.7	6.3		30.5	6.1	
LOS		E			D	C	D	A		C	A	
Approach Delay		76.3			38.9			7.7			6.7	
Approach LOS		E			D			A			A	
Queue Length 50th (ft)		190			46	30	73	219		14	373	
Queue Length 95th (ft)		#322			89	70	m29	m167		m2	12	
Internal Link Dist (ft)		347			701			155			327	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		318			312	355	118	3704		85	2572	
Starvation Cap Reductn		0			0	0	0	673		0	14	
Spillback Cap Reductn		0			0	0	0	238		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.79			0.21	0.17	0.81	0.70		0.59	0.69	

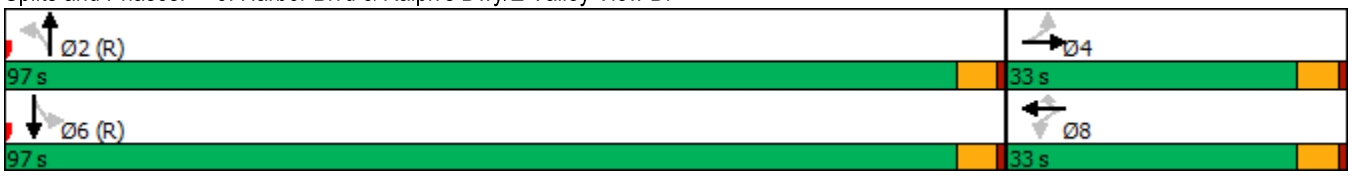
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 115 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	29	86	31	35	62	96	2104	26	50	1713	53
Future Volume (veh/h)	137	29	86	31	35	62	96	2104	26	50	1713	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	137	29	86	31	35	62	96	2104	26	50	1713	53
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	34	95	146	152	286	190	3861	48	163	2613	81
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	826	186	524	585	841	1585	271	5199	64	189	3519	109
Grp Volume(v), veh/h	252	0	0	66	0	62	96	1377	753	50	862	904
Grp Sat Flow(s),veh/h/ln	1537	0	0	1426	0	1585	271	1702	1859	189	1777	1851
Q Serve(g_s), s	16.2	0.0	0.0	0.0	0.0	4.3	36.0	22.7	22.8	20.2	31.5	31.9
Cycle Q Clear(g_c), s	20.8	0.0	0.0	4.6	0.0	4.3	67.9	22.7	22.8	42.9	31.5	31.9
Prop In Lane	0.54		0.34	0.47		1.00	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	320	0	0	298	0	286	190	2528	1380	163	1320	1375
V/C Ratio(X)	0.79	0.00	0.00	0.22	0.00	0.22	0.51	0.54	0.55	0.31	0.65	0.66
Avail Cap(c_a), veh/h	372	0	0	352	0	341	190	2528	1380	163	1320	1375
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	0.0	0.0	45.4	0.0	45.4	25.5	7.2	7.2	16.5	8.4	8.4
Incr Delay (d2), s/veh	9.4	0.0	0.0	0.4	0.0	0.4	9.3	0.8	1.6	4.8	2.5	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	0.0	1.9	0.0	1.8	2.7	7.5	8.4	1.1	11.3	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	0.0	45.7	0.0	45.8	34.8	8.1	8.8	21.3	10.9	10.9
LnGrp LOS	E	A	A	D	A	D	C	A	A	C	B	B
Approach Vol, veh/h		252			128			2226			1816	
Approach Delay, s/veh		61.3			45.8			9.5			11.2	
Approach LOS		E			D			A			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		101.5		28.5		101.5		28.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		69.9		22.8		44.9		6.6				
Green Ext Time (p_c), s		17.5		0.7		24.9		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			14.2									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Future Volume (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3529	0	3433	3539	1583
Flt Permitted	0.425			0.488			0.950			0.950		
Satd. Flow (perm)	792	1863	1583	909	1863	1583	1770	3529	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		2				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		647			786			659			504	
Travel Time (s)		12.6			15.3			12.8			9.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	147	81	59	168	750	87	1464	0	412	1467	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	35.0	16.0	59.0		35.0	78.0	78.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	26.9%	12.3%	45.4%		26.9%	60.0%	60.0%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	31.0	12.0	54.0		31.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	18.6	18.6	18.6	18.6	18.6	54.6	10.9	66.4		31.0	86.5	86.5
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.42	0.08	0.51		0.24	0.67	0.67
v/c Ratio	0.25	0.55	0.27	0.46	0.63	1.08	0.59	0.81		0.50	0.62	0.02
Control Delay	51.6	58.3	8.6	59.9	61.9	92.1	73.4	32.1		36.1	8.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	51.6	58.3	8.6	59.9	61.9	92.1	73.4	32.1		36.1	8.1	0.3
LOS	D	E	A	E	E	F	E	C		D	A	A
Approach Delay		41.8			84.9			34.4			14.1	
Approach LOS		D			F			C			B	
Queue Length 50th (ft)	22	119	0	47	137	~698	71	511		134	85	0
Queue Length 95th (ft)	47	167	34	83	188	#799	128	#814		m208	425	m0
Internal Link Dist (ft)		567			706			579			424	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	188	444	447	216	444	693	167	1803		818	2355	1070
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	190	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.15	0.33	0.18	0.27	0.38	1.08	0.52	0.81		0.50	0.68	0.02

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 14 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 37.1 Intersection LOS: D
Intersection Capacity Utilization 103.7% ICU Level of Service G
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

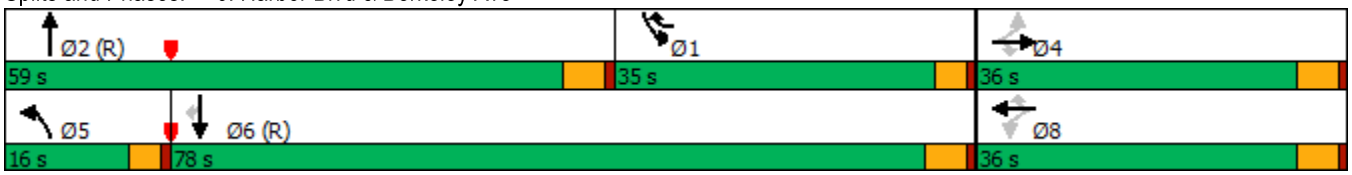
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	147	81	59	168	750	87	1438	26	412	1467	21
Future Volume (veh/h)	28	147	81	59	168	750	87	1438	26	412	1467	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	147	81	59	168	750	87	1438	26	412	1467	21
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	446	378	271	446	744	109	1483	27	797	2106	939
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.06	0.42	0.42	0.23	0.59	0.59
Sat Flow, veh/h	1217	1870	1585	1241	1870	1585	1781	3571	65	3456	3554	1585
Grp Volume(v), veh/h	28	147	81	59	168	750	87	715	749	412	1467	21
Grp Sat Flow(s),veh/h/ln	1217	1870	1585	1241	1870	1585	1781	1777	1859	1728	1777	1585
Q Serve(g_s), s	2.6	8.4	5.3	5.4	9.8	31.0	6.3	51.2	51.3	13.5	37.2	0.7
Cycle Q Clear(g_c), s	12.3	8.4	5.3	13.8	9.8	31.0	6.3	51.2	51.3	13.5	37.2	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	254	446	378	271	446	744	109	738	772	797	2106	939
V/C Ratio(X)	0.11	0.33	0.21	0.22	0.38	1.01	0.80	0.97	0.97	0.52	0.70	0.02
Avail Cap(c_a), veh/h	254	446	378	271	446	744	164	738	772	824	2106	939
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.6	40.9	39.7	46.6	41.4	34.5	60.2	37.2	37.2	43.7	18.4	10.9
Incr Delay (d2), s/veh	0.2	0.4	0.3	0.4	0.5	35.1	14.7	26.3	25.9	0.5	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.9	2.1	1.7	4.6	16.5	3.3	26.9	28.1	5.8	15.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	41.3	40.0	47.0	41.9	69.6	74.9	63.5	63.1	44.2	20.3	11.0
LnGrp LOS	D	D	D	D	D	F	E	E	E	D	C	B
Approach Vol, veh/h		256			977			1551			1900	
Approach Delay, s/veh		41.5			63.5			63.9			25.4	
Approach LOS		D			E			E			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	35.0	59.0		36.0	12.0	82.0		36.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	31.0	* 54		31.0	12.0	73.0		31.0				
Max Q Clear Time (g_c+I1), s	15.5	53.3		14.3	8.3	39.2		33.0				
Green Ext Time (p_c), s	1.3	0.6		1.0	0.1	14.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		47.0	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX C

SIMTRAFFIC QUEUEING WORKSHEETS

APPENDIX C-I

EXISTING TRAFFIC CONDITIONS

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	868	830	416	190	252	435	403	261	203	129	142
Average Queue (ft)	338	543	469	197	76	166	246	218	155	51	60	88
95th Queue (ft)	453	1033	950	324	157	281	358	318	239	126	110	134
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		12	0									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	50	1			0	1	21		6	0		
Queuing Penalty (veh)	142	2			0	2	54		12	0		

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	113	124	139	88	294	332	490	468	506
Average Queue (ft)	45	65	72	30	192	237	262	251	298
95th Queue (ft)	92	109	125	68	284	333	397	380	451
Link Distance (ft)	722	722	722				854	854	854
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)			0		1	6	4		
Queuing Penalty (veh)			0		2	18	14		

Queuing and Blocking Report

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	114	188	126	119	150	201	198	116	145	245	169	167
Average Queue (ft)	64	57	28	47	66	115	36	35	58	125	34	52
95th Queue (ft)	108	136	74	100	128	192	107	86	119	212	103	123
Link Distance (ft)		743		640	640		3866	3866	3866		722	722
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			175				230		
Storage Blk Time (%)	32	8	0			4	0			0		
Queuing Penalty (veh)	42	14	0			11	0			2		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB
Directions Served	TR
Maximum Queue (ft)	202
Average Queue (ft)	82
95th Queue (ft)	162
Link Distance (ft)	722
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	T	L	T	T
Maximum Queue (ft)	127	163	42	337	329	66	151	122	116	147	272	293
Average Queue (ft)	39	72	8	229	203	7	59	52	41	46	88	104
95th Queue (ft)	89	137	30	317	302	35	118	106	92	108	195	219
Link Distance (ft)		793	793	974	974		178	178	178		3866	3866
Upstream Blk Time (%)							0		0			
Queuing Penalty (veh)							0		0			
Storage Bay Dist (ft)	85					95				150		
Storage Blk Time (%)	1	12					3			0	3	
Queuing Penalty (veh)	1	6					1			0	1	

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	203
Average Queue (ft)	24
95th Queue (ft)	114
Link Distance (ft)	3866
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	L	T	TR
Maximum Queue (ft)	80	77	58	64	73	71	108	139	210	221
Average Queue (ft)	30	25	24	27	15	25	38	25	56	56
95th Queue (ft)	66	62	49	59	49	62	93	76	153	146
Link Distance (ft)	343	584			128	128	128		343	343
Upstream Blk Time (%)							0			
Queuing Penalty (veh)							1			
Storage Bay Dist (ft)			65	95				100		
Storage Blk Time (%)		1	0	0	0			0	2	
Queuing Penalty (veh)		0	0	0	0			1	1	

Queuing and Blocking Report

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	89	221	149	136	231	284	232	336	397	137	199	334
Average Queue (ft)	14	103	30	41	108	130	88	186	212	67	90	156
95th Queue (ft)	51	191	97	96	184	234	173	287	328	126	153	284
Link Distance (ft)		460			660	660		600	600			458
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		9			1		0	4				0
Queuing Penalty (veh)		8			0		0	4				1

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	358	108
Average Queue (ft)	171	8
95th Queue (ft)	303	54
Link Distance (ft)	458	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)	7	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 344

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	383	519	477	292	118	252	363	327	227	201	149	226
Average Queue (ft)	281	288	246	190	35	107	235	200	129	80	55	88
95th Queue (ft)	426	461	385	267	88	226	324	290	226	151	111	156
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	13	1				0	18		3	1		
Queuing Penalty (veh)	46	3				0	24		7	2		

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	269	288	316	210	304	330	553	525	446
Average Queue (ft)	154	175	185	100	226	262	321	278	249
95th Queue (ft)	236	259	285	213	338	364	662	584	405
Link Distance (ft)	722	722	722				854	854	854
Upstream Blk Time (%)							5	0	
Queuing Penalty (veh)							0	0	
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)	1		17	0	9	23	2		
Queuing Penalty (veh)	1		35	1	23	61	7		

Queuing and Blocking Report

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	113	170	124	133	274	104	147	180	181	136	78	95
Average Queue (ft)	69	38	38	58	125	38	25	29	42	66	26	49
95th Queue (ft)	114	120	88	117	226	84	89	124	126	125	64	87
Link Distance (ft)		743		640	640		3866	3866	3866		722	722
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			175				230		
Storage Blk Time (%)	34	1	0				0					
Queuing Penalty (veh)	53	2	0				0					

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB
Directions Served	TR
Maximum Queue (ft)	121
Average Queue (ft)	64
95th Queue (ft)	106
Link Distance (ft)	722
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	T	L	T	T
Maximum Queue (ft)	144	316	59	325	310	65	184	188	160	184	241	319
Average Queue (ft)	68	162	19	211	183	3	82	82	64	87	100	114
95th Queue (ft)	147	280	50	300	274	32	150	151	128	156	192	236
Link Distance (ft)		793	793	974	974		178	178	178		3866	3866
Upstream Blk Time (%)							0	0	0			
Queuing Penalty (veh)							1	1	0			
Storage Bay Dist (ft)	85					95				150		
Storage Blk Time (%)	5	37					5			3	2	
Queuing Penalty (veh)	9	25					0			11	2	

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	143
Average Queue (ft)	19
95th Queue (ft)	112
Link Distance (ft)	3866
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B19	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	L	T	TR
Maximum Queue (ft)	189	72	60	82	120	119	173	34	102	95	92
Average Queue (ft)	85	24	21	35	32	46	82	1	33	22	20
95th Queue (ft)	154	58	51	70	83	100	152	17	75	64	63
Link Distance (ft)	343	584			128	128	128	458		343	343
Upstream Blk Time (%)					0	0	2				
Queuing Penalty (veh)					0	0	9				
Storage Bay Dist (ft)			65	95					100		
Storage Blk Time (%)		1	0	0	0				1	0	
Queuing Penalty (veh)		0	0	2	0				5	0	

Queuing and Blocking Report

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	139	213	146	104	210	349	264	464	540	176	199	221
Average Queue (ft)	23	91	30	42	115	187	89	265	309	81	104	93
95th Queue (ft)	75	172	86	84	190	310	204	395	460	147	168	178
Link Distance (ft)		460			660	660		600	600			458
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)	0	5			1		0	15				
Queuing Penalty (veh)	0	6			0		0	13				

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	237	24
Average Queue (ft)	103	2
95th Queue (ft)	190	14
Link Distance (ft)	458	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)	1	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 351

APPENDIX C-II

EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	748	669	354	188	253	384	348	258	166	152	157
Average Queue (ft)	331	438	357	182	79	173	250	217	153	45	68	92
95th Queue (ft)	441	859	748	293	166	287	355	307	234	111	132	145
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		1										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	38	0			0	1	21		4			
Queuing Penalty (veh)	106	1			0	4	55		9			

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	173	175	163	112	298	334	604	580	530
Average Queue (ft)	93	104	98	38	213	256	347	307	252
95th Queue (ft)	150	155	156	80	326	364	666	589	432
Link Distance (ft)	333	333	333				854	854	854
Upstream Blk Time (%)							4	0	
Queuing Penalty (veh)							0	0	
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)			1		7	17	5		
Queuing Penalty (veh)			1		21	54	18		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	T	R
Maximum Queue (ft)	109	126	95	103	162	212	241	240	244	210	192	86
Average Queue (ft)	59	45	34	38	67	120	112	131	129	66	76	22
95th Queue (ft)	104	104	74	83	128	198	207	219	214	154	151	55
Link Distance (ft)		749		645	645		542	542		334	334	334
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			185			230			
Storage Blk Time (%)	18	5	1			4	1		0	0		
Queuing Penalty (veh)	24	9	1			14	2		2	0		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	B13	B13	B13
Directions Served	T	T	T
Maximum Queue (ft)	71	10	6
Average Queue (ft)	3	0	0
95th Queue (ft)	50	7	4
Link Distance (ft)	333	333	333
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B12	B12	SB
Directions Served	L	T	R	L	LT	R	L	T	T	T	T	L
Maximum Queue (ft)	100	157	38	349	334	34	66	220	233	3	10	160
Average Queue (ft)	38	74	8	226	200	3	7	105	104	0	0	53
95th Queue (ft)	83	134	31	313	291	39	34	195	198	2	7	119
Link Distance (ft)		793	793	984	984	984		178	178	340	340	
Upstream Blk Time (%)								1	2			
Queuing Penalty (veh)								6	7			
Storage Bay Dist (ft)	85						95					140
Storage Blk Time (%)	2	12						12				0
Queuing Penalty (veh)	1	6						3				0

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	B14	B14
Directions Served	T	T	R	T	T
Maximum Queue (ft)	312	326	200	18	15
Average Queue (ft)	171	176	52	1	1
95th Queue (ft)	282	284	164	17	18
Link Distance (ft)	290	290		772	772
Upstream Blk Time (%)	2	1			
Queuing Penalty (veh)	10	8			
Storage Bay Dist (ft)			140		
Storage Blk Time (%)	20	23	0		
Queuing Penalty (veh)	12	18	0		

Intersection: 4: Harbor Blvd & Future Dog Park

Movement	WB	NB	NB	B16	B14	SB	SB	SB	B15
Directions Served	LR	T	T	T	T	L	T	T	T
Maximum Queue (ft)	34	21	22	10	4	31	108	116	7
Average Queue (ft)	7	1	1	0	0	2	9	11	0
95th Queue (ft)	25	10	10	7	2	13	50	60	5
Link Distance (ft)	423	896	896	772	290		1143	1143	542
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)						250			
Storage Blk Time (%)									
Queuing Penalty (veh)									

Queuing and Blocking Report

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	L	T	TR
Maximum Queue (ft)	94	81	86	64	92	107	90	80	215	215
Average Queue (ft)	35	23	27	23	22	35	23	26	51	51
95th Queue (ft)	77	60	59	52	69	88	68	69	154	152
Link Distance (ft)	380	720			173	173	173		340	340
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			65	95				100		
Storage Blk Time (%)		1	1	0	0			0	2	
Queuing Penalty (veh)		1	0	0	0			0	1	

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	75	235	158	116	213	307	203	310	332	149	203	338
Average Queue (ft)	16	116	33	45	107	131	92	198	201	70	99	157
95th Queue (ft)	51	205	98	96	187	241	172	292	297	129	161	292
Link Distance (ft)		572			726	726		605	605			425
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		9			1		0	6				0
Queuing Penalty (veh)		8			0		0	6				1

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	373	146
Average Queue (ft)	178	9
95th Queue (ft)	321	69
Link Distance (ft)	425	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)	7	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 412

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	364	462	404	296	130	252	362	327	243	167	137	282
Average Queue (ft)	248	264	232	189	41	107	232	201	133	77	67	117
95th Queue (ft)	377	401	334	263	105	214	318	279	221	150	114	216
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	4	1				0	18		2	1		0
Queuing Penalty (veh)	16	2				0	23		6	4		0

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	B13	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	T	L	L	T	T	TR
Maximum Queue (ft)	346	358	375	210	9	280	323	525	490	388
Average Queue (ft)	209	228	241	140	0	197	233	280	238	210
95th Queue (ft)	305	325	355	264	8	299	334	519	456	351
Link Distance (ft)	333	333	333		334			854	854	854
Upstream Blk Time (%)	0	0	1					0		
Queuing Penalty (veh)	1	2	7					0		
Storage Bay Dist (ft)				150		275	275			
Storage Blk Time (%)	5		32	0		3	12	3		
Queuing Penalty (veh)	9		64	0		9	32	10		

Queuing and Blocking Report

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B15	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	T	L	T	T
Maximum Queue (ft)	114	219	136	124	279	192	317	334	11	170	112	130
Average Queue (ft)	70	46	51	54	123	51	179	200	0	75	46	58
95th Queue (ft)	114	150	104	107	227	139	308	327	8	143	102	108
Link Distance (ft)		749		645	645		542	542	1143		334	334
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			185				230		
Storage Blk Time (%)	28	1	2				12			0		
Queuing Penalty (veh)	42	4	3				6			0		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB	B13	B13	B13
Directions Served	R	T	T	T
Maximum Queue (ft)	54	4	8	9
Average Queue (ft)	13	0	0	0
95th Queue (ft)	40	4	6	6
Link Distance (ft)	334	333	333	333
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B12	B12	SB
Directions Served	L	T	R	L	LT	R	L	T	T	T	T	L
Maximum Queue (ft)	145	282	54	311	284	28	72	244	254	86	98	200
Average Queue (ft)	59	140	19	206	177	2	3	124	135	5	5	105
95th Queue (ft)	133	249	47	289	264	25	33	226	244	40	43	196
Link Distance (ft)		793	793	984	984	984		178	178	340	340	
Upstream Blk Time (%)								2	3			
Queuing Penalty (veh)								14	18			
Storage Bay Dist (ft)	85						95					140
Storage Blk Time (%)	4	33						14				5
Queuing Penalty (veh)	7	23						1				23

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	B14	B14
Directions Served	T	T	R	T	T
Maximum Queue (ft)	361	358	200	58	45
Average Queue (ft)	234	238	58	3	2
95th Queue (ft)	350	349	190	27	23
Link Distance (ft)	290	290		772	772
Upstream Blk Time (%)	5	6			
Queuing Penalty (veh)	27	32			
Storage Bay Dist (ft)			140		
Storage Blk Time (%)	31	32			
Queuing Penalty (veh)	30	16			

Intersection: 4: Harbor Blvd & Future Dog Park

Movement	WB	NB	NB	NB	SB	SB	SB
Directions Served	LR	T	T	R	L	T	T
Maximum Queue (ft)	30	73	80	12	19	39	58
Average Queue (ft)	6	5	6	0	1	2	5
95th Queue (ft)	22	33	36	6	11	16	32
Link Distance (ft)	423	896	896			1143	1143
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200	250		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B25	SB	SB	SB	B12
Directions Served	LTR	LT	R	L	T	T	TR	T	L	T	TR	T
Maximum Queue (ft)	189	68	64	97	114	133	137	14	75	124	126	8
Average Queue (ft)	85	21	24	33	29	48	42	0	29	34	31	0
95th Queue (ft)	153	55	53	72	86	107	105	7	62	91	87	6
Link Distance (ft)	380	720			173	173	173	425		340	340	178
Upstream Blk Time (%)					0	0	0					
Queuing Penalty (veh)					0	0	1					
Storage Bay Dist (ft)			65	95					100			
Storage Blk Time (%)		1	1	1	0				0	1		
Queuing Penalty (veh)		0	0	3	0				0	0		

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	100	181	148	153	221	346	264	508	499	156	186	250
Average Queue (ft)	26	93	34	47	108	168	96	271	296	79	105	103
95th Queue (ft)	68	167	94	105	192	284	219	413	440	137	160	194
Link Distance (ft)		572			726	726		605	605			425
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		5			1		0	16				0
Queuing Penalty (veh)		6			0		1	14				0

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	248	35
Average Queue (ft)	118	4
95th Queue (ft)	200	20
Link Distance (ft)	425	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)	3	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 459

APPENDIX C-III

YEAR 2045 BUILDOUT TRAFFIC CONDITIONS

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	1026	991	988	181	252	382	333	254	203	164	168
Average Queue (ft)	370	812	758	484	82	174	262	223	165	60	76	103
95th Queue (ft)	433	1261	1212	939	162	287	362	309	250	147	140	162
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		44	6	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	73	4			0	1	23		7	0		
Queuing Penalty (veh)	296	12			0	2	64		16	1		

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	167	196	192	151	305	335	903	885	882
Average Queue (ft)	81	106	110	51	273	328	821	777	717
95th Queue (ft)	138	163	169	109	359	370	1059	1046	1040
Link Distance (ft)	722	722	722				854	854	854
Upstream Blk Time (%)							55	22	18
Queuing Penalty (veh)							0	0	0
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)			2	0	21	47	36		
Queuing Penalty (veh)			2	0	107	236	161		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	113	199	106	119	161	188	154	181	235	276	222	188
Average Queue (ft)	66	54	27	54	66	105	66	83	125	156	93	106
95th Queue (ft)	112	135	67	108	121	177	130	150	206	260	176	173
Link Distance (ft)		743		640	640		3866	3866	3866		722	722
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			175				230		
Storage Blk Time (%)	34	5	0			1	0			2	0	
Queuing Penalty (veh)	45	10	0			2	0			8	0	

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB
Directions Served	TR
Maximum Queue (ft)	210
Average Queue (ft)	124
95th Queue (ft)	192
Link Distance (ft)	722
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	B12	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	T	T	L	T
Maximum Queue (ft)	133	187	34	542	503	48	202	152	146	7	210	491
Average Queue (ft)	46	82	8	347	311	5	77	67	51	0	67	217
95th Queue (ft)	109	156	31	478	451	25	158	140	121	5	157	377
Link Distance (ft)		793	793	974	974		178	178	178	343		3866
Upstream Blk Time (%)							0	0	0			
Queuing Penalty (veh)							1	0	0			
Storage Bay Dist (ft)	85					95					150	
Storage Blk Time (%)	3	19					5				0	11
Queuing Penalty (veh)	3	10					1				2	7

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	608	439
Average Queue (ft)	237	90
95th Queue (ft)	418	279
Link Distance (ft)	3866	3866
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B19	B19	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	T	L	T	TR
Maximum Queue (ft)	182	94	98	128	212	172	180	306	303	104	288	290
Average Queue (ft)	77	35	28	82	112	82	84	103	100	36	63	52
95th Queue (ft)	147	76	65	144	246	163	168	372	371	75	181	171
Link Distance (ft)	343	584			128	128	128	458	458		343	343
Upstream Blk Time (%)				16	27	2	2	2	2		0	0
Queuing Penalty (veh)				0	144	10	11	16	14		2	2
Storage Bay Dist (ft)			65	95						100		
Storage Blk Time (%)		4	1	32	8					0	3	
Queuing Penalty (veh)		2	0	154	6					1	2	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	B12	B12
Directions Served	T	T
Maximum Queue (ft)	75	69
Average Queue (ft)	3	3
95th Queue (ft)	31	28
Link Distance (ft)	178	178
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	77	303	175	106	225	379	264	512	578	240	263	323
Average Queue (ft)	12	115	36	47	106	171	116	296	330	141	165	132
95th Queue (ft)	48	217	104	93	185	311	242	491	523	214	235	253
Link Distance (ft)		460			660	660		600	600			458
Upstream Blk Time (%)								3	5			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		9	0		1		0	21		0	0	0
Queuing Penalty (veh)		8	0		0		1	21		0	0	1

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB	B19
Directions Served	T	R	T
Maximum Queue (ft)	342	150	12
Average Queue (ft)	150	9	0
95th Queue (ft)	278	76	6
Link Distance (ft)	458		128
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		165	
Storage Blk Time (%)	5		
Queuing Penalty (veh)	1		

Network Summary

Network wide Queuing Penalty: 1385

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	1022	1002	988	152	253	403	370	333	205	121	290
Average Queue (ft)	380	892	838	508	42	143	284	244	183	110	59	183
95th Queue (ft)	419	1225	1215	1029	104	286	381	336	275	203	108	368
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		65	10	1								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	79	1			0	0	29		8	3		0
Queuing Penalty (veh)	316	4			0	0	48		27	11		0

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	745	747	759	210	305	335	893	866	656
Average Queue (ft)	570	581	596	172	289	321	741	598	330
95th Queue (ft)	896	892	907	278	350	380	1115	1038	565
Link Distance (ft)	722	722	722				854	854	854
Upstream Blk Time (%)	5	5	7				60	0	0
Queuing Penalty (veh)	32	36	47				0	0	0
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)	52		62	4	40	79	3		
Queuing Penalty (veh)	104		142	20	131	257	13		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	114	241	145	222	390	209	896	932	957	181	73	82
Average Queue (ft)	70	47	43	61	193	70	371	396	418	81	17	32
95th Queue (ft)	120	158	108	145	322	191	1029	1062	1095	146	53	70
Link Distance (ft)		743		640	640		3866	3866	3866		722	722
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			175				230		
Storage Blk Time (%)	33	1	1				31			0		
Queuing Penalty (veh)	53	3	1				15			0		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB
Directions Served	TR
Maximum Queue (ft)	112
Average Queue (ft)	54
95th Queue (ft)	100
Link Distance (ft)	722
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	B12	B12	B12
Directions Served	L	T	R	L	LT	L	T	T	T	T	T	T
Maximum Queue (ft)	145	444	50	421	380	95	257	252	220	61	52	20
Average Queue (ft)	80	235	17	276	244	6	152	145	122	3	2	1
95th Queue (ft)	161	472	44	385	349	50	234	226	202	25	24	14
Link Distance (ft)		793	793	974	974		178	178	178	343	343	343
Upstream Blk Time (%)							3	2	1			
Queuing Penalty (veh)							16	11	4			
Storage Bay Dist (ft)	85					95						
Storage Blk Time (%)	8	57					13					
Queuing Penalty (veh)	15	39					1					

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	170	271	339	253
Average Queue (ft)	91	99	108	26
95th Queue (ft)	163	199	237	134
Link Distance (ft)		3866	3866	3866
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150			
Storage Blk Time (%)	5	1		
Queuing Penalty (veh)	20	2		

Queuing and Blocking Report

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B19	B19	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	T	L	T	TR
Maximum Queue (ft)	326	179	125	128	225	179	213	360	381	113	157	160
Average Queue (ft)	193	58	42	74	125	110	163	57	74	44	52	47
95th Queue (ft)	304	130	93	130	223	167	218	257	281	96	135	124
Link Distance (ft)	343	584			128	128	128	458	458		343	343
Upstream Blk Time (%)	0			7	13	4	13	0	0			
Queuing Penalty (veh)	0			0	96	26	96	1	3			
Storage Bay Dist (ft)			65	95						100		
Storage Blk Time (%)		12	3	18	11					2	2	
Queuing Penalty (veh)		7	2	124	11					17	1	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	B12	B12
Directions Served	T	T
Maximum Queue (ft)	4	29
Average Queue (ft)	0	1
95th Queue (ft)	3	17
Link Distance (ft)	178	178
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	112	208	123	259	605	673	264	634	641	160	195	206
Average Queue (ft)	31	92	30	56	219	456	129	552	572	93	119	93
95th Queue (ft)	77	172	77	142	561	702	286	722	717	156	180	170
Link Distance (ft)		460			660	660		600	600			458
Upstream Blk Time (%)					2	7		22	39			
Queuing Penalty (veh)					0	0		0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		5	0		4		0	48				
Queuing Penalty (veh)		5	0		3		2	42				

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB	B19
Directions Served	T	R	T
Maximum Queue (ft)	226	63	6
Average Queue (ft)	110	4	0
95th Queue (ft)	191	37	5
Link Distance (ft)	458		128
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		165	
Storage Blk Time (%)	1		
Queuing Penalty (veh)	0		

Network Summary

Network wide Queuing Penalty: 1807

APPENDIX C-IV

YEAR 2045 BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	1004	971	878	196	252	415	353	277	205	191	210
Average Queue (ft)	379	815	754	389	90	174	259	220	170	56	94	122
95th Queue (ft)	417	1186	1120	750	170	287	372	305	252	140	198	226
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		28	2	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	80	1			0	1	22		7	0	4	7
Queuing Penalty (veh)	323	5			0	2	60		16	0	10	16

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	B13	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	T	L	L	T	T	TR
Maximum Queue (ft)	249	231	234	183	18	298	335	900	899	894
Average Queue (ft)	136	136	118	56	1	200	317	839	816	802
95th Queue (ft)	268	233	198	130	17	316	387	1009	1030	1055
Link Distance (ft)	333	333	333		334			854	854	854
Upstream Blk Time (%)	2	0						52	40	33
Queuing Penalty (veh)	7	0						0	0	0
Storage Bay Dist (ft)				150		275	275			
Storage Blk Time (%)	0		2	0		7	11	56		
Queuing Penalty (veh)	1		3	0		33	55	252		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	T	R
Maximum Queue (ft)	114	233	142	119	174	245	470	508	280	211	219	78
Average Queue (ft)	69	59	43	48	68	148	310	340	151	86	95	22
95th Queue (ft)	112	144	97	95	135	278	454	475	247	166	172	55
Link Distance (ft)		749		645	645		542	542		334	334	334
Upstream Blk Time (%)								0		0	0	
Queuing Penalty (veh)								0		2	1	
Storage Bay Dist (ft)	55		85			185			230			
Storage Blk Time (%)	25	5	1			1	25		1	0		
Queuing Penalty (veh)	34	9	2			3	38		8	1		

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B12	B12	SB
Directions Served	L	T	R	L	LT	R	L	T	T	T	T	L
Maximum Queue (ft)	134	237	38	448	404	80	100	216	227	8	12	199
Average Queue (ft)	54	121	10	305	274	3	8	116	121	0	1	69
95th Queue (ft)	134	245	32	404	374	34	48	200	212	5	7	165
Link Distance (ft)		793	793	984	984	984		178	178	340	340	
Upstream Blk Time (%)								1	2			
Queuing Penalty (veh)								8	12			
Storage Bay Dist (ft)	85						95					140
Storage Blk Time (%)	4	43					0	13				0
Queuing Penalty (veh)	3	22					0	3				1

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	B14	B14
Directions Served	T	T	R	T	T
Maximum Queue (ft)	362	365	200	81	70
Average Queue (ft)	272	273	55	8	7
95th Queue (ft)	378	382	180	42	41
Link Distance (ft)	290	290		772	772
Upstream Blk Time (%)	10	12			
Queuing Penalty (veh)	81	96			
Storage Bay Dist (ft)			140		
Storage Blk Time (%)	37	37			
Queuing Penalty (veh)	22	29			

Intersection: 4: Harbor Blvd & Future Dog Park

Movement	WB	NB	NB	B16	B16	SB	SB	SB	B15
Directions Served	LR	T	T	T	T	L	T	T	T
Maximum Queue (ft)	30	18	43	8	8	63	142	149	4
Average Queue (ft)	8	1	3	0	0	3	17	20	0
95th Queue (ft)	26	10	19	4	6	33	87	94	3
Link Distance (ft)	423	896	896	772	772		1143	1143	542
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)						250			
Storage Blk Time (%)							0		
Queuing Penalty (veh)							0		

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B25	B25	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	T	L	T	TR
Maximum Queue (ft)	203	72	64	147	205	178	146	105	110	84	228	250
Average Queue (ft)	88	27	26	71	62	66	53	6	5	31	63	60
95th Queue (ft)	161	64	52	131	158	141	118	68	66	65	159	157
Link Distance (ft)	380	720			173	173	173	425	425		340	340
Upstream Blk Time (%)				0	2	1	0				0	0
Queuing Penalty (veh)				0	11	3	0				1	1
Storage Bay Dist (ft)			65	95						100		
Storage Blk Time (%)		2	0	14	2					0	2	
Queuing Penalty (veh)		1	0	70	2					3	2	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	B12
Directions Served	T
Maximum Queue (ft)	9
Average Queue (ft)	0
95th Queue (ft)	6
Link Distance (ft)	178
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	83	239	172	131	229	347	264	512	501	256	257	280
Average Queue (ft)	16	116	43	46	112	156	117	291	297	145	168	125
95th Queue (ft)	52	200	118	99	193	280	246	444	437	229	243	236
Link Distance (ft)		572			726	726		605	605			425
Upstream Blk Time (%)								0				
Queuing Penalty (veh)								0				
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		10	0		1			20			0	0
Queuing Penalty (veh)		9	0		0			20			0	0

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB	B25
Directions Served	T	R	T
Maximum Queue (ft)	317	112	9
Average Queue (ft)	147	9	1
95th Queue (ft)	264	63	9
Link Distance (ft)	425		173
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		165	
Storage Blk Time (%)	4		
Queuing Penalty (veh)	1		

Network Summary

Network wide Queuing Penalty: 1282

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	971	950	816	132	253	384	362	295	199	132	290
Average Queue (ft)	359	677	618	287	50	150	274	228	171	102	57	204
95th Queue (ft)	452	1140	1067	568	115	289	358	310	256	184	111	387
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		17	1	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	62	2				0	26		6	2		0
Queuing Penalty (veh)	249	9				0	43		22	8		0

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	B13	B13	B13	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	T	T	T	L	L	T	T	TR
Maximum Queue (ft)	418	430	428	210	370	392	397	305	335	902	869	846
Average Queue (ft)	380	384	388	177	248	254	261	295	325	786	645	279
95th Queue (ft)	489	491	481	274	480	481	478	346	377	1111	1067	541
Link Distance (ft)	333	333	333		334	334	334			854	854	854
Upstream Blk Time (%)	52	55	57		5	5	6			71	0	0
Queuing Penalty (veh)	347	368	379		33	30	43			0	0	0
Storage Bay Dist (ft)				150				275	275			
Storage Blk Time (%)	58		65	2				45	83	2		
Queuing Penalty (veh)	114		148	9				146	272	7		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B15	B15	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	T	T	L	T
Maximum Queue (ft)	114	285	144	124	420	245	648	647	1038	1071	169	124
Average Queue (ft)	77	56	52	49	193	113	489	502	347	364	86	42
95th Queue (ft)	123	182	116	99	344	278	774	767	1009	1044	155	93
Link Distance (ft)		749		645	645		542	542	1143	1143		334
Upstream Blk Time (%)							42	45	1	2		
Queuing Penalty (veh)							346	368	11	13		
Storage Bay Dist (ft)	55		85			185					230	
Storage Blk Time (%)	30	1	1			0	53					
Queuing Penalty (veh)	49	2	2			0	27					

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB	SB	B13	B13
Directions Served	T	R	T	T
Maximum Queue (ft)	131	34	7	11
Average Queue (ft)	57	7	0	0
95th Queue (ft)	108	28	4	7
Link Distance (ft)	334	334	333	333
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B12	B12	B12
Directions Served	L	T	R	L	LT	R	L	T	T	T	T	T
Maximum Queue (ft)	145	354	43	429	392	113	96	266	280	230	249	37
Average Queue (ft)	78	185	18	279	245	7	7	233	239	69	81	2
95th Queue (ft)	161	317	42	396	368	63	57	292	293	203	222	19
Link Distance (ft)		793	793	984	984	984		178	178	340	340	340
Upstream Blk Time (%)								19	22	0	0	
Queuing Penalty (veh)								146	168	1	3	
Storage Bay Dist (ft)	85						95					
Storage Blk Time (%)	7	53						34				
Queuing Penalty (veh)	13	36						3				

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	SB	B14	B14
Directions Served	L	T	T	R	T	T
Maximum Queue (ft)	200	361	356	200	30	38
Average Queue (ft)	99	212	220	33	2	2
95th Queue (ft)	196	345	356	128	15	17
Link Distance (ft)		290	290		772	772
Upstream Blk Time (%)		5	6			
Queuing Penalty (veh)		28	36			
Storage Bay Dist (ft)	140			140		
Storage Blk Time (%)	5	25	28	0		
Queuing Penalty (veh)	30	25	14	0		

Intersection: 4: Harbor Blvd & Future Dog Park

Movement	WB	NB	NB	B16	B16	B14	B14	SB	SB	SB
Directions Served	LR	T	T	T	T	T	T	L	T	T
Maximum Queue (ft)	38	430	434	5	10	4	19	33	62	74
Average Queue (ft)	8	71	76	0	0	0	1	3	5	8
95th Queue (ft)	28	369	377	6	8	2	11	18	29	39
Link Distance (ft)	423	896	896	772	772	290	290		1143	1143
Upstream Blk Time (%)		1	1							
Queuing Penalty (veh)		5	6							
Storage Bay Dist (ft)								250		
Storage Blk Time (%)			5							
Queuing Penalty (veh)			0							

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B25	B25	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	T	L	T	TR
Maximum Queue (ft)	321	108	91	152	222	213	234	177	191	92	149	136
Average Queue (ft)	183	50	31	61	114	132	129	16	18	40	63	58
95th Queue (ft)	295	99	70	125	198	199	211	141	147	84	134	120
Link Distance (ft)	380	720			173	173	173	425	425		340	340
Upstream Blk Time (%)	0			0	3	1	2	0	0			
Queuing Penalty (veh)	0			0	25	10	16	0	1			
Storage Bay Dist (ft)			65	95						100		
Storage Blk Time (%)		8	2	9	7					1	4	
Queuing Penalty (veh)		5	1	65	7					7	2	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	B12	B12
Directions Served	T	T
Maximum Queue (ft)	10	10
Average Queue (ft)	0	0
95th Queue (ft)	7	7
Link Distance (ft)	178	178
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	100	206	90	116	671	738	264	644	653	191	204	265
Average Queue (ft)	26	93	33	49	163	439	140	564	577	108	129	107
95th Queue (ft)	71	165	72	98	440	703	300	716	722	169	188	213
Link Distance (ft)		572			726	726		605	605			425
Upstream Blk Time (%)					0	2		25	33			
Queuing Penalty (veh)					0	0		0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		5			1		1	50				0
Queuing Penalty (veh)		5			1		5	43				0

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB	B25	B25
Directions Served	T	R	T	T
Maximum Queue (ft)	295	99	10	16
Average Queue (ft)	125	6	0	1
95th Queue (ft)	230	49	7	8
Link Distance (ft)	425		173	173
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		165		
Storage Blk Time (%)	2			
Queuing Penalty (veh)	0			

Network Summary

Network wide Queuing Penalty: 3753

CITY OF LAGUNA HILLS

City Manager

June 11, 2024

Orange County Transportation Authority
ATTN: Kia Mortazavi, Executive Director, Planning Division
550 South Main Street
P.O. Box 14184
Orange, CA 92863

Subject: Master Plan of Arterial Highways Amendment – Paseo De Valencia and Cabot Road

Dear Mr. Mortazavi:

The City of Laguna Hills is requesting an amendment to the Master Plan of Arterial Highways (MPAH). Paseo De Valencia is identified on the MPAH as a 6-lane divided Major Arterial between Alicia Parkway and La Paz Road but currently built as a 4-lane undivided arterial, and as a 4-lane undivided Secondary Arterial between La Paz Road and Cabot Road within the City of Laguna Hills. Cabot Road is identified on the MPAH as a 4-lane undivided Secondary Arterial between Paseo De Valencia and Oso Parkway. The City is recommending the segment of Paseo De Valencia between Alicia Parkway and La Paz Road to be reclassified as a 2-lane Divided Collector, and the segment between La Paz Road and Cabot Road to be reclassified as a 2-lane Undivided Collector. The City is also recommending the segment of Cabot Road between Paseo De Valencia and Oso Parkway to be reclassified as a 2-lane Divided Collector.

This reclassification will support the City's objective to provide traffic safety and circulation improvements in front of Valencia Elementary School along Paseo De Valencia. School improvements may include all-way stop installations, curb extensions at intersection crossings, and a student pick-up/drop-off lane for queuing vehicles during school loading times. Reclassification will also support the City's objective to accommodate multi-modal improvements along both Paseo De Valencia and Cabot Road. Attachment 'A' illustrates the project limits and proposed improvements.

The reclassification requires lane reduction, which was determined feasible based on Annual Daily Traffic (ADT) data collected in 2022, per the 2023 OCTA Traffic Volume Map (Attachment B). The segment of Paseo De Valencia between Alicia Parkway and La Paz Road has approximately 11,000 ADT, and the segment of Paseo De Valencia between La Paz Road and Cabot Road has approximately 6,000 ADT. Both of these segments are well within the ranges of 9,000 to 15,000 ADT for a Divided Collector and 7,500 to 10,000 ADT for an Undivided Collector identified in the MPAH, respectively. The segment of Cabot Road between Paseo De Valencia and El Paseo has approximately 13,000 to 14,000 ADT and is also within the range of 9,000 to 15,000 ADT for a Divided Collector identified in the MPAH.

Thank you for your attention to this important matter.

If you have any questions about this project, please contact me at jhildenbrand@lagunahillsca.gov or 949/707-2610, or Public Works Director Joe Ames at james@lagunahillsca.gov or 949/707-2655.

Sincerely,

Jarad Hildenbrand
City Manager



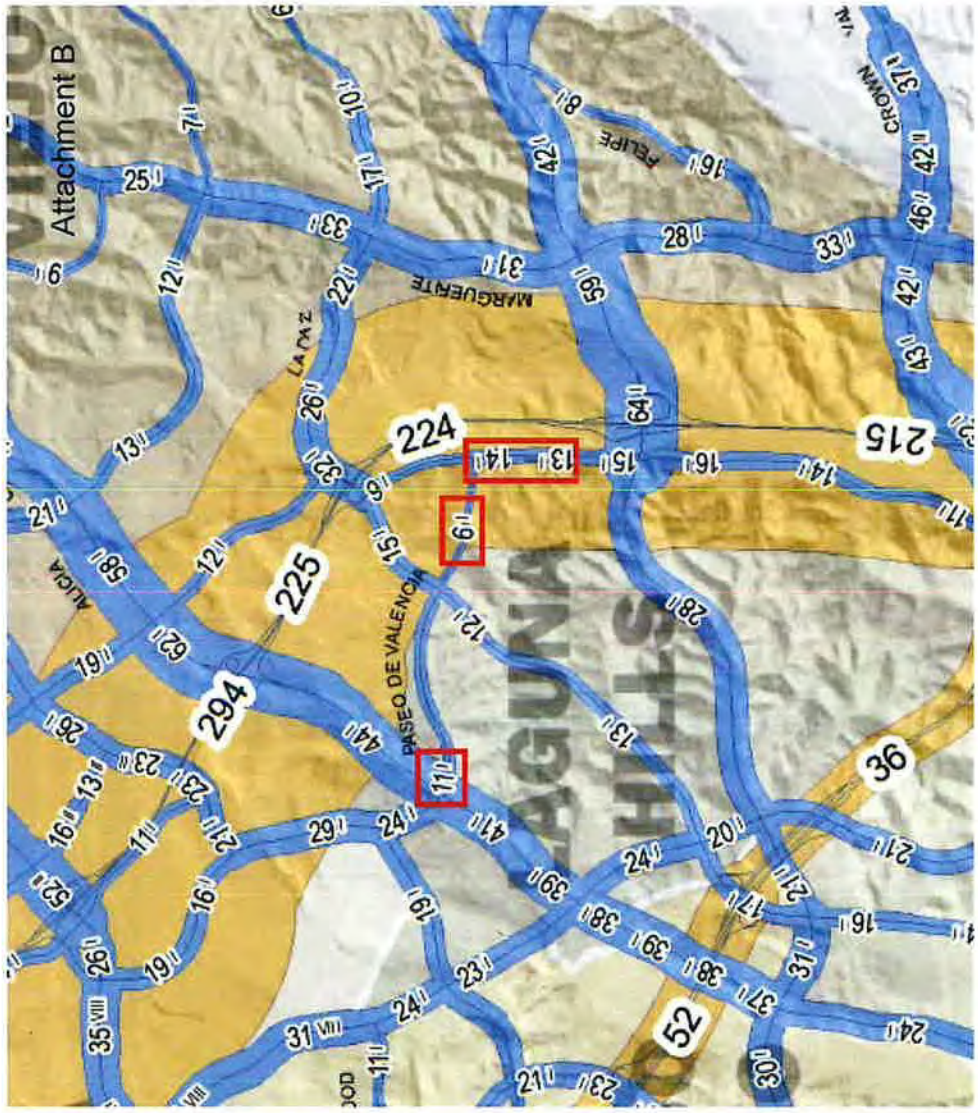
Paseo De Valencia & Cabot Road MPAH Amendment

Project Location Map

MARK THOMAS

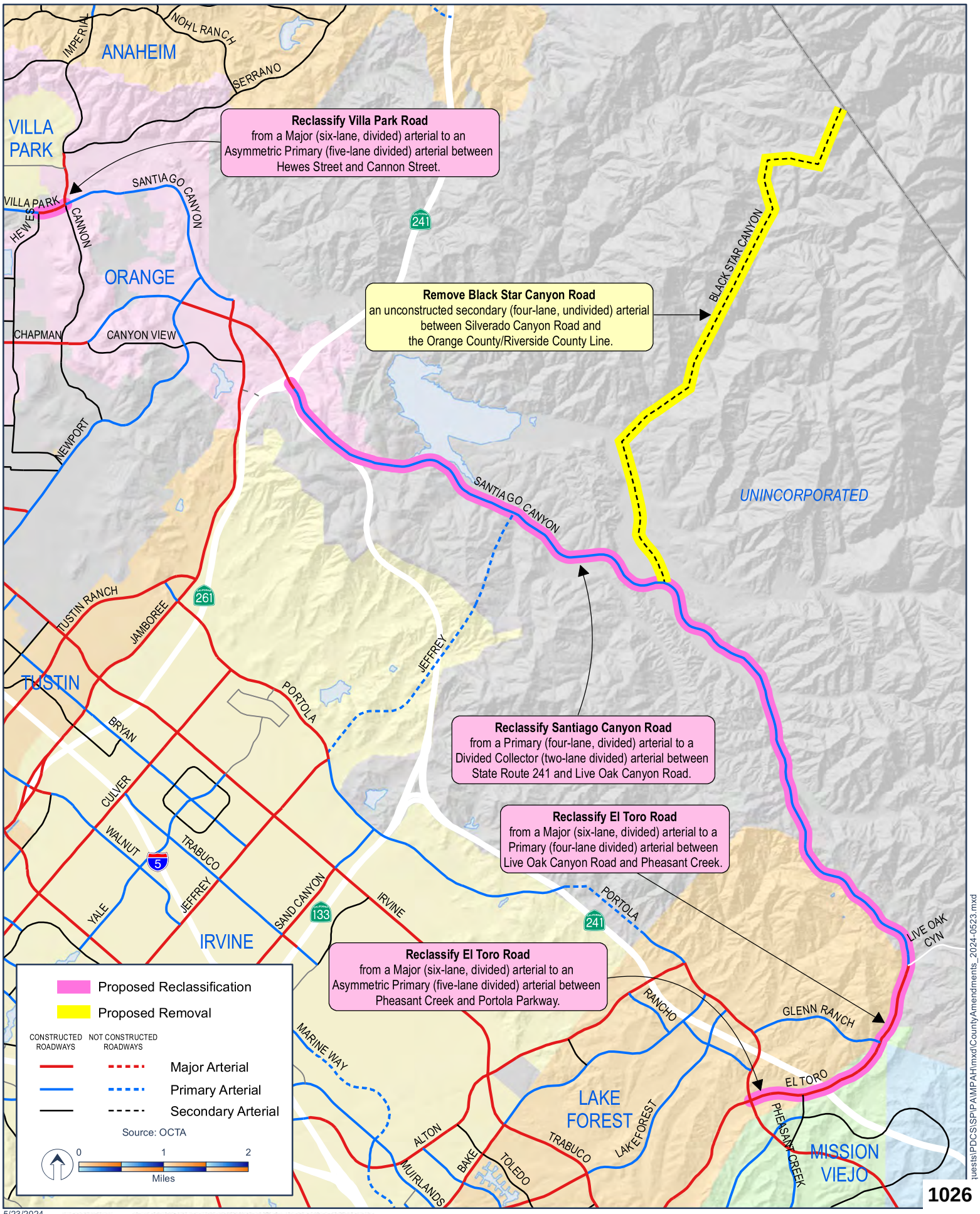
Legend

- MPAH Amendment Limits
- Laguna Hills City Boundary


Attachment B
MARGUERITE
PASEO DE VALENCIA
LAGUNA
HILLS
224
225
294
215
36
52

County of Orange MPAH Amendments

ATTACHMENT 7



5/23/2024

MPAH – Master Plan of Arterial Highways

Attachment 7

...uests\PDCS\SPIPA\MPAH\mxd\CountyAmendments_2024-0523.mxd

March 12, 2024

Consent Form

Project: MPAH Amendment Request for Villa Park Road/Santiago Canyon Road

Lead: Orange County Public Works

Amendment: Reclassification of Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street from a 6-lane Major Arterial Highway to a 5-lane Asymmetric Primary Highway

Please select your response below:

☒ We, City of Orange, grant consent to the subject MPAH Amendment Request, and are in support of OCPW being the lead agency in the Amendment efforts.

☐ We, _____, **do not** grant consent to the subject MPAH Amendment Request. Our reasons are attached as a separate page to this form.

Signature

3/12/2024
Date

Frank Sun
Name (Print)

Assistant PW Director/City Engineer
Title

March 4, 2024

Consent Form

Project: MPAH Amendment Request for Villa Park Road/Santiago Canyon Road

Lead: Orange County Public Works

Amendment: Reclassification of Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street from a 6-lane Major Arterial Highway to a 5-lane Asymmetric Primary Highway

Please select your response below:

☒ We, CITY OF VILLA PARK, grant consent to the subject MPAH Amendment Request, and are in support of OCPW being the lead agency in the Amendment efforts.

☐ We, _____, **do not** grant consent to the subject MPAH Amendment Request. Our reasons are attached as a separate page to this form.

Hamid Reza Torkamandha
Signature

3/13/2024
Date

HAMID TORKAMANHA
Name (Print)

CITY ENGINEER
Title

601 North Ross Street, Santa Ana, CA 92701
P.O. Box 4048, Santa Ana, CA 92702
www.ocpublicworks.com
714.667.8800 | info@ocpw.ocgov.com

March 25, 2024

Consent Form

Project: MPAH Amendment Request for Santiago Canyon Road, El Toro Road, and Black Star Canyon Road

Lead: Orange County Public Works

Amendment:

- Reclassify Santiago Canyon Road (SCR) between SR-241 and Live Oak Canyon Road from its currently planned designation as a Primary Arterial (four-lane divided roadway) to a Divided Collector (two-lane divided roadway with a center turn-lane)
- Reclassify El Toro Road (ETR) between Live Oak Canyon Road and Portola Parkway from its currently planned designation as a Major Arterial (six-lane divided roadway) to a Primary Arterial (four-lane divided roadway) with the exception that the southern end segment between Pheasant Creek and Portola Parkway remain at its current condition as an asymmetric Primary Arterial (five-lane divided roadway)
- Delete Black Star Canyon Road (BSCR) between Silverado Canyon Road and the Orange County/Riverside County line.

Please select your response below:

☒ We, City of Lake Forest, grant consent to the subject MPAH Amendment Request, and are in support of OCPW being the lead agency in the Amendment efforts.

☐ We, _____, **do not** grant consent to the subject MPAH Amendment Request. Our reasons are attached as a separate page to this form.

Tom Wheeler
_____
Signature

April 9, 2024
Date

Thomas E. Wheeler
Name (Print)

Public Works Director/City Engineer
Title

Consent Form

Project: MPAH Amendment Request for Santiago Canyon Road, El Toro Road, and Black Star Canyon Road

Lead: Orange County Public Works

Amendment:

- Reclassify Santiago Canyon Road (SCR) between SR-241 and Live Oak Canyon Road from its currently planned designation as a Primary Arterial (four-lane divided roadway) to a Divided Collector (two-lane divided roadway with a center turn-lane)
- Reclassify El Toro Road (ETR) between Live Oak Canyon Road and Portola Parkway from its currently planned designation as a Major Arterial (six-lane divided roadway) to a Primary Arterial (four-lane divided roadway) with the exception that the southern end segment between Pheasant Creek and Portola Parkway remain at its current condition as an asymmetric Primary Arterial (five-lane divided roadway)
- Delete Black Star Canyon Road (BSCR) between Silverado Canyon Road and the Orange County/Riverside County line.

Please select your response below:

☒ We, The City of Mission Viejo, grant consent to the subject MPAH Amendment Request, and are in support of OCPW being the lead agency in the Amendment efforts.

☐ We, _____, **do not** grant consent to the subject MPAH Amendment Request. Our reasons are attached as a separate page to this form.



_____ April 11, 2024

Signature Date

Mark Chagnon

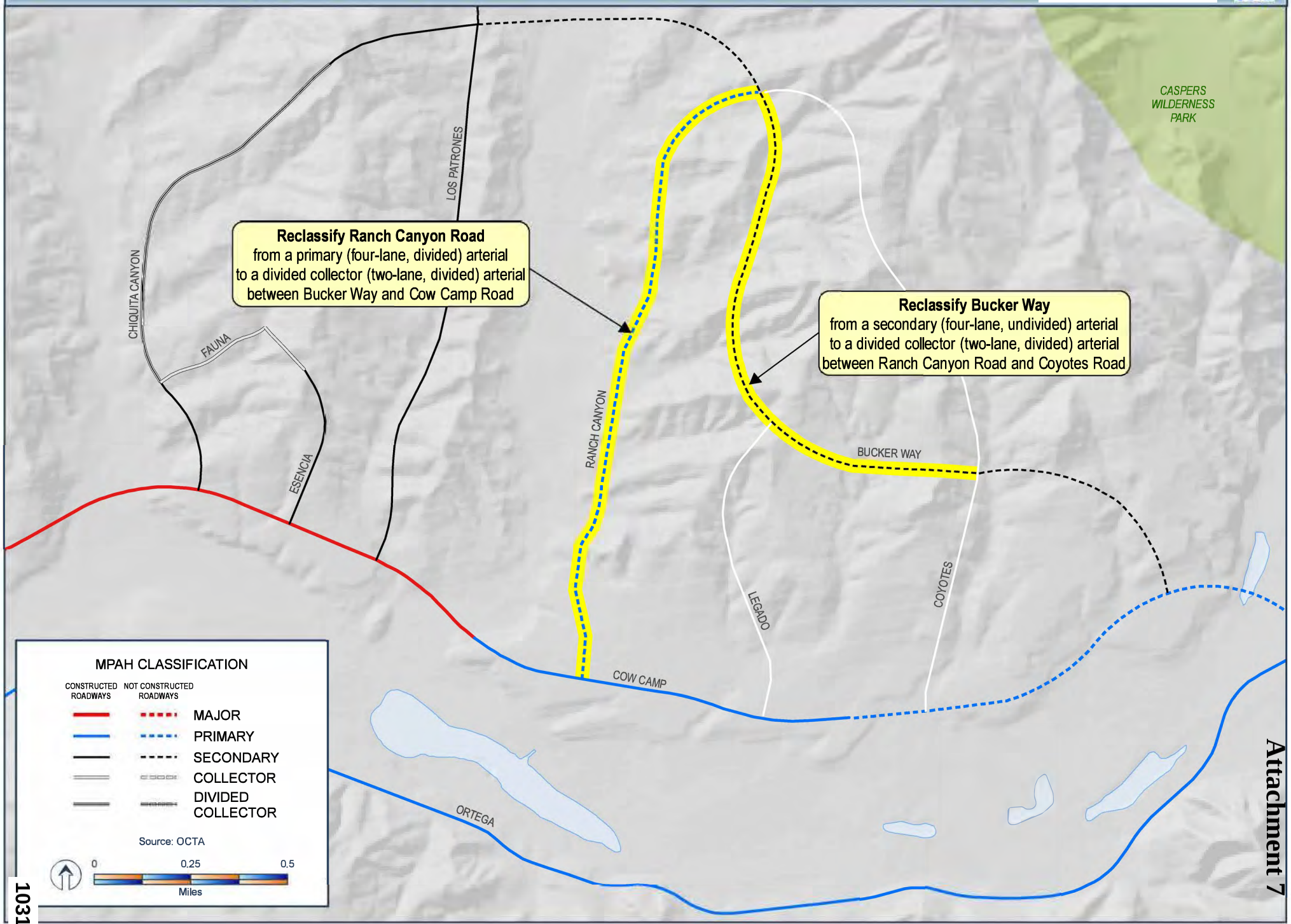
Name (Print)

Director of Public Works

Title

County of Orange MPAH Amendment – Bucker Way and Ranch Canyon Road

ATTACHMENT J

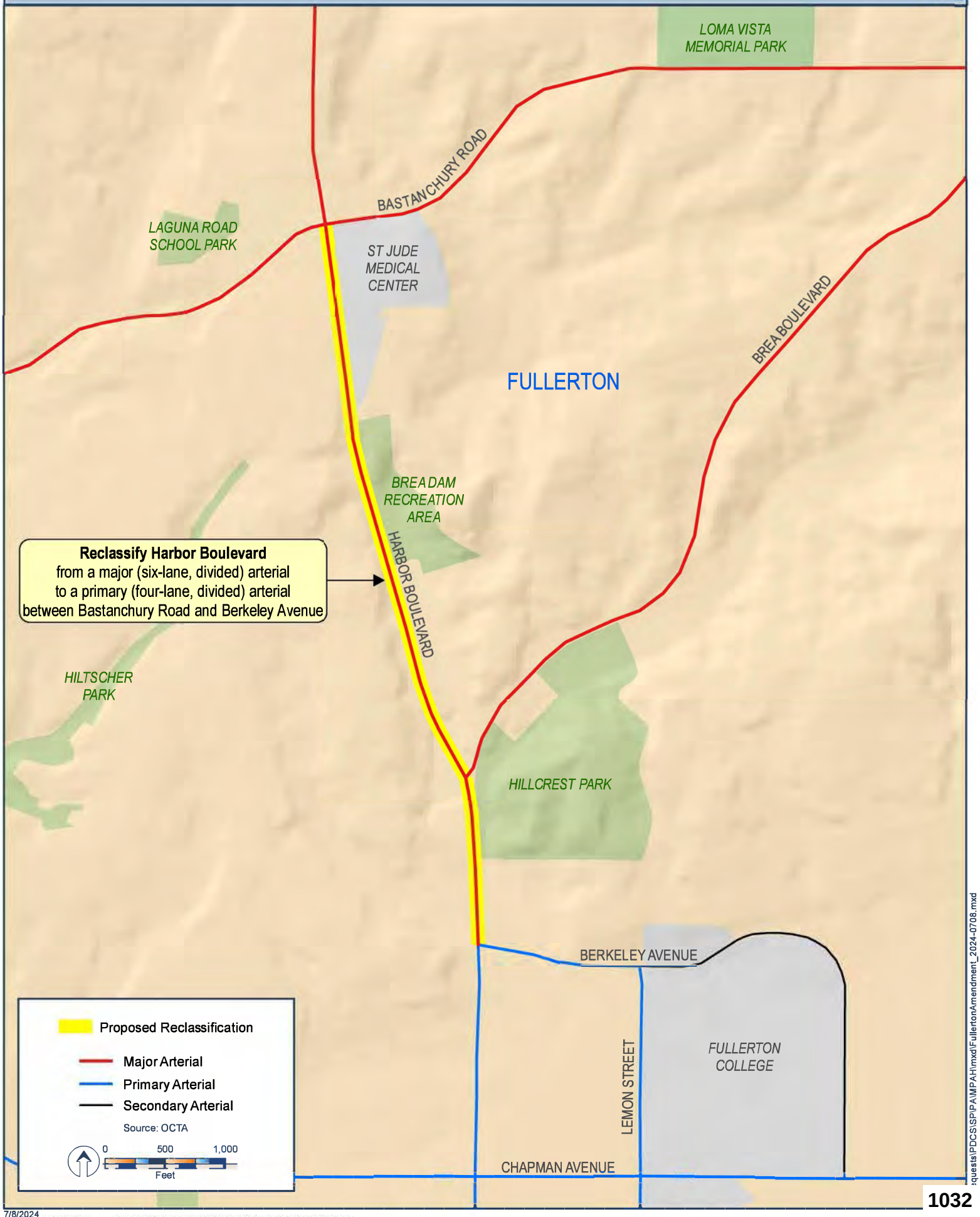


MPAH – Master Plan of Arterial Highways

W:\Requests\PDCS\SP\PA\MPAH\mxd\CountyRMVAmendment_2024-0730.mxd

Attachment 7

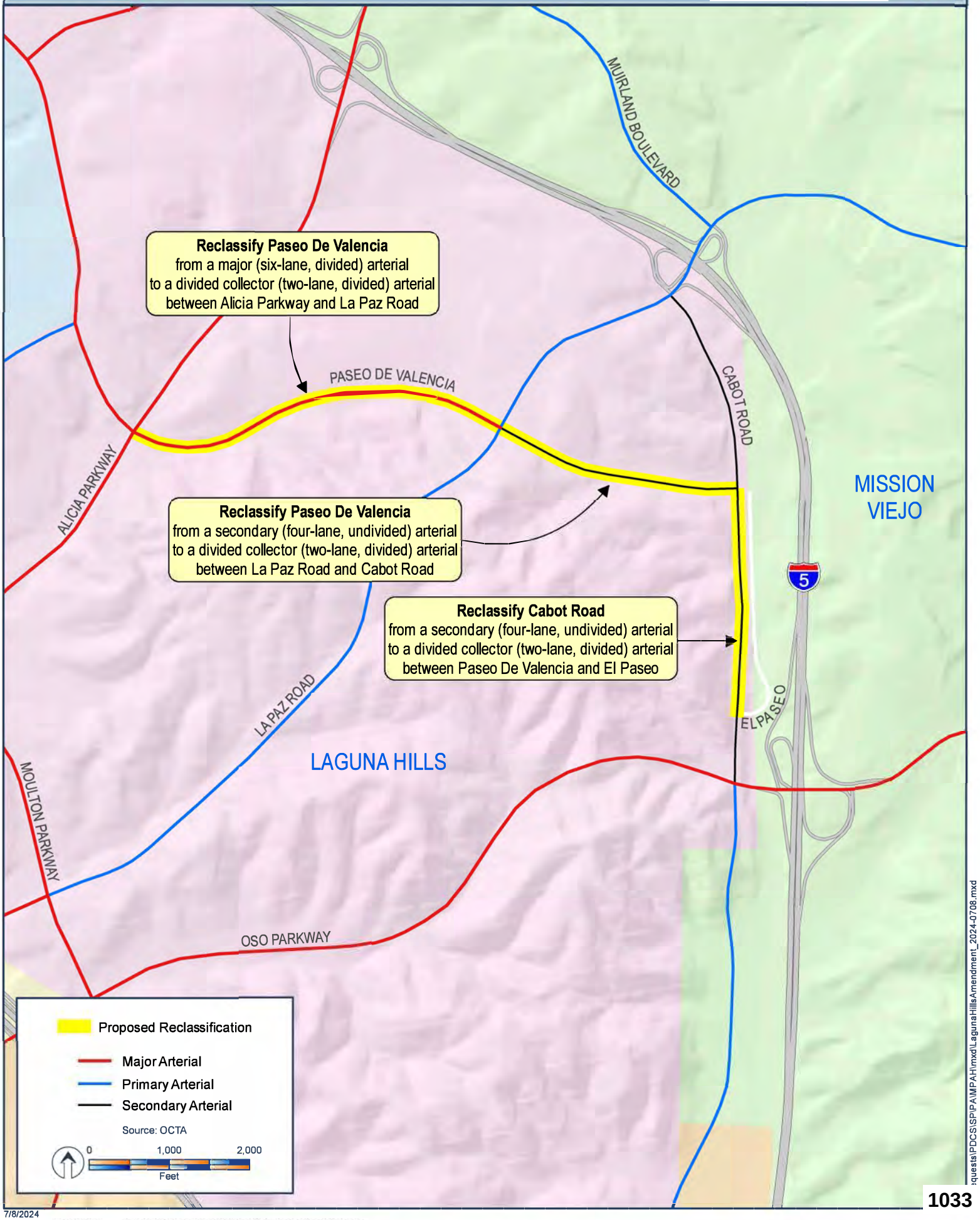
City of Fullerton MPAH Amendment



7/8/2024

MPAH – Master Plan of Arterial Highways

City of Laguna Hills MPAH Amendment



7/8/2024

MPAH – Master Plan of Arterial Highways

ATTACHMENT M

Status Report on Pending Master Plan of Arterial Highways Amendments

#	City	Street	From	To	Type of Amendment	Status	Board Approval Date
1	Brea / County of Orange	Tonner Canyon Road	Brea Canyon Road	Planned Valencia Avenue	Delete	Amendment expired, requires City to submit a new request.	7/12/2021
2	Brea / County of Orange	Valencia Avenue	Carbon Canyon Road	Planned Tonner Canyon Road	Delete	Amendment expired, requires City to submit a new request.	7/12/2021
3	Costa Mesa	Bluff Road	19th Street	Victoria Street	Delete	On hold pending final consensus between Costa Mesa and Newport Beach on circulation plans.	
4	Costa Mesa	19th Street	Placentia Avenue	west city limit	Reclassify from primary to divided collector	On hold pending final consensus between the cities of Costa Mesa and Newport Beach on circulation plans.	
5	County of Orange / Irvine	Jeffrey Road	SR-241	Santiago Canyon Road	Delete	The amendment was conditionally approved by the Board. Waiting for documentation confirming completion of CEQA and general plan change.	5/8/2017
6	Santa Ana/Orange	Fairhaven Avenue	Grand Avenue	Tustin Avenue	Reclassify from secondary to divided collector	The amendment was conditionally approved by the Board. Waiting for documentation confirming completion of CEQA and general plan change.	11/9/2020
7	Irvine	Red Hill Avenue	MacArthur Boulevard	Main Street	Reclassify from major to primary	The amendment was conditionally approved by the Board. Waiting for documentation confirming completion of CEQA and general plan change.	4/10/2023
8	Fullerton	Associated Road	Bastanchury Road	Imperial Highway	Reclassify from a secondary to a collector	The amendment was conditionally approved by the Board. Waiting for documentation confirming completion of CEQA and general plan change.	4/10/2023
9	County	Villa Park Road	Hewes Street	Cannon Street	Reclassify from a major to a asymmetric primary	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
10	County	Santiago Canyon Road	SR-241	Live Oak Canyon Road	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
11	County	El Toro Road	Live Oak Canyon Road	Portola Parkway	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	

Status Report on Pending Master Plan of Arterial Highways Amendments

#	City	Street	From	To	Type of Amendment	Status	Board Approval Date
12	County	Black Star Canyon Road	Silverado Canyon Road	Orange County/Riverside County Line	Delete	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
13	County	Bucker Way	Ranch Canyon Road	Coyotes Road	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
14	County	Ranch Canyon Road	Bucker Way	Cow Camp Road	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
15	Fullerton	Harbor Boulevard	Bastanchury Road	Berkeley Avenue	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
16	Laguna Hills	Paseo De Valencia	Alicia Parkway	Cabot Road	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
17	Laguna Hills	Cabot Road	Paseo De Valencia	El Paseo	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
MOU	Costa Mesa/ Fountain Valley/ Huntington Beach	Garfield Avenue/ Gisler Avenue Crossing over the Santa Ana River	Santa Ana River Westbank	Santa Ana River Eastbank	Reclassify from secondary to right-of-way reserve status	The cities of Costa Mesa, Fountain Valley, Huntington Beach, and OCTA entered a Memorandum of Understanding (C-6-0834). Reasonable progress has been made on implementation of 19 of the 25 mitigation measures that were specified. All improvements are required to be completed by 2025, at which time OCTA will revisit the designation of the Garfield Avenue/Gisler Avenue Bridge.	

Board – Board of Directors
CEQA – California Environmental Quality Act
MOU – Memorandum of understanding
MPAH – Master Plan of Arterial Highways
OCTA - Orange County Transportation Authority
SR-241 – State Route 241

Appendix K Transportation Impact Study

Appendices

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IBI GROUP
18401 Von Karman Avenue – Suite 300
Irvine CA 92612 USA
tel 949 833 5588 fax 949 833 5511
ibigroup.com

Memorandum

To/Attention	Placeworks	**Date**	October 7, 2020
From	IBI Group	**Project No**	119772
cc			
Subject	Santa Ana General Plan Traffic Analysis Updates		

This memo summarizes changes made to the Traffic Analysis prepared in support of the Santa Ana General Plan DEIR. The traffic analysis was circulated among relevant stakeholders in order to solicit input regarding the proposed reclassifications and analysis methodology. The major changes incorporated into the traffic analysis based on the comments received are summarized below:

- Adjustment of volumes in northeast corner for select intersections along Grand Avenue and Tustin Avenue. Volume changes at the intersection of Tustin Avenue and Santa Clara Avenue were highlighted by the City of Tustin as being excessive. Volumes were adjusted at intersections 74-76 and 91-93 in order to improve trip balance.
- Language for LOS impacts and mitigations updated to better address improvements.
- Fair –share added for non-City of Santa Ana intersections.
- LOS worksheets for the 2045 WP AM were added; they were missing in original appendix.
- V/C and LOS updated for intersection #98 at Red Hill and Warner. An impact was caused as part of the update. Mitigation was developed.
- Additional roadway segments added to analysis.
- Mitigation measure for intersection #3 at Euclid Street and Edinger Avenue expanded.
- Mitigation measure for intersection #62 at Santa Ana Boulevard and Santiago Street modified.
- Mitigation at intersection #100 at Red Hill Avenue and Alton Parkway modified.
- Updates to Figure 2.1 through 2.7.

Santa Ana General Plan Update
Traffic Impact Study
FINAL Report

Prepared for:

City of Santa Ana
Public Works Agency
20 Civic Center Plaza, M-36
Santa Ana, CA 92701

By:

IBI Group
18401 Von Karman Ave, Suite 300
Irvine, CA 92612
(949) – 833 – 5588

October 2020

DOCUMENT HISTORY

Version	Date	Originator	Revisions By	Status
1	06/05/20	Y. Esquivel		Initial draft.
2	07/21/20	Y. Esquivel	Y. Esquivel	Draft revision.
3	08/24/20	Y. Esquivel	Y. Esquivel	Draft revision.
4	10/20/20	Y. Esquivel	Y. Esquivel	Final Draft.
5				
6				
7				
8				

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1.0 Introduction

1.1 STUDY PURPOSE

This traffic analysis report has been prepared in support of the General Plan Update (GPU) Draft Program Environmental Impact Report (PEIR) for the City of Santa Ana and to assess requested changes to the Orange County Transportation Authority's (OCTA) Master Plan of Arterial Highways (MPAH) by the City of Santa Ana. This traffic analysis report reviews existing and future traffic conditions under the current General Plan and with the proposed Land Use Element and Circulation Element Updates.

This report is used as part of the Program EIR prepared for the General Plan Update. The Program EIR includes the results and findings of this traffic study report and identifies the significant impacts of the proposed project. The draft Program EIR will be available to the public for review and comment.

1.2 REPORT ORGANIZATION

This report consists of 11 sections.

1.0 Introduction
2.0 Project Description
3.0 Circulation Element Roadway Classifications
4.0 Analysis Methodology
5.0 Existing Year (2020) Conditions
6.0 Future Year 2045 Forecast Modeling
7.0 Future Year (2045) No Project
8.0 Future Year (2045) With Project
9.0 Significant Impacts and Mitigation Measures
10.0 Conclusions
11.0 Appendices

Section 1 provides a brief introduction to the study area and report organization. Section 2 provides a summary of the project description, background history, and project alternatives. Section 3 describes the various roadway classifications within the Circulation Element. Section 4 includes the methodology utilized in the analysis and the referenced standards. The study area roadways and Existing Year (2020) intersection geometry, turning movement volumes, and level of service are presented in Section 5. The Future Year (2045) forecast modeling methodology is provided in Section 6. Section 7 describes the Future Year (2045) No Project condition and provides the roadway segment and intersection level of service results. Section 8 describes the Future Year (2045) With Project Network Alternative condition and provides the roadway segment and intersection level of service results. Section 9 presents the mitigation measures to address facilities operating at an unacceptable level of service. Findings and conclusions from this study are presented in Section 10. Appendices are provided in Section 11.

The City boundaries/project study area is shown in Exhibits 1.1 and 1.2.

Exhibit 1.1 Project Location

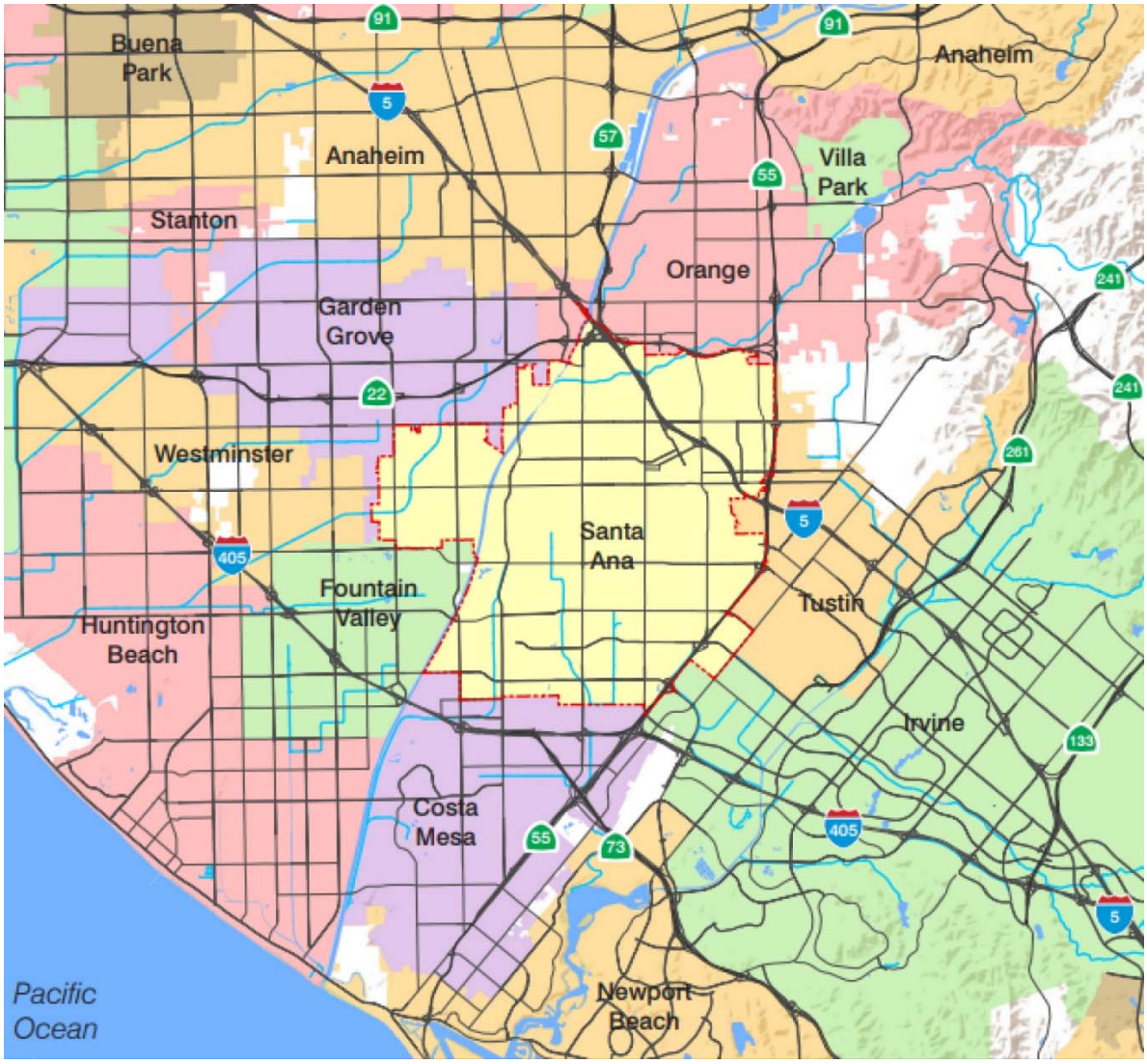
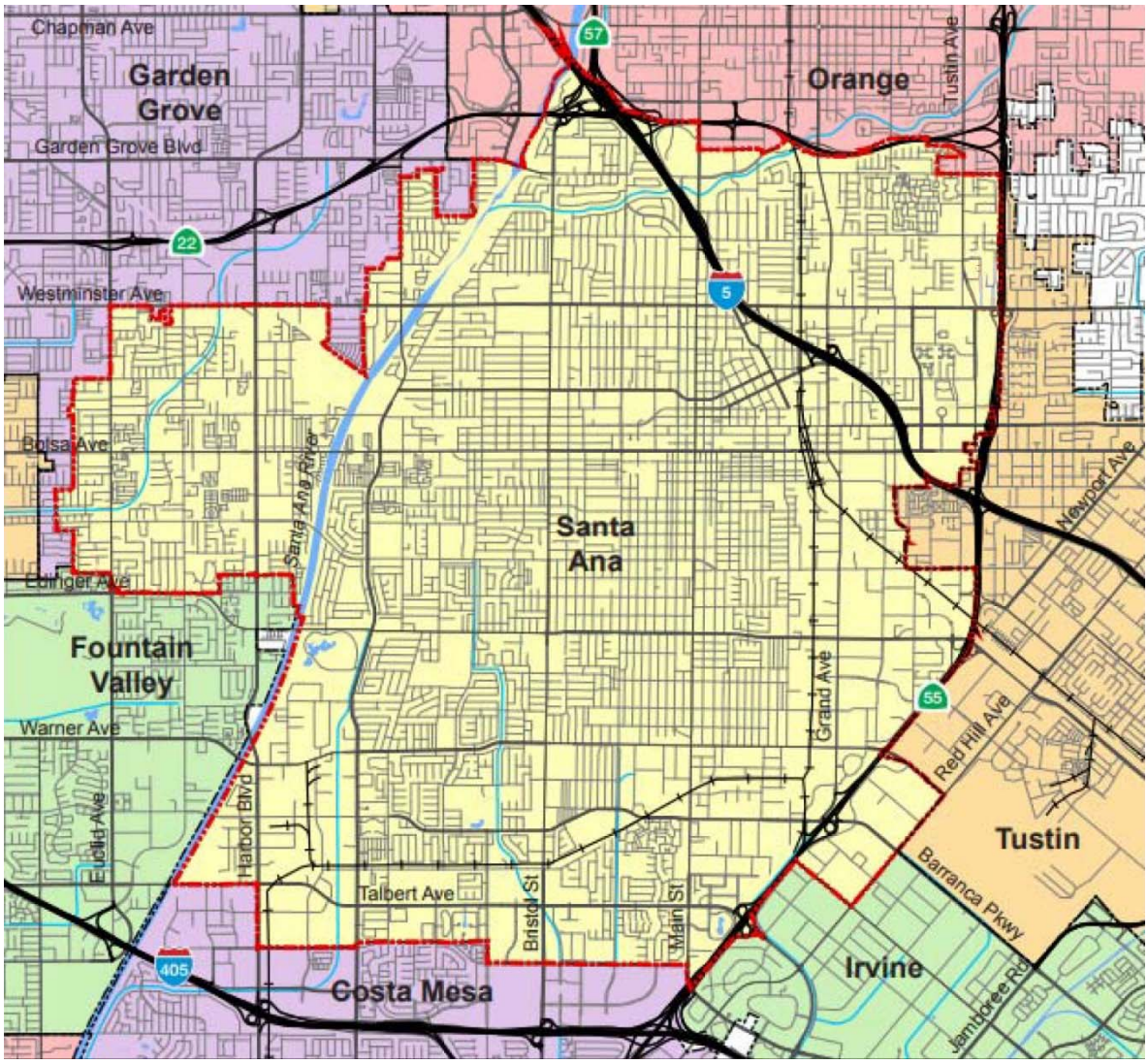


Exhibit 1.2 Project Study Area



2.0 Project Description

This section provides an overview of the project background and traffic study for the General Plan Update. This section also includes a description of the land use and Circulation Element network derived throughout the public outreach and planning process.

2.1 BACKGROUND

The City of Santa Ana's General Plan is comprised of 16 elements, serving as the principal long-range policy and planning document guiding the development, conservation, and enhancement of the City. Each element contains goals and policies related to the physical development of the City. The General Plan was adopted by City Council in 1998 and has been partially amended several times since then. For this analysis, the Land Use and Circulation Elements are of particular interest.

The Land Use Element serves as a long-range guide for land use and development within the City. The primary objective is to manage future growth, minimize land use conflicts, and facilitate growth and development as part of the City's overall vision.

The Circulation Element of the Santa Ana General Plan serves as the City's primary guide for transportation planning. The Circulation Element focuses on roadways and other transportation modes including public transit, railroads, pedestrian and bicycle paths that provide a full range of travel options.

The most recent update to the City of Santa Ana Circulation Element was authorized by City Council in 2011. The project was initiated to update the Circulation Element in its entirety to include the following key components:

- A Complete Streets Policy compliant with the requirements of Assembly Bill (AB) 1358
- OC Streetcar – a proposed streetcar service that would link the Santa Ana Regional Transportation Center (SARTC) with the Civic Center and Garden Grove. The project is currently under construction (at the time this report was written).

Over the last six years, the draft Circulation Element has gone through significant changes, including a new vision, completion of the Santa Ana Safe Mobility Plan, changes to the policy framework and roadway designations, OCTA modeling updates, work by the City on two separate Complete Street studies, advancement of a fixed-guideway/streetcar system and BRT routes, and incorporation of Complete Street Principals.

The updates to both the Circulation Element and the EIR are based on a proposed new roadway network scenario, updated OCTA modeling and new modal split, work on the Bikeway Master Plan and Pedestrian Opportunity Area Plan, regulatory changes (e.g., air quality/GHG requirements per 2015 Climate Action Plan, SB743, etc.), integrating related plans (Safe Mobility Santa Ana Plan, and complete street plans (Downtown and Central Santa Ana Transit Zone plans).

2.2 STUDY AREA

As noted, the project consists of changes to both land uses and the transportation network within the City of Santa Ana. The study area was chosen such that the direct and indirect effects of the project could be assessed, within the City of Santa Ana as well as in the adjacent cities. Study intersections were developed based on the locations of the proposed changes as well as in consideration of input provided by OCTA, Caltrans, and neighboring cities during outreach for the Circulation Element Update. Prior to merging with the GPU, the CEU was in the process of evaluating various transportation network

scenarios. The transportation network proposed in this study is a result of those efforts. Study roadway segments and intersections are shown in Exhibit 2.1 and 2.2, respectively.

Exhibit 2.1 Study Intersections

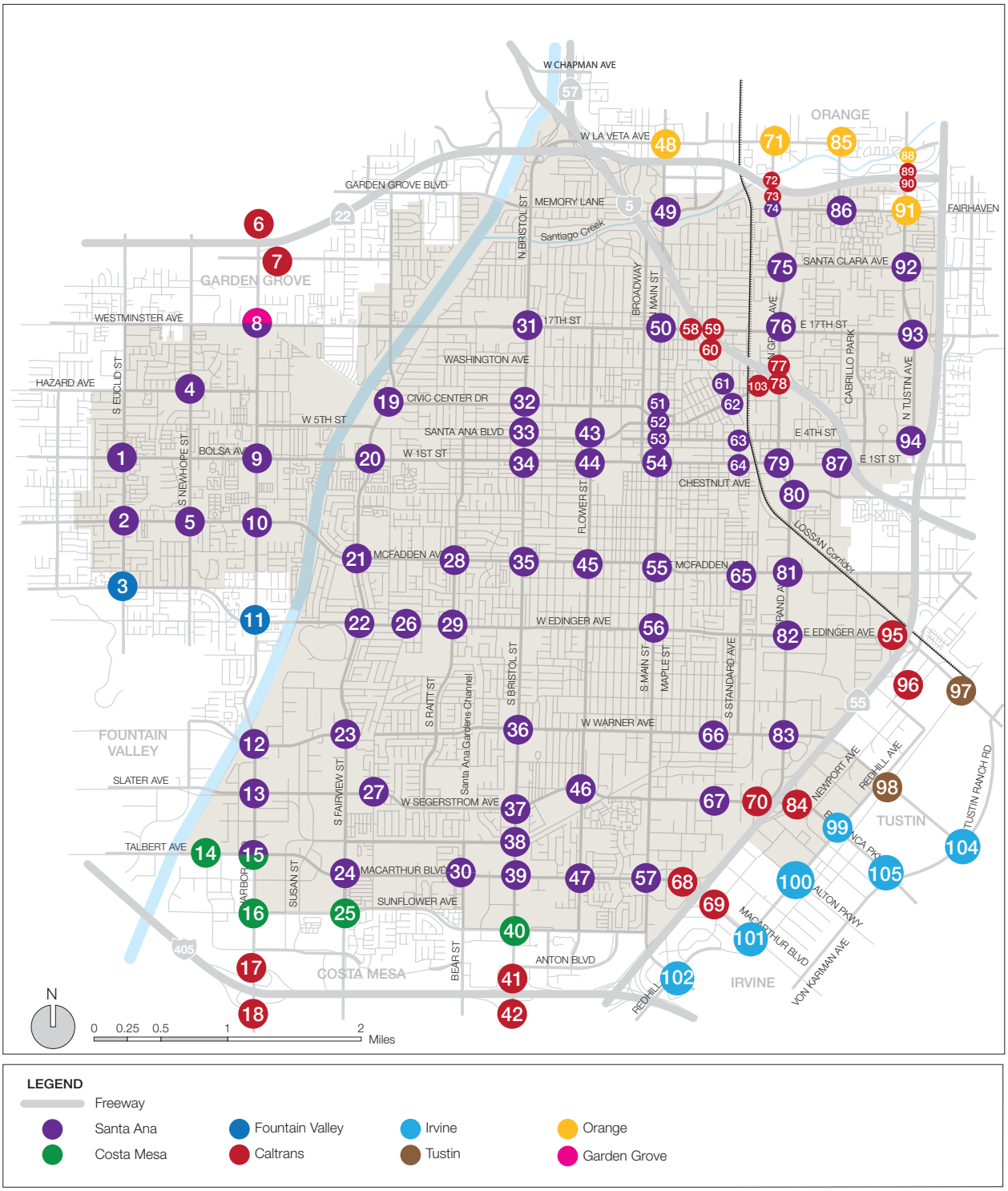
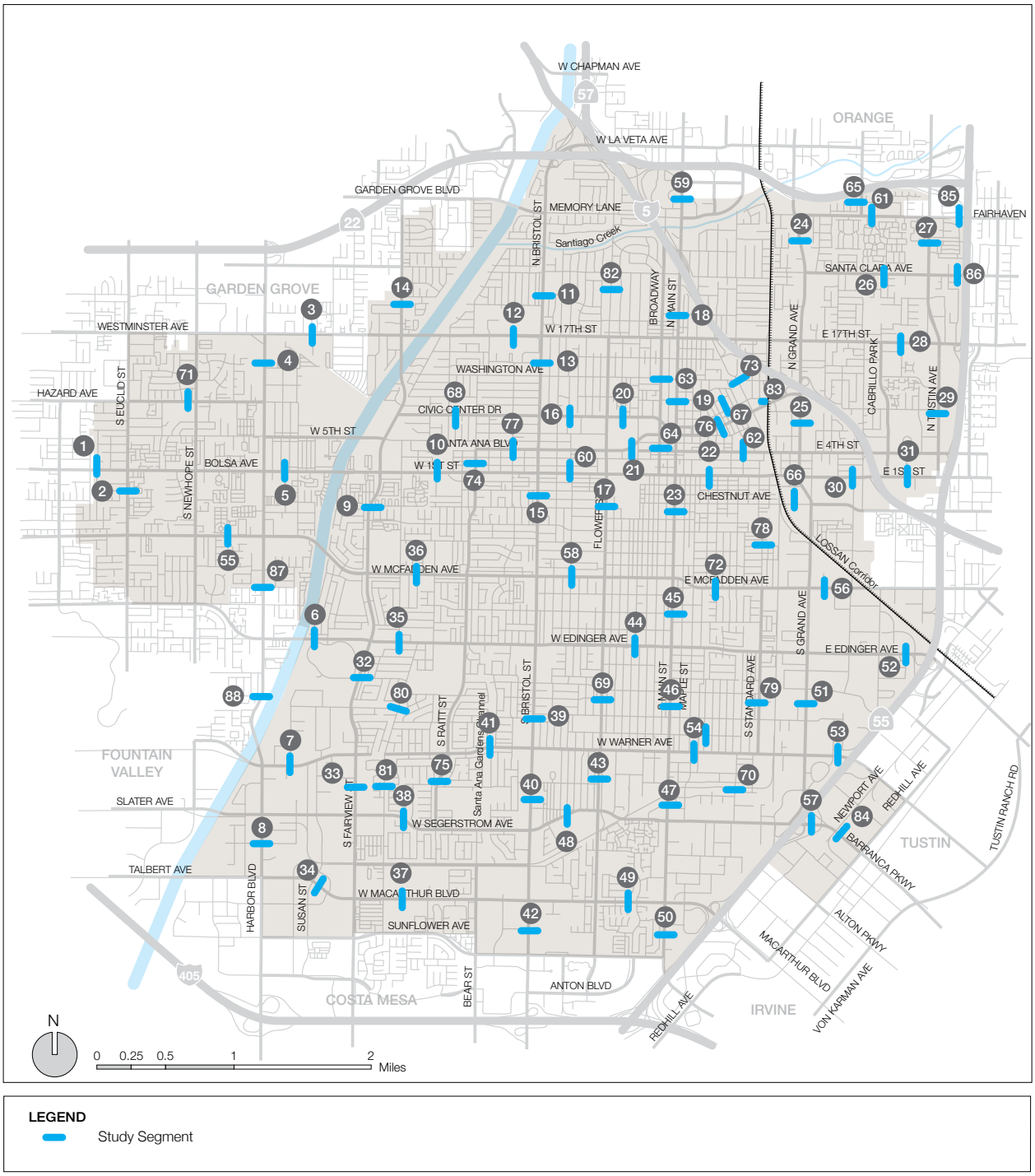


Exhibit 2.2 Study Roadway Segments



LEGEND

Study Segment

2.3 CIRCULATION ELEMENT ROADWAY CLASSIFICATIONS

The Circulation Element contains a Master Plan of Streets and Highways (MPSH) that uses a hierarchy of roadway classifications. Each roadway classification is described by size and function and has specific physical dimensions and characteristics. The MPSH contains regional arterials that connect to the countywide arterial network. OCTA's Master Plan of Arterial Highways (MPAH) is the County's planning document to ensure that the regional arterial highway network is maintained and developed in a coordinated manner between local jurisdictions to support mobility and future growth in the region. Consistency between the MPSH and MPAH is essential in order to maintain a functional regional arterial network and to receive funding from Measure M2 for street improvement projects.

Freeways

Freeways are multi-lane, limited-access, high-volume, high-speed roadways constructed for regional and interregional vehicular travel. Access to these facilities is restricted to interchange ramps at selected roadways along their route. Freeways are under the jurisdiction of the California Department of Transportation (Caltrans).

Principal Arterial

Typically, an eight-lane, divided roadway designed to accommodate between 45,000 to 67,500 vehicle trips daily. The typical right of way width is 144 feet.

Major Arterial

Generally consists of six-travel lanes, and is also divided. Typically, the right-of-way width for this type of roadway is 120 feet. A major arterial is designed to accommodate between 33,900 and 50,600 vehicle trips daily.

Primary Arterial

Generally consists of a four-lane, divided roadway. Typically, the right-of-way width is 100 feet. A primary arterial is designed to accommodate between 22,500 and 33,800 vehicle trips daily.

Secondary Arterial

Generally a four-lane, undivided roadway. The typical right-of-way width for this category of roadway is 80 feet. A secondary arterial is typically designed to accommodate between 15,000 and 22,500 vehicle trips daily.

Divided Collector Arterial

Generally a two-lane roadway with a continuous center two-way left-turn lane. The typical right-of-way width is 80 feet, for the purpose of allocating right-of-way to bicycle and pedestrian use. A divided collector arterial is designed to accommodate up to 22,000 vehicle trips per day.

Collector Street

A two-lane, undivided roadway. The right-of way width for this roadway classification is 60 feet. Collector Streets are also two-lane undivided roadways with a right-of-way width of 56 feet. A divided collector arterial is designed to accommodate up to 11,300 vehicle trips per day.

2.4 SCENARIO SUMMARY

This report presents the baseline analysis results for the existing year (2020) and future year (2045) baseline scenarios as well as future year (2045) project alternative scenario. These scenarios are listed below and described in the following sections:

- Existing Year (2020)
- Future Year (2045) No Project
- Future Year (2045) With Project – Proposed GPU

2.5 EXISTING YEAR (2020)

This scenario is representative of on-the-ground conditions for the transportation network and socio-economic makeup of the city for the year 2020. This scenario serves as a point of reference for future baseline and project alternative scenarios. The network and land use assumptions are as follows:

- The transportation network is reflective of configurations as of April 2020.
- Socio-economic data is representative of December 2019 conditions.

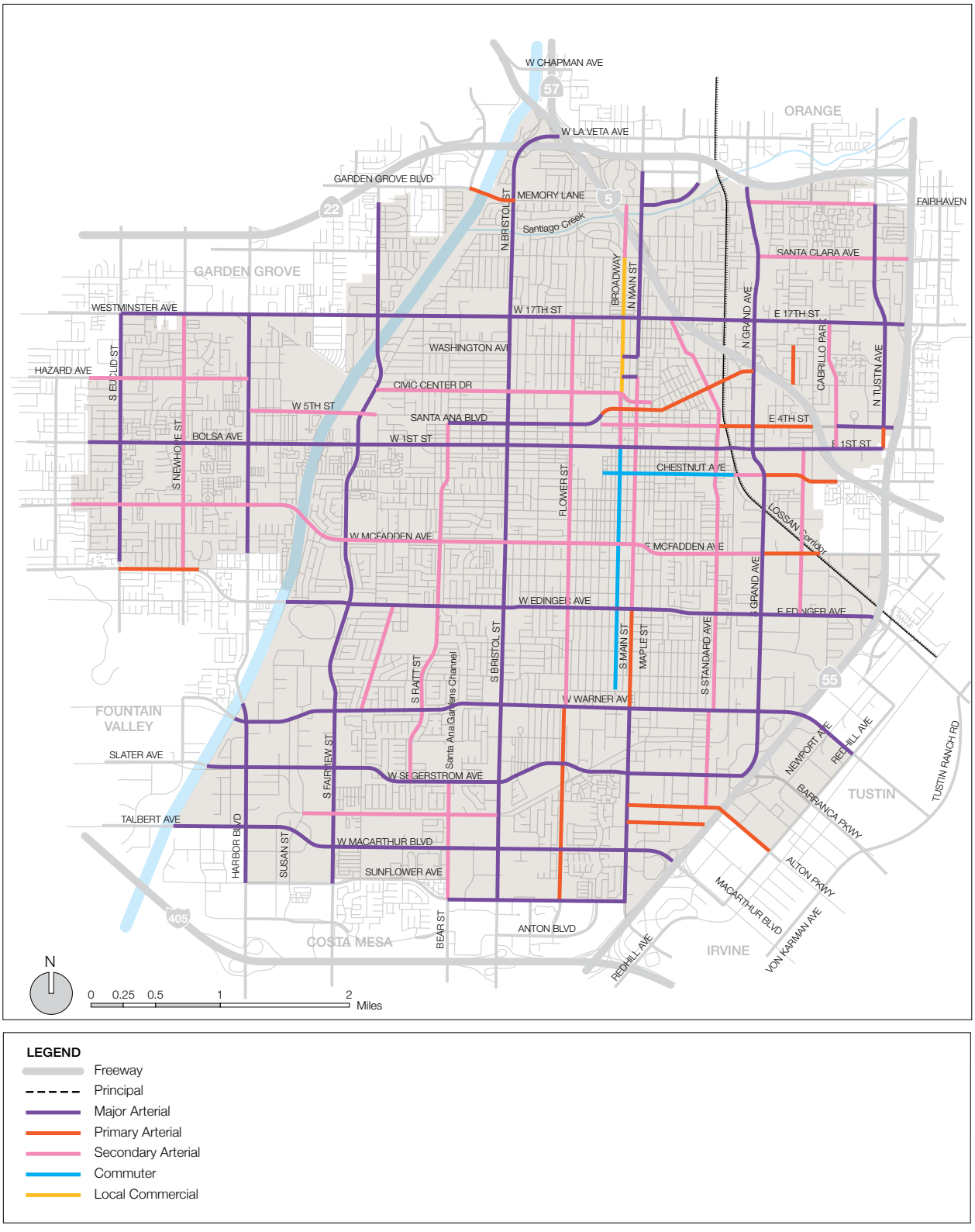
2.6 FUTURE YEAR (2045) NO PROJECT

This scenario serves as the baseline for future year (2045) analysis and consists of the following key assumptions:

- Transportation network and socio-economic data for OCTAM 5.0 Year 2045 Baseline scenario.
- Buildout of roadways consistent with the City of Santa Ana Master Plan of Streets and Highways map (MPSH) as shown in the Circulation Element (1998).
- Buildout of the Orange County Transportation Authority's (OCTA) Master Plan of Arterial Highways (MPAH)
- Freeway and transit improvements considered in the Preferred Alternative of OCTA's LRTP
    - OC Streetcar – The OC Streetcar Project is a proposed streetcar service that would travel between the Santa Ana Regional Transportation Center (SARTC) and Garden Grove. The streetcar is proposed to travel along an exclusive guideway or path on rails that are embedded in the pavement. The streetcar is proposed to travel primarily along Santa Ana Boulevard and along the Pacific Electric Right-of-Way.
    - Bus Rapid Transit (BRT) - These improvements include the Bus Rapid Transit projects along Harbor Boulevard, Bristol Street, and Westminster Avenue/17th Street.
- Modification of mode split for automobile, bicycle, and pedestrians to reflect new bicycle/pedestrian trips.

Exhibit 2.3 presents the current MPSH, which is consistent with the No Project Alternative. Exhibit 2.4 shows current MPAH designations. Exhibit 2.5 shows the Santa Ana Fixed Guideway (OC Streetcar) alignment.

Exhibit 2.3 Master Plan of Streets and Highways (MPSH)



LEGEND

- Freeway
- Principal
- Major Arterial
- Primary Arterial
- Secondary Arterial
- Commuter
- Local Commercial

Exhibit 2.4 OCTA Master Plan of Arterial Highways (MPAH)

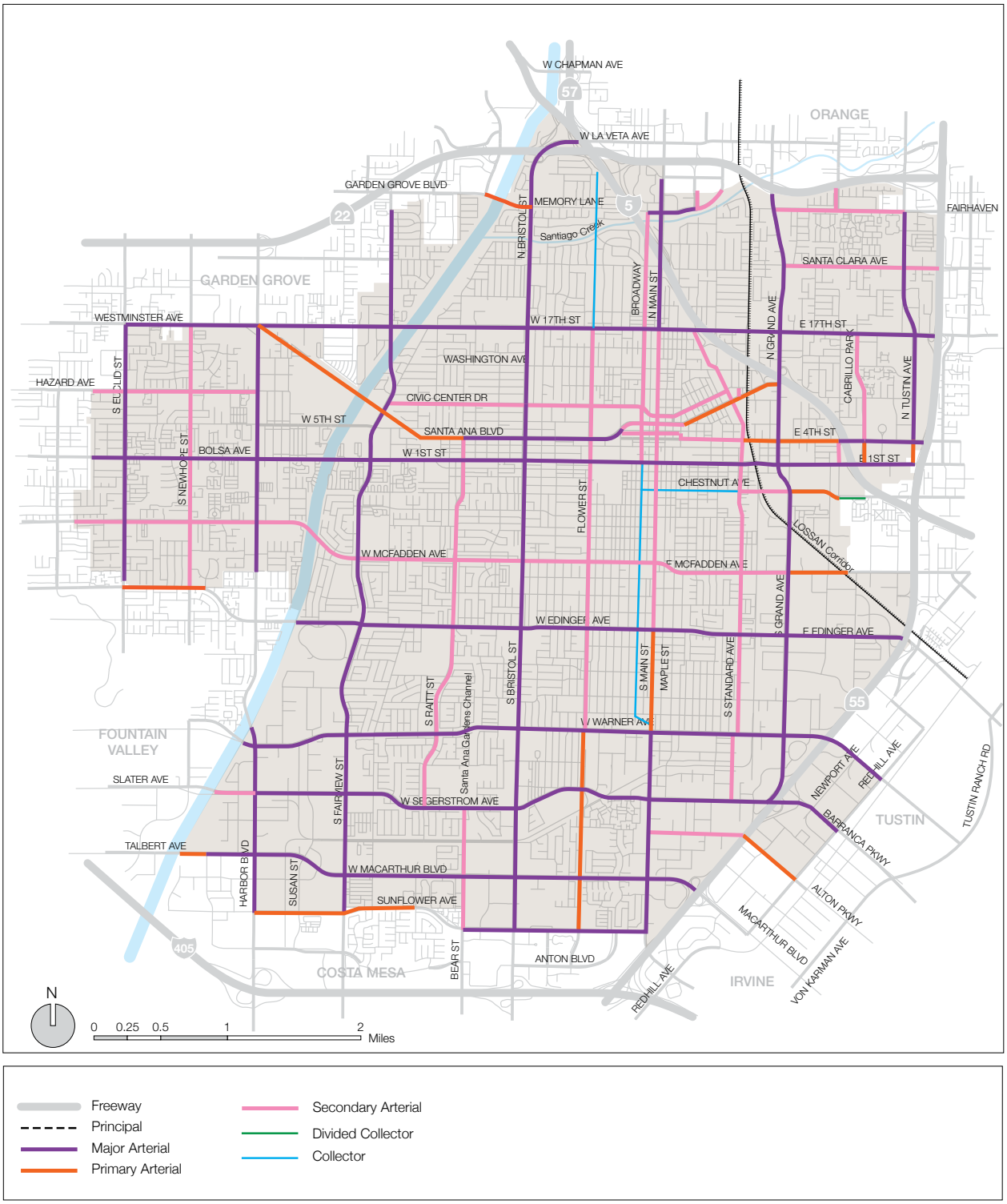


Exhibit 2.5 OC Streetcar Alignment



Source: Orange County Transportation Authority

2.7 FUTURE YEAR (2045) WITH PROJECT

This scenario is based on the Future Year (2045) No Project scenario, with modifications to both the transportation network and socio-economic data. Reclassifications to some roadways are proposed to facilitate the implementation of Complete Streets throughout the City as well as reconcile inconsistencies between the MPSH and MPAH. Additionally, this scenario considers the buildout of an updated Land Use Element for the General Plan.

The transportation network was developed through the evaluation of alternatives in the Circulation Element Update and in consideration of input provided by OCTA, Caltrans, and neighboring cities during outreach. This network is based on that of the No Project scenario, with the addition of the following modifications.

Classify the following streets as Divided Collector Arterials

- Santa Clara between Grand Avenue and SR-55 Freeway (currently Secondary)
- Flower Street between Warner Avenue and First Street (currently Secondary)
- Chestnut Avenue between Standard Avenue and East City Limit (currently Secondary/Primary)
- Raitt Street between Segerstrom and Santa Ana Boulevard (currently Secondary)
- Civic Center Drive between Fairview Street and Bristol Street (currently Secondary)
- Penn Way between I-5 on/off ramps and Washington Avenue (currently a secondary)
- Santiago Street between Washington Avenue and 6th Street (currently a secondary)
- Standard Avenue between 6th Street and Warner Avenue (currently a Secondary Arterial)
- Santa Ana Boulevard between French Street and Santiago Street (currently a Primary Arterial)
- Santa Ana Boulevard between Raitt and Flower (currently a Major)
- Cambridge Street between Fairhaven and SR-22 Freeway (currently Secondary)
- Hazard Avenue between Euclid and Harbor (currently Secondary)
- Halladay Avenue between Warner and Dyer (currently Secondary)
- McFadden Avenue between Harbor Blvd and Grand Ave (currently Secondary)
- Broadway between 1st and 17th (currently Secondary)
- 4th Street between French and Grand (currently Secondary/Primary)
- Fairhaven Avenue from Grand to Tustin (currently Secondary)

Classify the following streets as Primary Arterials

- Santa Ana Boulevard between Flower and Ross (currently a Major)
- 1st Street between Bristol Street and Tustin Avenue (currently Major)

Classify the following streets as Collector Arterials

- Civic Center Drive between French and Santiago (currently a Secondary Arterial)

Add the following streets to the MPAH as Divided Collector Arterials

- Greenville Street between Segerstrom Avenue and Warner Avenue

Add the following streets to the MPAH as Collector Streets

- Greenville Street between Edinger Avenue and Warner Avenue

Remove the following streets from the MPAH

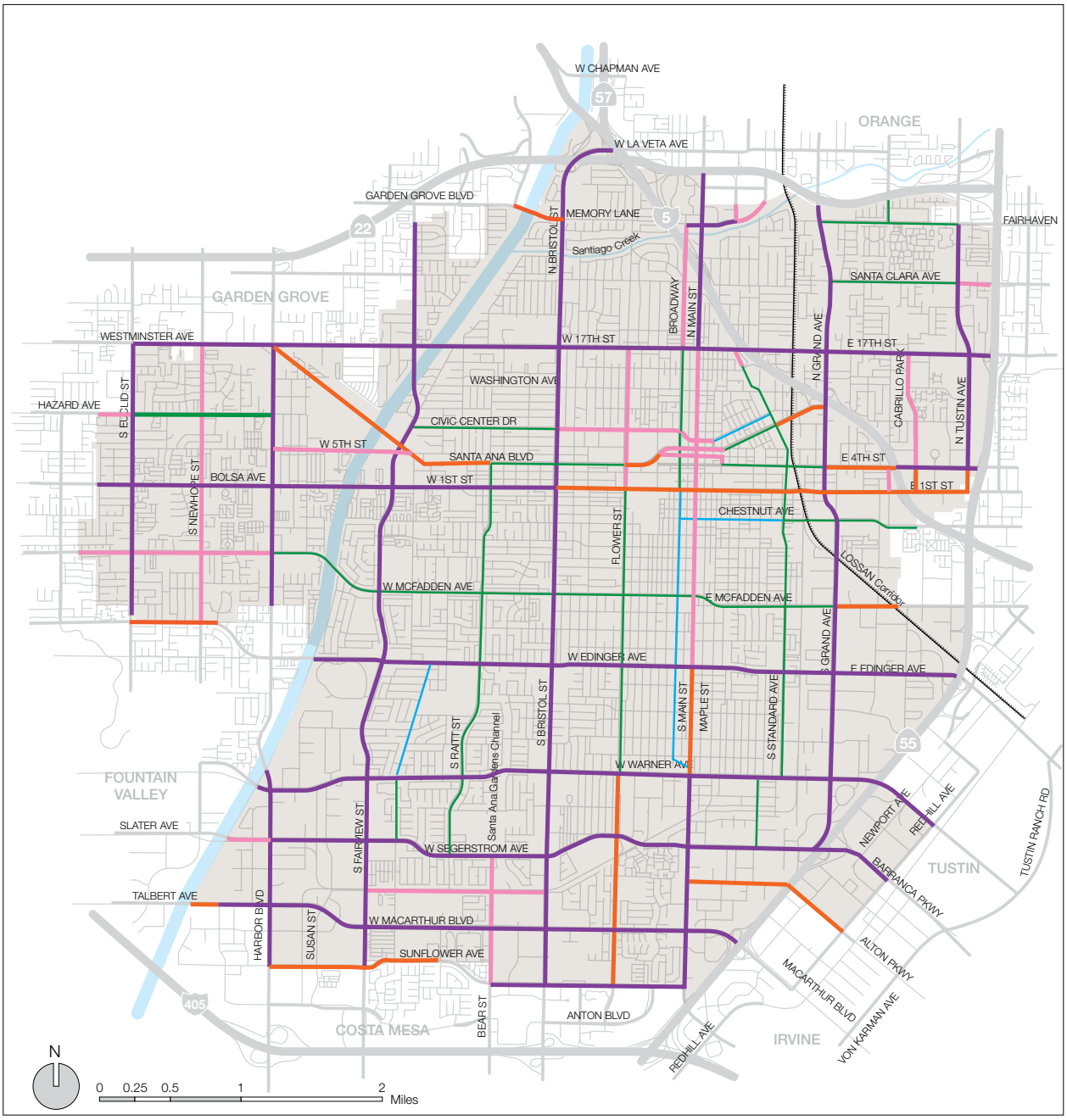
- Flower Street between 17th Street and its northern terminus
- Logan Street between Civic Center Drive and Santa Ana Boulevard

Exhibit 2.6 presents the proposed street reclassifications. Exhibit 2.7 presents the With Project transportation network.

Exhibit 2.6 Proposed Arterial Roadway Reclassifications



Exhibit 2.7 Proposed Santa Ana Circulation Element Transportation Network



3.0 Analysis Methodology

The analysis methodology and impact criteria used in this analysis conform to the California Environmental Quality Act (CEQA) guidelines for a traffic impact analysis. CEQA identifies VMT as the preferred metric for identifying environmental impacts. Although VMT governs CEQA impacts, vehicle LOS is also assessed in order to address local operational performance and impacts. Additionally, roadway performance is assessed in order to monitor conformance with the Orange County Transportation Authority's (OCTA) Master Plan of Arterial Highways (MPAH) operational requirements.

Study intersections and roadway segments were assessed using the method specified by the City Santa Ana, Orange County Congestion Management Program (CMP) guidelines, and other governing agency guidelines. As such, intersections under the jurisdiction of the Cities of Santa Ana, Costa Mesa, Irvine, Tustin, Garden Grove, Fountain Valley, and Orange were assessed using the Intersection Capacity Utilization (ICU) method. Intersections under the jurisdiction of Caltrans were assessed using the Highway Capacity Manual 2000 method (HCM 2000).

3.1 VEHICLE MILES TRAVELED (VMT) ANALYSIS

The VMT analysis was prepared in conformance with the City of Santa Ana VMT Analysis Guidelines (VMT Guidelines; September 2019). The City's VMT Guidelines are based on the Office of Planning and Research's (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018). A VMT analysis is to be conducted for land use and transportation projects that have the potential to increase the average VMT per service population (VMT/SP).

VMT is defined as the total miles traveled by vehicles (within a transportation network). Service population is described as the population generating the VMT of interest. A VMT analysis may be conducted for large-scale projects such as land use plans or individual transportation/development projects. For large-scale projects, it is appropriate to assess VMT impacts based on total VMT/SP. For individual projects, the VMT analysis may consider VMT and VMT/SP based on specific trip types (e.g. work-based trips) and the corresponding population which generates said VMT (e.g. employees).

VMT was generated with data from OCTAM 5.0 using the full-accounting, origin-destination (OD) methodology. The full-accounting, origin-destination methodology considers the VMT generated by all internal-internal (I-I), internal-external (I-X), and external-internal (X-I) trips. These trip types refer to trips that include an origin and/or destination within the study areas (City of Santa Ana and Orange County). For example, an internal-internal trip refers to a trip which begins in the City and also ends in the City; an internal-external trip refers to a trip which begins in the City but ends outside of the City; an external-internal trip refers to a trip which begins outside of the City but ends in the City. It should be noted that while the majority of trips are captured in their entirety, a small portion are cut off at the OCTAM 5.0 boundaries. Thus, while the number of trips to and from the City of Santa Ana which cross the model boundary are known at various locations along major access points (highways, freeways, etc.) the trip length past the OCTAM 5.0 boundary is not.

In order to account for the VMT generated by the portions of trips outside the model boundaries, trip length assumptions were developed. These assumptions are based on the destinations/attractions near the model boundary as well as likely attractions/destinations beyond the immediate developments near the boundary limits. For example, northbound and southbound trips along I-5 at the San Diego County Line were assigned a trip length of 20 miles past the model's southern boundary (the San Diego County Line). This assumption is intended to provide a general account for VMT which considers trips to various locations such as Camp Pendleton, the US-Mexico Border, and various cities within San Diego County. Trip lengths of zero (0) miles are assigned to those trips which are not considered to extend further than 5 miles past the OCTAM boundary; due to the approximate boundary of the model, it would not be appropriate to pursue such a level of accuracy. A summary of the trip length assumptions to/from major OCTAM 5.0 boundary access points is provided below:

- SR-101 near Ventura (20 miles)
- SR-150 near Ojai (0 miles)
- SR-33 near Ventura (0 miles)
- I-5 near Santa Clarita (50 miles)
- SR-14 near Santa Clarita (20 miles)
- I-15 north of I-215 (50 miles)
- I-10 near Banning (30 miles)
- SR-243 south of Banning (10 miles)
- SR-74 east of Hemet (20 miles)
- SR-79 near Temecula (20 miles)
- I-15 near Temecula (0 miles)
- I-5 at San Diego County Line (20 miles)

Due to the nature and scale of the proposed project, the analysis considers the total VMT and service population which consists of the aggregate of total employees and population within the study area. When aggregating employees and residents, an employee reduction factor was applied to account for overlaps in the two (employees who are also residents). Reduction factors were applied to both the City of Santa Ana and County of Orange employees then aggregated to the resident population. Reduction factors are based on employment data within the Southern California Association of Governments (SCAG) Local Profiles Reports (2019) for the City of Santa Ana and Orange County. The SCAG reports show that 20.8% of employees within the City are also residents of the City and that 65.3% of employees within the County are also residents of the County.

VMT and VMT/SP is provided for all scenarios. Existing year (2020) VMT, SP, and VMT/SP values were developed through linear interpolation of 2016 and 2045 baseline OCTAM scenarios. This method was chosen due to the availability of consistent VMT and socio-economic data (SED) used to derive VMT/SP. Although existing year (2020) SED is available, it does not have an accompanying VMT dataset since there is no baseline OCTAM roadway/highway network for existing year (2020) conditions. Therefore, the traffic study uses both interpolated VMT and SED based on OCTAM 2016 baseline and the 2045 forecasts to develop the existing year (2020) values.

Per the City of Santa Ana Traffic Impact Study Guidelines (2019), the project should be screened to determine the need for a full VMT analysis based on the following screening criteria. Firstly, two conditions should be considered:

- Does the project have the potential to reduce VMT/SP?
- Is the project consistent with the Regional Transportation Plan (RTP) / Sustainable Communities Strategy's (SCS)?

If both conditions are met, then a project may be precluded from a full VMT analysis if any of the following criteria are met:

- Projects which serve the local community and have the potential to reduce VMT, such as neighborhood K-12 schools and local-serving retail less than 50,000 square feet (Charter schools are excluded from this criteria.
- Projects that generate less than 110 net daily trips.
- Projects located within Transit Priority Areas (TPAs)
- Projects located in a low-VMT generating Traffic Analysis Zone (TAZ).
    - Proposed land use shall be consistent with the existing land use generating the low VMT/SP.
    - Proposed land use shall be consistent with the RTP/SCS assumptions or decreases VMT/SP compared to RTP/SCS.

The criteria above are presented in a compact manner. Detailed criteria descriptions and supporting material are provided in the City of Santa Ana Traffic Impact Study Guidelines (2019).

VMT impacts are assessed for the Future Year (2045) With Project scenario, based on changes from both the Existing Year (2020) and Future Year (2045) No Project scenarios. VMT impact thresholds for land use plans (such as General Plans and Specific Plans) are listed below:

- Project Level Impact
    - A project is considered to have a significant impact if the project VMT/SP (for the land use plan) exceeds 15% below the existing total daily VMT/SP for the County; or
- Cumulative Impact
    - A project is considered to have a significant impact if the project results in a negative effect on VMT/SP at the citywide level (City VMT/SP is higher with the project than without it.

Where an impact is identified, the project's VMT/SP should be mitigated to be at or less than 15% below the existing Countywide VMT/SP. Mitigation measures may include changes to the project, implementation of transportation demand management (TDM) measures, impact fees, a mitigation exchange, or any other measure approved by the City's Traffic Engineering Division and Planning Department.

3.2 ROADWAY LEVEL OF SERVICE ANALYSIS

Roadway performance was assessed based on the volume-to-capacity (V/C) ratio, as specified in the Santa Ana Circulation Element (1998). The V/C ratio is calculated by dividing the roadway volume by the capacity of the roadway. Roadway capacities are presented in Table 3-1 and resemble those presented in the Santa Ana Circulation Element. The Santa Ana Circulation Element, however, does not provide roadway capacities for the Divided Collector and five-lane divided arterial roadway types. Capacities for the Divided Collector roadway were taken from the Orange County Master Plan of Arterial and Highways (OC MPAH); capacities for the five-lane divided arterial roadway were developed by averaging the capacities of the Major and Primary Arterial roadway types. The capacities shown

correspond to the maximum volume that can be experienced in order to achieve the corresponding level of service (LOS). Therefore, a volume greater than that listed in the column labeled "LOS E" will result in LOS F. The minimum level of service for roadways in the City of Santa Ana is LOS D, per the Circulation Element (1998). The OC MPAH suggests a minimum LOS of C be maintained for roadways, with the intent of maintaining LOS D through intersections. Descriptions of operation and the range of volume-to-capacity ratios for each LOS grade are presented in Table 3-2.

Table 3-1 Roadway Capacity and LOS

CLASSIFICATION	LANES	LOS A	LOS B	LOS C	LOS D	LOS E
Principal Arterial	8D	45,000	52,500	60,000	67,500	75,000
Major Arterial	6D	33,900	39,400	45,000	50,600	56,300
Major / Primary Arterial	5D	28,200	32,850	37,500	42,200	46,900
Primary Arterial	4D	22,500	26,300	30,000	33,800	37,500
Secondary Arterial	4U	15,000	17,500	20,000	22,500	25,000
Divided Collector	2D	9,000	12,000	15,000	20,000	22,000
Collector	2U	7,500	8,800	10,000	11,300	12,500

Sources: City of Santa Ana, General Plan – Circulation Element (1998); Orange County Master Plan of Arterials and Highways (2017).

3.3 INTERSECTION LEVEL OF SERVICE ANALYSIS

Study intersections were assessed using the methodology described in the governing agency's traffic impact analysis guidelines. As such, intersections were assessed using the Intersection Capacity Utilization (ICU) methodology or the Highway Capacity Manual 2000 method (HCM 2000). A description of each as well as the level of service criteria is provided in the following sections.

3.3.1 ICU Methodology

Signalized intersections under the jurisdiction of the Cities of Santa Ana, Costa Mesa, Orange, Irvine, Tustin, and Fountain Valley were assessed using the ICU methodology. The ICU methodology is based on intersection V/C ratio. The V/C ratio value for each movement is the observed volume divided by the saturation flow volume. The intersection ICU value is the sum of the V/C values for the critical movement on each leg, where critical movements are the pairs of conflicting movements with the highest combined V/C values. ICU is expressed as a decimal value (e.g. 0.74), where 1.00 represents the saturated condition where the volume of traffic flow is equal to the capacity. LOS descriptions and their corresponding ranges of V/C ratios are provided in Table 3-2.

This study uses maximum saturation volumes of 1,600 vehicles per hour per lane (VPHPL) for turn lanes and 1,700 VPHPL for through lanes. A 5% loss time per cycle length was applied.

Table 3-2 ADT / ICU Level of Service Descriptions

LOS	V/C	Definition
A	0.00 – 0.60	Free Flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.
B	0.61 – 0.70	Stable flow. The presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream with LOS A. The general level of comfort and convenience provided is somewhat less than that of LOS A, because the presence of others in the traffic stream begins to affect individual behavior.
C	0.71 – 0.80	Stable flow. This LOS marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.
D	0.81 – 0.90	High density, but stable flow. Speed and freedom to maneuver are severely restricted, and the drive or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.
E	0.91 – 1.00	Operating conditions at or near the capacity level. All speeds are reduced to a slow but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and drivers or pedestrian frustration is generally high. Operations at this level are usually unstable because small increases in flow or minor variations within the stream will cause a breakdown.
F	> 1.00	Forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse that point. Queues form up behind such locations as arrival flow exceeds discharge flow.

Source: City of Santa Ana, General Plan – Circulation Element, 1998

3.3.2 Highway Capacity Manual (HCM) Methodology

Study intersections that are Caltrans operated intersections were evaluated using the Highway Capacity Manual 2000 (HCM 2000) Operations methodology consistent with Caltrans guidelines. Chapter 16 of the Highway Capacity Manual (HCM) 2000 contains the operations methodology for signalized intersections, which evaluates LOS based on controlled delay per vehicle. Controlled delay is defined as the portion of the total delay attributed to the traffic signal operation including deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Consistent with HCM 2000 methodology the maximum saturation flow rate for intersections analyzed using HCM 2000 is 1,900 VPHPL. The relationship between controlled delay per vehicle and LOS for signalized intersections is summarized in Table 3-3.

Table 3-3 HCM 2000 Level of Service Descriptions

LOS	Description of Traffic Conditions	Delay (sec/veh)
A	Insignificant delays: no approach phase is fully utilized and no vehicle waits longer than one red indication.	≤ 10
B	Minimal delays: an occasional approach phase is fully utilized. Drivers begin to feel restricted.	> 10 – 20
C	Acceptable delays: major approach phase may become fully utilized. Most drivers feel somewhat restricted.	> 20 – 35
D	Tolerable delays: drivers may wait through more than one red indication. Queues may develop but dissipate rapidly, without excessive delays.	> 35 – 55
E	Significant delays: volumes approaching capacity. Vehicles may wait through several cycles and long vehicle queues form upstream.	> 55 – 80
F	Excessive delays: represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

Source: Highway Capacity Manual, Transportation Research Board, 2000.

Unsignalized intersections were evaluated using the methodology described in Chapter 17 of the HCM. The criteria for unsignalized intersections have different threshold values than do those for signalized intersections because drivers expect signalized intersections to carry higher traffic volumes, so higher levels of control delay are acceptable. The relationship between controlled delay per vehicle and LOS for unsignalized intersections is summarized in Table 3-4.

Table 3-4 Level of Service for Unsignalized Intersections

LOS	Control Delay (sec/veh)
A	≤ 10
B	> 10 – 15
C	> 15 – 25
D	> 25 – 35
E	> 35 – 50
F	> 50

Source: Highway Capacity Manual, Transportation Research Board, 2000. Exhibit 17-22

The intersection Level of Service analysis for this report was performed using TRAFFIX software. TRAFFIX is a network-based interactive computer program that enables calculation of levels of service at signalized and unsignalized intersections for multiple locations and scenarios. TRAFFIX also calculates signal timing (green times and cycle lengths) and maximum queue lengths to assist in evaluating signalized intersections.

3.4 INTERSECTION LOS AND SIGNIFICANT IMPACT CRITERIA

3.4.1 Cities of Santa Ana, Costa Mesa, Fountain Valley, and Orange

The minimum LOS for intersections in the Cities of Santa Ana, Costa Mesa, and Fountain Valley is LOS D. Impacts are considered significant if:

- An intersection degrades from an acceptable LOS (LOS D or better) to an unacceptable LOS (LOS E or F) during the peak hours; or
- The project increases traffic demand at the study intersection by 1% of capacity (0.01) if the intersection already operates at an unacceptable level (LOS E or F).

3.4.2 City of Tustin

The minimum LOS for intersections in the City of Tustin is LOS D. Significant impacts are not explicitly outlined, but the preservation of the minimum LOS with and without the project is required. Therefore, a significant impact can be assumed to occur if:

- An intersection is expected to operate at an unacceptable LOS (LOS E or F) in the With Project scenario; an effort to return the intersection LOS to an acceptable level is to be made.

3.4.3 City of Irvine

The minimum LOS for intersections in the City of Irvine is LOS D. Impacts are considered significant if:

- An intersection degrades from an acceptable LOS (LOS D or better) to an unacceptable LOS (LOS E or F) during the peak hours; or
- An intersection is operating at an unacceptable LOS (LOS E or F) and experiences an increase in V/C of 0.02 or more.

3.4.4 Orange County Congestion Management Program

The minimum LOS for intersections part of the Orange County Congestion Management Program (OC CMP) establishes LOS E as the minimum level of operation for CMP roadways (freeways and Smart Streets). Impacts are considered significant if:

- An intersection degrades from an acceptable LOS (LOS E or better) to an unacceptable LOS (LOS F) during the peak hours; or
- The project increases traffic demand at the study intersection by 10% of capacity (0.10) if the intersection already operates at an unacceptable level (LOS F)

OC CMP intersections included in this analysis are:

- INT 6 – Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive
- INT 9 – Harbor Boulevard and 1st Street
- INT 12 – Harbor Boulevard and Warner Avenue
- INT 17 – Harbor Boulevard and I-405 NB Off-Ramp
- INT 18 – Harbor Boulevard and I-405 SB Off-Ramp
- INT 87 – Mabury Street and 1st Street
- INT 95 – SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue

3.4.5 Caltrans

The minimum LOS for Caltrans intersections is LOS C. Impacts are considered significant if:

- An intersection degrades from an acceptable LOS (LOS C or better) to an unacceptable LOS (LOS D or worse) during the peak hours; or
- Any increase in delay is expected at an intersection already operating at an unacceptable LOS.

3.5 TRAFFIC VOLUMES

This study assesses both roadway and intersection performance for all existing and future year scenarios. Roadway and intersection counts were utilized to determine existing year (2020) average daily traffic (ADT) on study roadway segments and peak hour turning movement counts at study intersections. To determine future year (2045) volumes, an annual growth rate applied to existing traffic volumes was developed through the Orange County Transportation Analysis Model (OCTAM). The traffic volume development procedure is further detailed in the following sections.

3.5.1 Traffic Count Data

Roadway ADT was taken from the City of Santa Ana count database, with counts conducted in September and October 2019. A compound annual growth rate of 1% was applied to the ADT volumes to bring them to levels consistent with those expected in the year 2020.

Intersection turning movement volumes are provided by recent count data and supplemented with historical count data. Updated traffic counts for the year 2020 were in the process of being scheduled and conducted when widespread closures of schools, businesses, and other facilities were ordered due to the onset of the COVID-19 pandemic, disrupting normal traffic patterns. As a result, updated counts were only partially conducted and were supplemented with historic count data. Where they were able to be conducted, updated counts were conducted during the morning peak period (6:00 AM to 9:00 AM) and the afternoon peak period (4:00 PM to 7:00 PM). The AM and PM peak hour analyses are based on the hour of highest total intersection volume during the morning and afternoon peak periods. A compound annual growth rate (CAGR) of 1% was applied to the volumes for traffic counts conducted prior to 2020 to bring them to levels consistent with those expected in the year 2020. The CAGR 1% was selected based on comparisons of historical ADT data for various locations throughout the City. An inventory of intersection count data is provided in Table 3-5.

3.5.2 Travel Demand Forecasting

The horizon year 2045 volumes were derived based on existing peak hour count data and forecast link volumes obtained from the Orange County Transportation Analysis Model (OCTAM) version 5.0. OCTAM 5.0 is the accepted sub-regional model for forecasting travel demand in Orange County, and is based on socioeconomic data from Orange County Projections 2018. Growth factors for each intersection approach and departure were interpolated from OCTAM forecast for the 2016 and 2045 baseline scenarios. These growth factors were then applied to existing counts to forecast future turning movement volumes. OCTAM 5.0 was recently updated by OCTA and this traffic analysis update utilizes this new TransCad version of the model.

Table 3-5 Intersection Count Inventory

ID	INTERSECTION	COUNT YEAR
1	Euclid Street and Bolsa Avenue	2019
2	Euclid Street and McFadden Avenue	2016
3	Euclid Street and Edinger Avenue	2019
4	Newhope Street and Hazard Avenue	2016
5	Newhope Street and McFadden Avenue	2016
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	2016
7	Trask Avenue and SR-22 EB On-Ramp	2013
8	Harbor Boulevard and Westminster Avenue	2019
9	Harbor Boulevard and 1st Street	2019
10	Harbor Boulevard and McFadden Avenue	2016
11	Harbor Boulevard and Edinger Avenue	2019
12	Harbor Boulevard and Warner Avenue	2019
13	Harbor Boulevard and Segerstrom Avenue	2016
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	2016
15	Harbor Boulevard and MacArthur Boulevard	2019
16	Harbor Boulevard and Sunflower Avenue	2016
17	Harbor Boulevard and I-405 NB Off-Ramp	2019
18	Harbor Boulevard and I-405 SB Off-Ramp	2019
19	Fairview Street and Civic Center Drive	2016
20	Fairview Street and 1st Street	2018
21	Fairview Street and McFadden Avenue	2016
22	Fairview Street and Edinger Avenue	2019
23	Fairview Street and Warner Avenue	2016
24	Fairview Street and MacArthur Boulevard	2019
25	Fairview Road and Sunflower Avenue	2016
26	Greenville Street and Edinger Avenue	2017
27	Greenville Street and Segerstrom Avenue	2017
28	Raitt Street and McFadden Avenue	2016
29	Raitt Street and Edinger Avenue	2016
30	Bear Street and MacArthur Boulevard	2017
31	Bristol Street and 17th Street	2019
32	Bristol Street and Civic Center Drive	2016

ID	INTERSECTION	COUNT YEAR
33	Bristol Street and Santa Ana Boulevard	2016
34	Bristol Street and 1st Street	2019
35	Bristol Street and McFadden Avenue	2017
36	Bristol Street and Warner Avenue	2019
37	Bristol Street and Segerstrom Avenue	2016
38	Bristol Street and Alton Avenue	2017
39	Bristol Street and MacArthur Boulevard	2017
40	Bristol Street and Sunflower Avenue	2016
41	Bristol Street and I-405 NB Ramps	2018
42	Bristol Street and I-405 SB Ramps	2018
43	Flower Street and Santa Ana Boulevard	2016
44	Flower Street and 1st Street	2017
45	Flower Street and McFadden Avenue	2016
46	Flower Street and Segerstrom Avenue	2016
47	Flower Street and MacArthur Boulevard	2016
48	Main Street and La Veta Avenue	2018
49	Main Street and Mainplace Drive / Memory Lane	2019
50	Main Street and 17th Street	2019
51	Main Street and Civic Center Drive	2016
52	Main Street and Santa Ana Boulevard	2016
53	Main Street and 4th Street	2016
54	Main Street and 1st Street	2019
55	Main Street and McFadden Avenue	2016
56	Main Street and Edinger Avenue	2019
57	Main Street and MacArthur Boulevard	2019
58	Penn Way and 17th Street	2017
59	Santiago Street / I-5 NB Ramps and 17th Street	2016
60	Penn Way and I-5 SB Ramps	2017
61	Santiago Street and Civic Center Drive	2017
62	Santiago Street and Santa Ana Boulevard	2016
63	Standard Avenue and 4th Street	-
64	Standard Avenue and 1st Street	2017
65	Standard Avenue and McFadden Avenue	2018

ID	INTERSECTION	COUNT YEAR
66	Halladay Street and Warner Avenue	2016
67	Halladay Street and Dyer Road	2019
68	SR-55 SB Ramps and MacArthur Boulevard	2019
69	SR-55 NB Ramps and MacArthur Boulevard	2019
70	SR-55 SB Ramps and Dyer Road	2019
71	Glassell Street and La Veta Avenue	2016
72	Glassell Street and SR-22 WB Ramps	2016
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	2016
74	Grand Avenue and Fairhaven Avenue	2016
75	Grand Avenue and Santa Clara Avenue	2017
76	Grand Avenue and 17th Street	2019
77	Grand Avenue and I-5 NB Ramps	2017
78	Grand Avenue and Santa Ana Boulevard	2017
79	Grand Avenue and 1st Street	2019
80	Grand Avenue and Chestnut Avenue	2016
81	Grand Avenue and McFadden Avenue	2016
82	Grand Avenue and Edinger Avenue	2019
83	Grand Avenue and Warner Avenue	2019
84	SR-55 NB Ramps and Dyer Road	2019
85	Cambridge Street and La Veta Avenue	2016
86	Cambridge Street and Fairhaven Avenue	2020
87	Mabury Street and 1st Street	2020
88	Tustin Street and La Veta Avenue	2020
89	Tustin Street and SR-22 WB On-Ramp	2020
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	2020
91	Tustin Street and Fairhaven Avenue	2020
92	Tustin Avenue and Santa Clara Avenue	2020
93	Tustin Avenue and 17th Street	2020
94	Tustin Avenue and 4th Street	2020
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	2020
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	2020
97	Red Hill Avenue and Edinger Avenue	2020
98	Red Hill Avenue and Warner Avenue	2020

ID	INTERSECTION	COUNT YEAR
99	Red Hill Avenue and Barranca Parkway	2020
100	Red Hill Avenue and Alton Parkway	2020
101	Red Hill Avenue and MacArthur Boulevard	2020
102	Red Hill Avenue and Main Street	2020
103	I-5 SB Ramps and Santa Ana Boulevard	2017
104	Tustin Ranch Road and Warner Avenue	2020
105	Von Karman Avenue and Barranca Parkway	2020

4.0 Existing Year (2020) Conditions

The project study area includes arterial roadways and signalized intersections in the vicinity of the project corridor. Descriptions of geometrical features and intersection level of service analysis results for the year 2020 are included in this section.

4.1 EXISTING ROADWAY NETWORK

Selected arterials that are located in the vicinity of the project corridor are described in this section. Items of note include existing geometry, pedestrian and bicycle facilities, and adjacent land uses.

Euclid Street is classified as a Major Arterial that travels north and south through the study area. Within the study area, there are three travel lanes in each direction with a striped center median functioning as a two-way left-turn lane. Euclid Street is five lanes (2 northbound and 3 southbound) south of Davit Avenue. The posted speed limit is 45 miles per hour. On-street parking is not permitted and no bike facilities are provided. OCTA provides service along this corridor via Route 37 at approximately 30 minute headways.

Newhope Street is classified as a Secondary Arterial that travels north and south on the west end of Santa Ana. Within the study area, there are two travel lanes in each direction with a striped center median functioning as a two-way left-turn lane. The posted speed limit is 40 miles per hour. On-street parking is generally not permitted north of McFadden Avenue, except between 1st Street and 5th Street. Class II bike lanes were recently implemented between Westminster Avenue and McFadden Avenue. There are currently no bus routes that serve this corridor.

Hazard Avenue is classified as a Secondary Arterial that travels east and west through the study area. Within the study area, there are two travel lanes in each direction with a striped center median functioning as a two-way left-turn lane. Hazard Avenue transitions to a Divided Collector west of Harbor Boulevard, and Undivided Collector east of Harbor Boulevard. Limited on-street parking is permitted adjacent to Rosita Park. The posted speed limit is 35 miles per hour and 25 miles per hour near the school zone. No bus routes or bike facilities are provided along this corridor.

McFadden Avenue is classified as a Secondary Arterial (between Euclid Street and Grand Avenue) and a Primary Arterial (east of Grand Avenue) that travels east and west through the study area. Within the study area, there are two travel lanes in each direction with a striped center median functioning as a two-way left-turn lane and a raised, landscaped median on occasion. McFadden Avenue narrows to a two-lane undivided roadway between Bristol Street and Standard Avenue. The posted speed limit is 30-45 miles per hour. On-street parking is permitted along parts of the corridor. Bike lanes are provided west of Harbor Boulevard. OCTA provides service along this corridor via Route 66 and Route 145 at approximately 15-45 minute headways.

Harbor Boulevard is classified as a Major Arterial that travels north and south through the study area. Within the study area, there are three travel lanes in each direction with a raised, landscaped median. The posted speed limit is 40-45 miles per hour. On-street parking is not permitted and limited bike facilities are provided. OCTA provides service along this corridor via Route 43 and Route 543 at approximately 15-20 minute headways.

Fairview Avenue is classified as a Major Arterial that travels north and south through the study area. Within the study area, there are three lanes in each direction with a raised, landscaped median. Fairview Avenue transitions to a five-lane divided roadway then a Primary Arterial north of Civic Center Drive. The posted speed limit is 45 miles per hour. On-street parking is not permitted and bike facilities are not provided. OCTA provides service along this corridor via Route 47 at approximately 15 minute headways.

Civic Center Drive is classified as a Secondary Arterial that travels east and west through the study area. Within the study area, Civic Center Drive is a four-lane undivided roadway; Civic Center Drive becomes a four-lane divided with bike facilities east of Bristol Street until Broadway. It is a four-lane

divided road until Minter Street and then becomes a two-lane undivided. The posted speed limit is 35 miles per hour, unless otherwise noted to be 25 miles per hour in a school zone. On-street parking is allowed along some sections of Civic Center Drive. On-street parking is permitted along certain segments. There are some bike lanes or bike routes provided along this roadway. OCTA provides service along this corridor via Routes 83, 145, and 862 with headways of approximately 30 minutes for each route.

MacArthur Boulevard is classified as a Major Arterial that travels east and west through the study area. Within the study area, there are three travel lanes in each direction with a raised, landscaped median. MacArthur Boulevard is classified as a Primary Arterial west of Hyland Avenue. The posted speed limit is 40 miles per hour. On-street parking is not permitted throughout the corridor and there are currently no bike facilities provided. OCTA operates four bus routes along this corridor via Routes 53, 55, 76 and 173. Headways range between every 10 minutes for Route 53, 30 minutes for Route 55, 60 minutes for Route 76, and 45 minutes for Route 173.

Raitt Street is classified as a Secondary Arterial that travels north and south through the study area. Between MacArthur Boulevard and Edinger Avenue, Raitt Street is a four-lane divided roadway. Between Edinger Avenue and Myrtle Street, Raitt Street is a four-lane undivided roadway. Then from Myrtle Street to 1st Street it is a two-lane divided roadway. Between First Street and Washington Avenue, Raitt Street narrows down to a two-lane undivided roadway. The speed limit is limited to 25 miles per hour in school zones and 35-40 miles per hour outside of the school zone. On-street parking is permitted along the west side of the street between McFadden Avenue and Edinger Avenue and on both sides of the street north of McFadden Avenue to Richland Avenue. Currently bike facilities are not provided along this roadway. OCTA operates Route 145 approximately every 45 minutes during peak operation.

1st Street is classified as a Major Arterial that travels east and west through the study area. Within the study area, there are three lanes in each direction with a raised, landscaped median. The posted speed limit is 40 miles per hour. On-street parking is not permitted along this corridor. There are currently no bike lanes or bike routes provided. OCTA provides service along this corridor via Route 64 at approximately 15 minute headways.

Bristol Street is classified as a Major Arterial that travels north and south through the study area. Within the study area, there are three travel lanes in each direction with a raised, landscaped median. The posted speed limit is 40 miles per hour. Bikeways exist between 17th Street and Edinger Avenue. On-street parking is not permitted along this corridor. OCTA provides service along this corridor via Route 57 at approximately 30 minute headways.

17th Street/ Westminster Avenue is classified as a Major Arterial traveling east and west through the northern region in Santa Ana. There are three lanes in each direction divided by a center median. The posted speed limit is 40 miles per hour. On-street parking is not permitted and there are currently no bike facilities provided along the corridor. Several OCTA bus routes serve this corridor, including Routes 51 and 60 with approximately 15-20 minute headways.

Santa Ana Boulevard is classified as a Major Arterial (between Raitt Street and Ross Street) and a Primary Arterial (between Ross Street and Grand Avenue). The roadway fluctuates between a four-lane undivided roadway (Raitt Street to Flower Street), six-lane divided roadway (Flower Street to Ross Street and Santiago Street to Grand Avenue), and a three-lane one-way roadway (Ross Street to French Street). On-street parking is permitted along certain segments of the corridor. There are currently no bike lanes or bike routes provided. The posted speed limit is 35 miles per hour. Several OCTA bus routes serve this corridor, including Routes 83, 145, and 206 with approximately 30-45 minute headways.

Segerstrom Avenue is classified as a Major Arterial that travels east and west through the study area. Segerstrom Avenue is a six-lane divided roadway between Susan Street and Harbor Boulevard and a four-lane divided roadway along the rest of the corridor. The posted speed limit is 40 miles per hour.

On-street parking is not permitted and there are currently no bike facilities provided along this corridor. There are currently no transit services that operate along Segerstrom Avenue within the study area.

Memory Lane is classified as a Major Arterial that travels east and west through the study area. There are three travel lanes in each direction with a raised, landscaped median. The posted speed limit is 40 miles per hour. On-street parking is not permitted along this roadway. Class II bike lanes are provided between Bristol Street and Flower Street. OCTA provides service along this corridor via Route 453 at approximately 30 minute headways.

Tustin Avenue is classified as a Major Arterial that travels north and south parallel to the SR-55 Freeway. There are three travel lanes in each direction with a striped center median. The posted speed limit is 40 miles per hour. On-street parking is not permitted and bike lanes are not available along Tustin Avenue. Two OCTA bus routes operate along Tustin Avenue. Routes 60 and 71 operate at frequencies of 45 minutes and 1 hour respectively.

Warner Avenue is classified as a Major Arterial that travels east and west through the study area. Within the study area, Warner Avenue is a four-lane undivided roadway. The posted speed limit is 40-45 miles per hour. On-street parking is not permitted and there are currently limited bike lanes provided along the corridor. There are two OCTA bus routes that serve Warner Avenue in the study area. Routes 72 and 463 operate with headways at approximately 20-60 minutes.

Edinger Avenue is classified as a Major Arterial that travels east and west through the study area. The roadway is a four-lane divided roadway between Euclid Street and Main Street and six-lane divided roadway between Main Street and SR-55 freeway. The posted speed limit is 40 miles per hour. On-street parking is not permitted throughout most of the corridor, with the exception of the eastbound direction between Main Street and Maple Street; and between Cedar Street and Evergreen Street. There are bike facilities provided along parts of the corridor. OCTA provides service along Edinger Avenue via Route 70 at approximately 30 minute headways.

Flower Street is classified as a Collector Street (north of 17th Street), Secondary Arterial (between 17th Street and Warner Avenue), and Primary Arterial (south of Warner Avenue) that travels north and south through the study area. The roadway fluctuates between a two-lane divided roadway (Warner Avenue to First Street and 17th Street to Memory Lane) and a four-lane divided roadway (Sunflower Avenue to Warner Avenue and First Street to 17th Street). On-street parking is permitted along residential areas. There are currently no bike facilities provided along the corridor. OCTA provides service along this corridor via Route 51 at approximately 30 minute headways.

Main Street is classified as a Major Arterial (north of Washington Avenue and south of Warner Avenue), Secondary Arterial (between Washington Avenue to Edinger Avenue), and a Primary Arterial (between Edinger Avenue and Warner Avenue) that travels north and south through the study area. There are two travel lanes in each direction, with a striped center median operating as a two-way left-turn lane. The posted speed limit is 35-40 miles per hour. Parking is permitted on the east side of the street between Goetz Avenue and Dyer Road, and prohibited on Main Street through the rest of the study area. South of Dyer Road, Main Street widens to a six-lane facility with a center two-way left-turn lane. OCTA provides service along this corridor via Route 53 at approximately 20 minute headways.

Grand Avenue is classified as a Major Arterial that travels north and south through the study area. From the SR-55 freeway to the northern study area boundary, Grand Avenue is a six-lane major arterial with a center two-way left-turn lane. Approximately 900 feet north of Warner Avenue, Grand Avenue narrows to two lanes in the southbound direction, and the third southbound lane is restored about 300 feet north of Warner Avenue. South of the SR-55 freeway, Grand Avenue has two northbound and three southbound lanes divided by a landscaped median. Parking is not permitted and there are currently no bike lanes or bike routes along Grand Avenue. The posted speed limit is 45 miles per hour. OCTA provides service along this corridor via Route 59 at approximately 30 minute headways.

4.2 STUDY INTERSECTION GEOMETRY AND PEAK HOUR VOLUMES

Intersections were selected in consultation with the City of Santa Ana based on expected traffic impacts and vehicle volumes. The existing study intersection lane geometries are provided in the Appendix. Year 2020 AM peak hour turning movement volumes are shown in Table 4-1, and the PM peak hour volumes are shown in Table 4-2.

Table 4-1 Existing Year 2020 Volumes – AM Peak Hour

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
1	Euclid Street and Bolsa Avenue	124	1044	179	207	1844	104	218	811	153	184	586	188
2	Euclid Street and McFadden Avenue	145	1100	131	137	1906	158	227	463	287	166	368	140
3	Euclid Street and Edinger Avenue	134	845	72	127	1842	169	172	753	460	100	609	111
4	Newhope Street and Hazard Avenue	98	738	105	91	1341	123	78	199	147	51	170	68
5	Newhope Street and McFadden Avenue	110	491	173	119	1183	110	135	492	160	176	449	100
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	70	1274	0	0	1354	18	74	0	121	836	44	117
7	Trask Avenue and SR-22 EB On-Ramp	0	0	0	0	0	0	651	815	0	0	738	138
8	Harbor Boulevard and Westminster Avenue	178	1173	251	212	1663	95	176	927	33	212	574	156
9	Harbor Boulevard and 1st Street	117	935	202	227	1914	124	140	932	181	245	621	145
10	Harbor Boulevard and McFadden Avenue	104	1059	101	182	1919	64	167	435	130	190	430	123
11	Harbor Boulevard and Edinger Avenue	103	772	146	183	2105	61	107	644	323	221	491	204
12	Harbor Boulevard and Warner Avenue	115	701	178	457	2059	123	97	1385	364	151	792	134
13	Harbor Boulevard and Segerstrom Avenue	111	791	50	171	2299	86	88	737	297	117	362	82
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	69	3	19	8	2	19	7	1953	775	64	490	20
15	Harbor Boulevard and MacArthur Boulevard	128	898	92	316	1820	126	126	1141	344	133	443	132
16	Harbor Boulevard and Sunflower Avenue	217	1107	205	246	2324	57	9	109	42	130	166	94
17	Harbor Boulevard and I-405 NB Off-Ramp	0	1567	0	0	2327	0	0	0	0	508	0	894
18	Harbor Boulevard and I-405 SB Off-Ramp	0	1729	0	0	1504	0	385	0	429	0	0	0
19	Fairview Street and Civic Center Drive	6	1278	414	243	1402	6	6	23	23	300	9	155
20	Fairview Street and 1st Street	157	1206	227	241	1401	161	214	1233	191	163	732	245
21	Fairview Street and McFadden Avenue	121	1294	173	142	1727	125	221	522	120	194	500	40
22	Fairview Street and	188	831	116	215	1503	127	237	657	176	421	553	110

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
	Edinger Avenue												
23	Fairview Street and Warner Avenue	215	952	125	205	1628	119	69	1010	301	307	926	300
24	Fairview Street and MacArthur Boulevard	248	771	89	307	1546	173	125	1019	150	235	494	140
25	Fairview Road and Sunflower Avenue	185	1071	163	204	1738	111	49	322	65	306	256	132
26	Greenville Street and Edinger Avenue	186	0	251	0	0	0	0	960	234	172	915	0
27	Greenville Street and Segerstrom Avenue	47	193	78	154	472	160	33	739	118	164	662	76
28	Raitt Street and McFadden Avenue	62	570	90	100	762	104	116	704	90	172	542	97
29	Raitt Street and Edinger Avenue	188	501	181	152	716	85	165	1008	145	117	916	54
30	Bear Street and MacArthur Boulevard	81	280	119	199	756	300	97	1663	114	70	1180	100
31	Bristol Street and 17th Street	192	988	167	335	1376	181	324	963	156	359	824	273
32	Bristol Street and Civic Center Drive	123	1087	96	318	1284	80	149	755	93	121	401	83
33	Bristol Street and Santa Ana Boulevard	65	1419	197	137	1507	41	83	403	35	96	240	41
34	Bristol Street and 1st Street	183	1278	162	275	1133	160	206	1268	128	108	813	119
35	Bristol Street and McFadden Avenue	118	1054	53	161	1571	162	275	472	232	155	432	50
36	Bristol Street and Warner Avenue	192	862	159	386	1307	148	206	1149	286	188	860	146
37	Bristol Street and Segerstrom Avenue	65	725	136	283	1011	119	189	913	84	122	554	71
38	Bristol Street and Alton Avenue	9	628	47	227	1571	36	190	117	244	41	87	31
39	Bristol Street and MacArthur Boulevard	92	478	120	326	1419	148	192	1394	283	191	910	132
40	Bristol Street and Sunflower Avenue	94	461	136	245	1388	104	114	942	381	246	400	138
41	Bristol Street and I-405 NB Ramps	0	1489	191	0	1967	8	0	0	34	121	73	665
42	Bristol Street and I-405 SB Ramps	113	1108	0	0	985	847	573	0	524	0	0	0
43	Flower Street and Santa Ana Boulevard	87	811	118	168	568	76	114	710	81	101	323	135
44	Flower Street and 1st Street	139	602	159	175	554	58	165	1514	60	209	861	123
45	Flower Street and McFadden Avenue	60	438	38	66	367	53	51	581	44	64	432	58
46	Flower Street and Segerstrom Avenue	63	331	73	98	544	120	155	1065	297	74	546	60
47	Flower Street and MacArthur Boulevard	22	142	73	163	352	264	165	1879	80	54	909	58
48	Main Street and La Veta Avenue	84	579	300	198	1034	173	350	495	215	316	276	230
49	Main Street and Mainplace Drive / Memory Lane	28	764	250	32	1244	260	148	233	16	198	226	15

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
50	Main Street and 17th Street	128	760	163	195	1086	70	116	1225	61	325	1300	19
51	Main Street and Civic Center Drive	138	901	79	59	1042	159	90	545	99	43	566	34
52	Main Street and Santa Ana Boulevard	68	1083	0	0	1107	98	0	0	0	61	848	65
53	Main Street and 4th Street	0	977	23	0	1098	27	0	93	14	0	114	28
54	Main Street and 1st Street	116	596	60	88	882	65	119	1393	147	88	1097	61
55	Main Street and McFadden Avenue	89	838	42	175	1364	27	42	396	43	140	373	107
56	Main Street and Edinger Avenue	109	617	67	228	1052	55	75	971	131	122	709	87
57	Main Street and MacArthur Boulevard	54	311	264	645	848	192	240	1393	252	146	435	218
58	Penn Way and 17th Street	43	0	217	0	0	0	0	1238	631	214	1722	0
59	Santiago Street / I-5 NB Ramps and 17th Street	768	35	22	57	0	295	99	1040	376	0	1245	20
60	Penn Way and I-5 SB Ramps	0	158	140	799	165	0	0	0	0	179	0	100
61	Santiago Street and Civic Center Drive	206	143	20	5	303	74	121	46	246	72	66	13
62	Santiago Street and Santa Ana Boulevard	24	71	56	311	161	133	48	474	14	108	807	271
63	Standard Avenue and 4th Street	-	-	-	-	-	-	-	-	-	-	-	-
64	Standard Avenue and 1st Street	108	191	119	12	231	25	86	1317	214	64	1012	12
65	Standard Avenue and McFadden Avenue	74	284	128	220	531	37	17	589	71	138	366	82
66	Halladay Street and Warner Avenue	43	0	100	0	0	0	0	1283	145	160	607	0
67	Halladay Street and Dyer Road	11	18	49	183	37	39	41	1375	10	115	626	101
68	SR-55 SB Ramps and MacArthur Boulevard	0	0	0	961	0	870	0	1441	1027	0	1275	145
69	SR-55 NB Ramps and MacArthur Boulevard	908	0	976	0	0	0	0	1609	796	0	517	244
70	SR-55 SB Ramps and Dyer Road	221	26	505	50	242	60	35	1338	285	408	647	108
71	Glassell Street and La Veta Avenue	263	412	125	17	358	79	38	195	375	236	249	6
72	Glassell Street and SR-22 WB Ramps	500	561	0	0	743	346	0	0	0	285	5	426
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	0	818	218	280	733	0	258	0	1012	0	0	0
74	Grand Avenue and Fairhaven Avenue	18	737	106	174	1444	32	99	60	59	254	28	229
75	Grand Avenue and Santa Clara Avenue	66	463	119	290	1418	319	143	233	48	120	231	211
76	Grand Avenue and 17th Street	163	476	327	286	1198	235	224	835	106	309	807	88
77	Grand Avenue and I-5 NB Ramps	0	831	480	58	1869	0	0	0	0	456	0	126
78	Grand Avenue and	71	1003	51	141	1166	1029	263	217	428	5	373	34

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
	Santa Ana Boulevard												
79	Grand Avenue and 1st Street	213	751	35	99	1432	174	332	793	225	247	867	99
80	Grand Avenue and Chestnut Avenue	53	737	163	149	1788	49	60	419	110	118	347	216
81	Grand Avenue and McFadden Avenue	171	722	108	237	1590	155	186	601	182	117	420	106
82	Grand Avenue and Edinger Avenue	47	472	92	224	1146	224	319	1332	128	151	579	126
83	Grand Avenue and Warner Avenue	169	510	218	199	574	194	256	914	359	88	388	131
84	SR-55 NB Ramps and Dyer Road	557	0	456	0	0	0	0	1533	613	0	719	433
85	Cambridge Street and La Veta Avenue	160	204	0	0	480	245	117	0	187	0	0	0
86	Cambridge Street and Fairhaven Avenue	0	0	0	515	0	166	80	216	0	0	247	192
87	Mabury Street and 1st Street	10	0	244	238	141	533	0	1062	11	46	701	0
88	Tustin Street and La Veta Avenue	8	333	96	74	1452	4	9	11	35	447	2	69
89	Tustin Street and SR-22 WB On-Ramp	656	610	0	0	1395	833	0	0	0	0	0	0
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	0	996	5	22	1349	0	244	24	1051	6	0	43
91	Tustin Street and Fairhaven Avenue	89	514	90	235	2026	40	68	258	444	306	338	442
92	Tustin Avenue and Santa Clara Avenue	73	397	74	127	2600	82	101	255	186	118	244	122
93	Tustin Avenue and 17th Street	111	198	236	602	1737	19	187	738	126	488	770	188
94	Tustin Avenue and 4th Street	48	245	219	664	845	262	114	676	28	103	579	376
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	421	63	498	50	30	8	28	1104	408	399	940	123
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	227	60	38	14	344	504	253	153	146	8	223	4
97	Red Hill Avenue and Edinger Avenue	81	299	85	226	960	450	190	611	130	224	1085	152
98	Red Hill Avenue and Warner Avenue	56	339	46	19	891	179	202	343	253	98	349	62
99	Red Hill Avenue and Barranca Parkway	127	316	104	199	876	115	118	710	281	578	645	126
100	Red Hill Avenue and Alton Parkway	174	512	321	251	1141	183	9	28	28	223	189	106
101	Red Hill Avenue and MacArthur Boulevard	64	569	10	208	537	492	1248	645	106	23	223	571
102	Red Hill Avenue and Main Street	162	556	361	67	313	108	139	1309	254	154	309	73
103	I-5 SB Ramps and Santa Ana Boulevard	0	0	0	367	0	36	323	554	0	0	1130	330
104	Tustin Ranch Road and Warner Avenue	0	0	0	265	0	33	18	238	0	0	1717	395

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
105	Von Karman Avenue and Barranca Parkway	107	142	85	119	1164	509	130	488	163	769	1263	39

Table 4-2 Existing Year 2020 Volumes – PM Peak Hour

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
1	Euclid Street and Bolsa Avenue	159	1477	119	185	1053	199	212	678	106	217	909	217
2	Euclid Street and McFadden Avenue	175	1426	92	110	1354	164	183	419	185	127	532	246
3	Euclid Street and Edinger Avenue	526	1572	112	122	803	204	161	622	186	91	840	136
4	Newhope Street and Hazard Avenue	116	1281	50	49	1038	124	108	214	131	32	202	58
5	Newhope Street and McFadden Avenue	202	1084	190	164	733	142	81	496	72	107	589	168
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	88	1992	0	0	1519	49	93	0	78	593	80	170
7	Trask Avenue and SR-22 EB On-Ramp	0	0	0	0	0	0	838	628	0	0	606	57
8	Harbor Boulevard and Westminster Avenue	276	1374	325	207	1430	165	187	667	32	230	797	181
9	Harbor Boulevard and 1st Street	287	1480	164	278	1218	164	188	766	145	230	1073	175
10	Harbor Boulevard and McFadden Avenue	167	1716	125	298	1273	115	214	520	65	211	506	146
11	Harbor Boulevard and Edinger Avenue	282	1773	214	283	822	75	134	564	100	140	813	271
12	Harbor Boulevard and Warner Avenue	774	3713	279	274	1525	182	241	1707	390	260	2700	862
13	Harbor Boulevard and Segerstrom Avenue	299	1881	60	91	1027	91	111	552	181	99	1074	390
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	1201	7	70	12	4	14	36	891	160	25	2350	12
15	Harbor Boulevard and MacArthur Boulevard	588	1519	88	213	1073	176	140	489	181	87	1467	276
16	Harbor Boulevard and Sunflower Avenue	178	1771	263	112	1393	42	67	182	189	254	533	199
17	Harbor Boulevard and I-405 NB Off-Ramp	0	1529	0	0	2475	0	0	0	0	701	0	1132
18	Harbor Boulevard and I-405 SB Off-Ramp	0	1861	0	0	2147	0	157	0	722	0	0	0
19	Fairview Street and Civic Center Drive	5	1430	402	144	1338	0	2	5	4	438	0	162
20	Fairview Street and 1st Street	149	1094	99	203	1264	251	215	870	151	159	1204	186
21	Fairview Street and McFadden Avenue	159	1462	127	155	1257	196	244	659	163	158	545	134
22	Fairview Street and Edinger Avenue	188	1793	110	198	616	151	230	703	188	373	789	173
23	Fairview Street and Warner Avenue	217	1728	161	188	951	96	197	955	148	188	1108	240
24	Fairview Street and MacArthur Boulevard	243	1672	91	171	955	88	280	731	246	179	1365	239
25	Fairview Road and Sunflower Avenue	201	1806	393	144	1196	83	203	430	95	265	664	173

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
26	Greenville Street and Edinger Avenue	327	0	218	0	0	0	0	982	200	95	1128	0
27	Greenville Street and Segerstrom Avenue	57	476	36	61	200	61	108	823	47	27	1037	148
28	Raitt Street and McFadden Avenue	58	835	130	45	474	76	126	747	65	88	742	102
29	Raitt Street and Edinger Avenue	190	816	229	111	384	96	139	961	137	86	972	87
30	Bear Street and MacArthur Boulevard	200	962	251	112	271	82	97	910	94	93	1673	266
31	Bristol Street and 17th Street	236	1148	191	243	1293	220	336	750	136	284	1069	362
32	Bristol Street and Civic Center Drive	200	1399	73	136	1250	128	190	534	63	169	723	82
33	Bristol Street and Santa Ana Boulevard	75	1524	87	105	1402	53	59	163	38	233	371	100
34	Bristol Street and 1st Street	286	1235	182	206	1115	252	189	1062	136	217	1330	126
35	Bristol Street and McFadden Avenue	213	1566	85	84	1171	270	262	512	102	97	504	59
36	Bristol Street and Warner Avenue	309	1157	211	251	838	163	193	868	153	173	1021	299
37	Bristol Street and Segerstrom Avenue	179	1322	233	92	843	176	200	716	57	119	1074	54
38	Bristol Street and Alton Avenue	43	1681	158	119	896	56	75	105	195	91	150	29
39	Bristol Street and MacArthur Boulevard	335	1428	260	223	821	129	357	796	169	265	1536	290
40	Bristol Street and Sunflower Avenue	645	1363	220	201	750	215	293	573	222	263	1012	322
41	Bristol Street and I-405 NB Ramps	0	2094	183	0	2148	20	0	0	194	357	306	1184
42	Bristol Street and I-405 SB Ramps	127	1555	0	0	1506	880	740	0	331	0	0	0
43	Flower Street and Santa Ana Boulevard	124	754	62	104	530	48	134	386	63	146	510	151
44	Flower Street and 1st Street	132	625	149	170	466	135	139	1217	101	210	1415	147
45	Flower Street and McFadden Avenue	42	567	35	46	352	57	64	478	19	48	595	85
46	Flower Street and Segerstrom Avenue	120	843	80	66	369	106	158	786	83	75	1258	81
47	Flower Street and MacArthur Boulevard	133	634	74	85	205	197	209	994	63	62	1989	177
48	Main Street and La Veta Avenue	307	938	439	145	911	235	296	422	189	257	513	206
49	Main Street and Mainplace Drive / Memory Lane	90	945	179	51	1055	139	293	325	87	185	151	73
50	Main Street and 17th Street	197	1019	222	173	757	117	221	1237	73	178	1089	72
51	Main Street and Civic Center Drive	89	1126	94	61	995	63	159	881	105	38	384	39
52	Main Street and Santa Ana Boulevard	54	1229	0	0	1083	53	0	0	0	65	656	85
53	Main Street and 4th Street	0	1055	50	0	1037	47	0	98	55	0	181	46

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
54	Main Street and 1st Street	169	826	72	175	671	143	120	1214	90	114	1275	89
55	Main Street and McFadden Avenue	146	1147	71	134	908	66	78	345	42	85	480	216
56	Main Street and Edinger Avenue	99	1050	48	122	609	83	127	752	84	97	1296	134
57	Main Street and MacArthur Boulevard	488	1169	321	283	368	278	298	613	59	198	1570	456
58	Penn Way and 17th Street	848	0	414	0	0	0	0	1590	513	123	1440	0
59	Santiago Street / I-5 NB Ramps and 17th Street	345	46	18	51	0	133	120	1099	722	0	1525	41
60	Penn Way and I-5 SB Ramps	0	363	238	550	127	0	0	0	0	175	0	150
61	Santiago Street and Civic Center Drive	97	299	30	13	187	48	266	76	269	14	19	18
62	Santiago Street and Santa Ana Boulevard	36	133	84	297	120	61	71	649	20	73	492	187
63	Standard Avenue and 4th Street	-	-	-	-	-	-	-	-	-	-	-	-
64	Standard Avenue and 1st Street	185	367	119	19	189	23	177	1218	129	91	1148	21
65	Standard Avenue and McFadden Avenue	169	667	82	137	300	52	53	351	60	117	712	206
66	Halladay Street and Warner Avenue	169	0	352	0	0	0	2	926	93	141	1121	0
67	Halladay Street and Dyer Road	41	180	208	114	15	32	150	1298	9	45	1451	116
68	SR-55 SB Ramps and MacArthur Boulevard	0	0	0	288	0	697	0	1167	1040	0	1532	602
69	SR-55 NB Ramps and MacArthur Boulevard	641	0	426	0	0	0	0	711	731	0	1501	1081
70	SR-55 SB Ramps and Dyer Road	319	10	240	103	226	110	65	1523	207	556	991	64
71	Glassell Street and La Veta Avenue	472	490	160	15	499	37	82	268	461	155	280	11
72	Glassell Street and SR-22 WB Ramps	557	910	0	0	878	255	0	0	0	201	7	357
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	0	1202	307	381	681	0	229	4	503	0	0	0
74	Grand Avenue and Fairhaven Avenue	46	1214	243	222	894	82	79	45	33	255	48	181
75	Grand Avenue and Santa Clara Avenue	88	1185	246	220	868	220	159	194	36	136	244	260
76	Grand Avenue and 17th Street	246	877	221	270	582	128	346	886	149	300	1107	201
77	Grand Avenue and I-5 NB Ramps	0	1297	1001	48	1164	0	0	0	0	143	0	172
78	Grand Avenue and Santa Ana Boulevard	167	1888	31	34	750	532	328	200	316	20	134	97
79	Grand Avenue and 1st Street	165	1261	38	120	706	282	277	918	91	151	941	173
80	Grand Avenue and Chestnut Avenue	140	1050	182	149	664	112	93	285	62	107	333	194
81	Grand Avenue and McFadden Avenue	202	1150	198	138	626	168	128	476	83	86	686	151

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
82	Grand Avenue and Edinger Avenue	242	1397	121	165	408	229	201	868	70	74	1333	173
83	Grand Avenue and Warner Avenue	242	873	193	146	471	217	342	656	142	151	964	316
84	SR-55 NB Ramps and Dyer Road	188	0	51	0	0	0	0	1339	681	0	1545	965
85	Cambridge Street and La Veta Avenue	191	266	0	0	196	181	219	0	144	0	0	0
86	Cambridge Street and Fairhaven Avenue	0	0	0	219	0	76	141	246	0	0	273	340
87	Mabury Street and 1st Street	25	0	256	207	88	390	0	1512	24	40	549	0
88	Tustin Street and La Veta Avenue	46	1033	245	90	801	15	13	5	20	183	5	112
89	Tustin Street and SR-22 WB On-Ramp	532	1529	0	0	711	365	0	0	0	0	0	0
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	0	1547	4	52	707	0	458	41	581	28	0	67
91	Tustin Street and Fairhaven Avenue	239	1275	113	327	862	99	80	180	147	94	208	196
92	Tustin Avenue and Santa Clara Avenue	163	789	121	183	1444	100	61	192	113	125	157	148
93	Tustin Avenue and 17th Street	216	926	476	346	371	37	444	872	118	229	753	419
94	Tustin Avenue and 4th Street	55	598	194	459	339	124	180	642	33	88	596	367
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	377	30	398	110	50	37	35	1258	354	385	1003	120
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	583	174	34	8	97	373	104	36	21	23	348	16
97	Red Hill Avenue and Edinger Avenue	159	1146	182	145	289	234	327	838	102	62	803	392
98	Red Hill Avenue and Warner Avenue	382	1308	150	58	223	283	222	603	94	25	525	69
99	Red Hill Avenue and Barranca Parkway	356	1339	345	185	313	147	203	753	99	127	966	282
100	Red Hill Avenue and Alton Parkway	27	1499	217	124	528	4	132	324	166	433	74	267
101	Red Hill Avenue and MacArthur Boulevard	125	809	10	286	594	1042	597	275	42	39	818	574
102	Red Hill Avenue and Main Street	416	897	242	74	538	292	198	705	191	279	1589	89
103	I-5 SB Ramps and Santa Ana Boulevard	0	0	0	278	0	61	561	634	0	0	668	183
104	Tustin Ranch Road and Warner Avenue	0	0	0	653	0	45	54	1795	0	0	548	236
105	Von Karman Avenue and Barranca Parkway	224	1290	281	67	343	236	560	1023	143	204	646	220

4.3 EXISTING YEAR (2020) VEHICLE MILES TRAVELED (VMT)

Table 4-3 presents the VMT analysis results for the existing year (2020) scenario. VMT calculations are based on the scenario parameters and methodology as described in Sections 2.5 and 3.1, respectively.

Table 4-3 Existing Year (2020) VMT Summary

	I – I VMT	I – X VMT	X – I VMT	Total VMT	Service Population	VMT/SP
City	697,779	5,356,504	5,352,841	11,407,124	507,924	22.5
County	48,242,429	25,463,887	25,637,825	99,344,141	3,834,949	25.9

SP = Service Population = Total Employees + Total Population. Reduction factor applied to Total Employees as noted in Section 3.1 and shown in Appendix F. I-I = Internal-Internal; I-X = Internal-External; X-I = External-Internal.

4.4 EXISTING YEAR (2020) ROADWAY SEGMENT LEVEL OF SERVICE

Table 4-4 includes the 24-hour count locations, volumes, and corresponding roadway segment level of service. The following study roadway segments currently operate at a deficient LOS:

- Segment 4 – Harbor Boulevard from Westminster Avenue/17th Street to Hazard Avenue
- Segment 11 – Bristol Street from 17th Street to Santa Clara Avenue
- Segment 13 – Bristol Street from 17th Street to Washington Avenue
- Segment 14 – Fairview Street from Trask Avenue to 17th Street
- Segment 17 – Flower Street from 1st Street to Bishop Street
- Segment 23 – Main Street from 1st Street to Bishop Street
- Segment 25 – Grand Avenue from Santa Ana Boulevard to 4th Street
- Segment 39 – Bristol Street from Edinger Avenue to Warner Avenue
- Segment 44 – Edinger Avenue from Flower Street to Main Street
- Segment 45 – Main Street from McFadden Avenue to Edinger Avenue
- Segment 57 – Dyer Road from Grand Avenue to Pullman Street
- Segment 58 – McFadden Avenue from Bristol Street to Flower Street
- Segment 72 – McFadden Avenue from Main Street to Standard Avenue
- Segment 88 – Harbor Boulevard from Edinger Avenue to Warner Avenue

Table 4-4 Existing Year (2020) Roadway Segment LOS

ID	Street	Segment	Lanes	ADT	LOS
1	1st Street	Euclid Street to Ward Street	6D	25,233	A
2	Euclid Street	1st Street to McFadden Avenue	6D	40,731	C
3	Westminster Avenue	Harbor Boulevard to Fairview Street	6D	30,459	A
4	Harbor Boulevard	Westminster Avenue/17th Street to Hazard Avenue	6D	54,137	E
5	1st Street	Harbor Boulevard to Jackson	6D	32,736	A
6	Edinger Avenue	Harbor Boulevard to Fairview Street	4D	27,838	C
7	Warner Avenue	Harbor Boulevard to Fairview Street	6D	31,945	A
8	Harbor Boulevard	Segerstrom Avenue to MacArthur Boulevard	6D	15,622	A
9	Fairview Street	1st Street to Willits Street	6D	42,605	C
10	1st Street	Sullivan Street to Raitt Street	6D	36,377	B
11	Bristol Street	17th Street to Santa Clara Avenue	4D	45,676	F
12	17th Street	College Avenue to Bristol Street	6D	37,345	B
13	Bristol Street	17th Street to Washington Avenue	4D	42,005	F
14	Fairview Street	Trask Avenue to 17th Street	4D	40,432	F
15	Bristol Street	1st Street to Bishop Street	6D	42,663	C
16	Civic Center Drive	Bristol Street to Flower Street	4D	17,589	A
17	Flower Street	1st Street to Bishop Street	2U	15,622	F
18	Main Street	17th Street to 20th Street	4D	32,044	D
19	Main Street	Washington Street to Civic Center Drive	4D	33,489	D
20	Civic Center Drive	Flower Street to Ross Street	4D	17,427	A
21	Santa Ana Boulevard	Flower Street to Ross Street	6D	14,689	A
22	1st Street	Main Street to Standard Avenue	6D	42,699	C
23	Main Street	1st Street to Bishop Street	4U	30,125	F
24	Grand Avenue	Santa Clara Avenue to Fairhaven Street	4D	30,206	D
25	Grand Avenue	Santa Ana Boulevard to 4th Street	4D	36,678	E
26	Santa Clara Avenue	Grand Avenue to Tustin Avenue	2U	10,585	D
27	Tustin Avenue	Santa Clara Avenue to Fairhaven Street	6D	35,410	B
28	17th Street	Cabrillo Park Drive to Tustin Avenue	4D	32,080	D
29	Tustin Avenue	Fruit Street to 4th Street	6D	25,174	A
30	1st Street	Grand Avenue to Elk Lane	6D	28,638	A
31	1st Street	Cabrillo Park Drive to Tustin Avenue	6D	22,083	A
32	Fairview Street	Edinger Avenue to Harvard Street	6D	37,524	B
33	Fairview Street	Warner Avenue to Segerstrom Avenue	6D	39,878	C
34	MacArthur Boulevard	Harbor Boulevard to Fairview Street	6D	26,235	A
35	Edinger Avenue	Fairview Street to Greenville Street	4D	29,115	C
36	McFadden Avenue	Fairview Street to Raitt Street	4D	20,997	A
37	MacArthur Boulevard	Fairview Street to Raitt Street	6D	28,809	A
38	Segerstrom Avenue	Fairview Street to Raitt Street	4D	19,326	A
39	Bristol Street	Edinger Avenue to Warner Avenue	4D	37,238	E
40	Bristol Street	Warner Avenue to Segerstrom Avenue	6D	38,007	B

ID	Street	Segment	Lanes	ADT	LOS
41	Warner Avenue	Raitt Street to Bristol Street	5D	34,555	C
42	Bristol Street	MacArthur Boulevard to Sunflower Avenue	6D	34,731	B
43	Flower Street	Warner Avenue to Segerstrom Avenue	4D	15,378	A
44	Edinger Avenue	Flower Street to Main Street	4D	36,534	E
45	Main Street	McFadden Avenue to Edinger Avenue	4U	28,622	F
46	Main Street	Edinger Avenue to Warner Avenue	4D	27,972	C
47	Main Street	Warner Avenue to Dyer Road	5D	30,484	B
48	Segerstrom Avenue	Bristol Street to Flower Street	4D	22,959	B
49	MacArthur Boulevard	Flower Street to Main Street	6D	37,946	B
50	Main Street	MacArthur Boulevard to Sunflower Avenue	6D	23,692	A
51	Grand Avenue	Edinger Avenue to Warner Avenue	6D	17,735	A
52	Edinger Avenue	Richie Street to Newport Avenue	6D	40,435	C
53	Warner Avenue	Grand Avenue to Red Hill Avenue	6D	22,435	A
54	Warner Avenue	Main Street to Standard Avenue	6D	27,391	A
55	McFadden Avenue	Newhope Street to Harbor Boulevard	4D	18,495	A
56	McFadden Avenue	Standard Avenue to Grand Avenue	4D	20,188	A
57	Dyer Road	Grand Avenue to Pullman Street	6D	51,084	E
58	McFadden Avenue	Bristol Street to Flower Street	2U	14,951	F
59	Main Street	La Veta Avenue to Memory Lane	6D	31,004	A
60	1st Street	Bristol Street to Flower Street	6D	39,006	B
61	Fairhaven Avenue	Grand Avenue to Tustin Avenue	4D	10,218	A
62	4th Street	French Street to Standard Avenue	2D	14,855	C
63	Broadway	17th Street to Civic Center Drive	4D	20,630	A
64	Broadway	Civic Center Drive to 1st Street	4U	16,005	B
65	Cambridge Street	SR-22 to Fairhaven Avenue	2U	- *	-
66	Chestnut Avenue	Standard Avenue to Lyon Street	4U	2,587	A
67	Civic Center Drive	French Street to Santiago Street	2U	10,266	D
68	Civic Center Drive	Fairview Road to Bristol Street	4U	13,772	A
69	Flower Street	Edinger Avenue to Warner Avenue	2U	10,964	D
70	Halladay Avenue	Warner Avenue to Dyer Road	2D	- *	-
71	Hazard Avenue	Euclid Street to Harbor Boulevard	4U	9,546	A
72	McFadden Avenue	Main Street to Standard Avenue	2U	16,064	F
73	Penn Way/Santiago Street	I-5 SB Ramps to Santa Ana Boulevard	4U	- *	-
74	Raitt Street	Santa Ana Boulevard to 1st Street	2U	9,978	C
75	Raitt Street	Warner Avenue to Segerstrom Avenue	4D	14,746	A
76	Santa Ana Boulevard	French Street to Santiago Street	2D	6,616	A
77	Santa Ana Boulevard	Raitt Street to Bristol Street	4U	4,236	A
78	Standard Avenue	Chestnut Avenue to McFadden Avenue	4U	12,871	A
79	Standard Avenue	Edinger Avenue to Warner Avenue	4U	12,852	A
80	Greenville Street	Edinger Avenue to Warner Avenue	2U	7,090	A
81	Greenville Street	Warner Avenue to Segerstrom Avenue	4D	8,578	A
82	Flower Street	17th Street to Northern Terminus	2D	11,155	B

ID	Street	Segment	Lanes	ADT	LOS
83	Logan Street	Civic Center Drive to Santa Ana Boulevard	2U	- *	-
84	Dyer Road	Pullman Street to Red Hill Avenue	6D	31,248	A
85	Fairhaven Avenue	Tustin Street to Yorba Street	4U	16,381	B
86	Santa Clara Avenue	Tustin Street to Yorba Street	2U	8,568	B
87	Harbor Boulevard	McFadden Avenue to Edinger Avenue	6D	49,281	D
88	Harbor Boulevard	Edinger Avenue to Warner Avenue	6D	52,363	E

Notes:
* Not available.
(1) ADT – Average Daily Traffic Volumes
(2) LOS – Level of Service
(3) #D – total number of lanes in both directions divided by raised or striped median; #U – total number of undivided lanes in both directions
(4) Roadway capacities shown in Table 3-1.
(5) Yellow and red shading indicates an unacceptable level of service.

4.5 EXISTING YEAR (2020) INTERSECTION LEVEL OF SERVICE

A summary of the AM and PM peak hour level of service analysis results for the existing year (2020) existing condition are included in Table 4-5. Intersections are general considered unacceptable if the level of service (LOS) is “E” or “F”. It should be noted that Caltrans and CMP intersection have a minimum acceptable LOS of C and E, respectively. The following intersections are forecast to have unacceptable level of service in the existing year (2020) condition:

- INT 2 – Euclid street and McFadden Avenue (City of Santa Ana)
- INT 12 – Harbor Boulevard and Warner Avenue (City of Santa Ana – CMP)
- INT 13 – Harbor Boulevard and Segerstrom Avenue (City of Santa Ana)
- INT 14 – Hyland Avenue and MacArthur Boulevard (City of Costa Mesa / City of Santa Ana)
- INT 37 – Bristol Street and Segerstrom Avenue (City of Santa Ana)
- INT 45 – Flower Street and McFadden Avenue (City of Santa Ana)
- INT 47 – Flower Street and MacArthur Boulevard (City of Santa Ana)
- INT 82 – Grand Avenue and Edinger Avenue (City of Santa Ana)
- INT 91 – Tustin Street and Fairhaven Avenue (City of Orange)

Table 4-5: Existing Year (2020) LOS Summary

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
1	Euclid Street and Bolsa Avenue	0.85	D	0.87	D
2	Euclid Street and McFadden Avenue	0.91	E	0.83	D
3	Euclid Street and Edinger Avenue	0.86	D	0.79	C
4	Newhope Street and Hazard Avenue	0.71	C	0.64	B
5	Newhope Street and McFadden Avenue	0.83	D	0.84	D
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	27.4	C	23.6	C
7	Trask Avenue and SR-22 EB On-Ramp	11.5	B	12.4	B
8	Harbor Boulevard and Westminster Avenue	0.82	D	0.79	C
9	Harbor Boulevard and 1st Street	0.81	D	0.83	D
10	Harbor Boulevard and McFadden Avenue	0.79	C	0.81	D
11	Harbor Boulevard and Edinger Avenue	0.77	C	0.70	B
12	Harbor Boulevard and Warner Avenue	0.81	D	1.58	F
13	Harbor Boulevard and Segerstrom Avenue	0.98	E	0.90	D
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	0.61	B	0.92	E
15	Harbor Boulevard and MacArthur Boulevard	0.75	C	0.82	D
16	Harbor Boulevard and Sunflower Avenue	0.70	B	0.78	C
17	Harbor Boulevard and I-405 NB Off-Ramp	19.7	B	23.7	C
18	Harbor Boulevard and I-405 SB Off-Ramp	13.2	B	19.4	B
19	Fairview Street and Civic Center Drive	0.67	B	0.66	B
20	Fairview Street and 1st Street	0.87	D	0.88	D
21	Fairview Street and McFadden Avenue	0.79	C	0.80	C
22	Fairview Street and Edinger Avenue	0.75	C	0.81	D
23	Fairview Street and Warner Avenue	0.85	D	0.85	D
24	Fairview Street and MacArthur Boulevard	0.70	B	0.83	D
25	Fairview Road and Sunflower Avenue	0.71	C	0.71	C
26	Greenville Street and Edinger Avenue	0.56	A	0.59	A
27	Greenville Street and Segerstrom Avenue	0.73	C	0.69	B
28	Raitt Street and McFadden Avenue	0.72	C	0.72	C
29	Raitt Street and Edinger Avenue	0.85	D	0.86	D
30	Bear Street and MacArthur Boulevard	0.74	C	0.87	D
31	Bristol Street and 17th Street	0.73	C	0.69	B
32	Bristol Street and Civic Center Drive	0.83	D	0.83	D
33	Bristol Street and Santa Ana Boulevard	0.67	B	0.66	B
34	Bristol Street and 1st Street	0.75	C	0.78	C
35	Bristol Street and McFadden Avenue	0.75	C	0.75	C
36	Bristol Street and Warner Avenue	0.77	C	0.79	C
37	Bristol Street and Segerstrom Avenue	0.79	C	0.91	E
38	Bristol Street and Alton Avenue	0.56	A	0.69	B
39	Bristol Street and MacArthur Boulevard	0.74	C	0.81	D

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
40	Bristol Street and Sunflower Avenue	0.64	B	0.69	B
41	Bristol Street and I-405 NB Ramps	19.1	B	28.2	C
42	Bristol Street and I-405 SB Ramps	22.3	C	18.4	B
43	Flower Street and Santa Ana Boulevard	0.60	A	0.57	A
44	Flower Street and 1st Street	0.80	C	0.75	C
45	Flower Street and McFadden Avenue	0.82	D	0.92	E
46	Flower Street and Segerstrom Avenue	0.77	C	0.90	D
47	Flower Street and MacArthur Boulevard	0.70	B	0.91	E
48	Main Street and La Veta Avenue	0.57	A	0.63	B
49	Main Street and Mainplace Drive / Memory Lane	0.49	A	0.47	A
50	Main Street and 17th Street	0.82	D	0.73	C
51	Main Street and Civic Center Drive	0.76	C	0.80	C
52	Main Street and Santa Ana Boulevard	0.67	B	0.61	B
53	Main Street and 4th Street	0.49	A	0.54	A
54	Main Street and 1st Street	0.76	C	0.80	C
55	Main Street and McFadden Avenue	0.90	D	0.85	D
56	Main Street and Edinger Avenue	0.83	D	0.85	D
57	Main Street and MacArthur Boulevard	0.74	C	0.78	C
58	Penn Way and 17th Street	11.2	B	20.7	C
59	Santiago Street / I-5 NB Ramps and 17th Street	31.2	C	19.5	B
60	Penn Way and I-5 SB Ramps	19.0	B	22.0	C
61	Santiago Street and Civic Center Drive	16.9	C	17.1	C
62	Santiago Street and Santa Ana Boulevard	0.55	A	0.57	A
63*	Standard Avenue and 4th Street	-	-	-	-
64	Standard Avenue and 1st Street	0.80	C	0.84	D
65	Standard Avenue and McFadden Avenue	0.61	B	0.68	B
66	Halladay Street and Warner Avenue	0.66	B	0.68	B
67	Halladay Street and Dyer Road	0.57	A	0.78	C
68	SR-55 SB Ramps and MacArthur Boulevard	19.8	B	17.3	B
69	SR-55 NB Ramps and MacArthur Boulevard	19.2	B	14.8	B
70	SR-55 SB Ramps and Dyer Road	23.7	C	25.7	C
71	Glassell Street and La Veta Avenue	0.60	A	0.62	B
72	Glassell Street and SR-22 WB Ramps	28.5	C	24.8	C
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	27.0	C	26.5	C
74	Grand Avenue and Fairhaven Avenue	0.68	B	0.68	B
75	Grand Avenue and Santa Clara Avenue	0.89	D	0.75	C
76	Grand Avenue and 17th Street	0.80	C	0.83	D
77	Grand Avenue and I-5 NB Ramps	12.9	B	10.0	A
78	Grand Avenue and Santa Ana Boulevard	23.8	C	21.1	C
79	Grand Avenue and 1st Street	0.80	C	0.79	C

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
80	Grand Avenue and Chestnut Avenue	0.71	C	0.62	B
81	Grand Avenue and McFadden Avenue	0.83	D	0.76	C
82	Grand Avenue and Edinger Avenue	0.76	C	0.91	E
83	Grand Avenue and Warner Avenue	0.53	A	0.70	B
84	SR-55 NB Ramps and Dyer Road	16.3	B	5.7	A
85	Cambridge Street and La Veta Avenue	17.3	C	12.5	B
86	Cambridge Street and Fairhaven Avenue	0.56	A	0.58	A
87	Mabury Street and 1st Street	28.3	C	26.1	C
88	Tustin Street and La Veta Avenue	0.52	A	0.44	A
89	Tustin Street and SR-22 WB On-Ramp	12.9	B	12.1	B
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	24.2	C	23.7	C
91	Tustin Street and Fairhaven Avenue	0.98	E	0.61	B
92	Tustin Avenue and Santa Clara Avenue	0.87	D	0.65	B
93	Tustin Avenue and 17th Street	0.75	C	0.72	C
94	Tustin Avenue and 4th Street	0.70	B	0.69	B
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	24.4	C	25.1	C
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	24.0	C	27.4	C
97	Red Hill Avenue and Edinger Avenue	0.57	A	0.67	B
98	Red Hill Avenue and Warner Avenue	0.49	A	0.59	A
99	Red Hill Avenue and Barranca Parkway	0.58	A	0.56	A
100	Red Hill Avenue and Alton Parkway	0.52	A	0.67	B
101	Red Hill Avenue and MacArthur Boulevard	0.66	B	0.66	B
102	Red Hill Avenue and Main Street	0.67	B	0.77	C
103	I-5 SB Ramps and Santa Ana Boulevard	17.4	B	18.9	B
104	Tustin Ranch Road and Warner Avenue	0.48	A	0.61	B
105	Von Karman Avenue and Barranca Parkway	0.76	C	0.87	D

Notes: (1) LOS – Level of Service; (2) V/C – Volume to Capacity
*Intersection does not currently exist; assessed in future scenarios only.

5.0 Future Year 2045 Forecast Modeling

5.1 ORANGE COUNTY TRANSPORTATION AUTHORITY MODEL (OCTAM)

The Orange County Transportation Authority (OCTA) is responsible for regional transportation planning in Orange County. OCTA's role as the regional planning agency is to plan for and evaluate multi-modal transportation alternatives to support regional planning activities. The Orange County Transportation Authority Model (OCTAM) is OCTA's regional model that is based on the traditional four-step sequential modeling methodology with "feedback loops" procedures to insure internal modeling consistency. The model incorporates multi-modal analytical capabilities to analyze the following modes of travel: local and express bus transit, urban rail, commuter rail, toll roads, carpools, truck traffic, as well as non-motorized transportation which includes pedestrian and bicycle trips. The model responds to changes in land use types, household characteristics, transportation infrastructure, and travel costs such as transit fares, parking costs, tolls, and auto operating costs.

5.2 PEAK HOUR FORECASTS

The future year 2040 volumes were derived based on existing peak hour count data and forecast link volumes obtained from the Orange County Transportation Analysis Model (OCTAM 5.0). OCTAM 5.0 (TransCad) is the accepted sub-regional model for forecasting travel demand for Orange County. Growth factors for each intersection approach and departure were interpolated from OCTAM 5.0 link plots for the baseline 2016 and 2045 scenarios. These growth factors were then applied to existing counts to forecast future turning movement volumes at each of the study intersections.

5.2.1 Turning Movement Development

It should be noted that Intersection #63 (Standard Avenue and 4th Street) does not currently exist, but is assumed to be constructed in the future year (2045) scenarios. Turning movement volumes for this intersection were developed through use of a post-processor. Because this intersection may affect local travel patterns, turning movement volumes for two adjacent intersections were also developed using this method. These intersections are #62 (Santiago Street and Santa Ana Boulevard) and #64 (Standard Avenue and 1st Street).

The process of converting link level traffic volumes to turning movement volumes is called "post processing." The fundamental theory behind the post-processor is the belief that with proper calibration, travel demand models provide good forecasts at the link level. Turning level forecasts are obtainable from the model, but the reliability of the forecast breaks down at this level of detail, and the abstraction of reality into numerical methods becomes apparent. The frictionless nature of left and right turns in the travel demand model allow them to occur as easily as through movements, which does not represent a realistic situation.

IBI Group has developed a spreadsheet-based postprocessor that uses existing turning movement volumes or split percentages along with forecast link-level data to determine future turn movement volumes at selected intersections. For intersections where existing data is not available (#63), assumed split percentages of 50% for the through movements, 25% for the right turn movements, and 25% for the left turn movements are used.

The postprocessor generates another solution to the possible combination of turning movements at a given intersection. There are numerous approaches to post processing. The IBI Group postprocessor utilizes a procedure documented in Chapter 8 of the National Cooperative Highway Research Program Report 255. It uses an iterative process to balance the intersection throughput volumes, which provides the best combination of reasonable turning movement volumes and traceability of results. Most importantly, the model link volumes (especially the approach intersection volumes) are maintained

when using this methodology. The "post processing" method can be summarized into the following steps:

1. If existing peak hour turning movement volumes are not available, calculate a base set of turning volumes from the known/assumed splits and the peak hour approach link volumes.
2. Calculate the inbound and outbound volumes for each leg of the intersection from the initial set of turning volumes.
3. Multiply the inbound volumes by the ratio of the forecast inbound volume to the calculated inbound volume for each leg. The calculated inbound volumes should now match the forecast inbound volumes.
4. Multiply the new volumes by the ratio of the forecast outbound volume to the calculated outbound volume for each leg. The calculated outbound volumes should now match the forecast outbound volumes for each leg, but the calculated inbound volumes may no longer be equal to the forecast inbound volumes.
5. Compare the calculated approach and departure volumes with the forecast approach and departure volumes.
6. If the deviation is within the tolerance level, the solution is obtained.
7. If the deviation is not within the tolerance level, repeat steps 3 and 4.
8. Repeat this process until the tolerance is met.

5.2.2 Roadway Segment Forecasts

Forecast roadway segment volumes were also derived based on existing average daily traffic (ADT) volumes and forecast ADT link volumes obtained from OCTAM 5.0. Growth factors for each study roadway segment were interpolated from OCTAM 5.0 link plots for the 2016 and 2045 baseline scenarios. The growth factors were then applied to existing ADT counts to forecast future roadway segment ADT.

5.2.3 Santa Ana Fixed Guideway (OC Streetcar)

As described in Section 2.0 of this report, the OC Streetcar is a proposed streetcar service that would travel primarily along Santa Ana Boulevard and the Pacific Electric Right-of-Way (PEROW) between the Santa Ana Regional Transportation Center (SARTC) and Garden Grove (4 miles long). The streetcar is proposed to travel along an exclusive guideway or path on rails that are embedded in the pavement. The streetcar would adhere to the same signal operations as on-street automobiles for most locations where Transit Signal Priority is not implemented. Santa Ana Boulevard is reclassified between Raitt Street and Shelton Street from a four lane undivided roadway to a two lane roadway (divided with a center left turn lane or raised median with left turn pockets. The project also proposes to reconfigure portions of Santa Ana Boulevard between Raitt Street and SARTC to accommodate a bike lane on the north side of the street throughout the alignment as well as 14-inch high platforms. The Fixed Guideway service is proposed to run every 10 to 15 minutes from approximately 6:00 AM to 11:00 PM. Within OCTAM, the Fixed Guideway is modeled as ‘bus transit,’ which would translate to six extra trips assigned during the peak hour in the direction of operations.

In 2016, the OCTA Board conditionally approved the following additional MPAH amendments:

- Fourth Street from French Street to Grand Avenue – Secondary to Divided Collector
- Santa Ana Boulevard from Flower Street to Ross – Major to Primary
- Santa Ana Boulevard from French Street to Santiago Street – Primary to Divided Collector
- Santa Ana Boulevard from Raitt Street to Flower Streer – Major to Divided Collector

6.0 Future Year (2045) No Project

This scenario is used as the point of comparison for the network alternatives and consists of the key elements presented in Section 2.6.

This scenario will serve as a base for comparison and establish impacts of the proposed With Project network. The Future Year 2045 No Project intersection geometries are the same as existing. The future year 2045 No Project volumes for the AM peak hour are shown in Table 6-1 and the PM peak hour volumes are shown in Table 6-2.

Table 6-1 Future Year (2045) No Project Volumes – AM Peak Hour

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
1	Euclid Street and Bolsa Avenue	103	870	149	200	1785	101	252	937	177	190	606	194
2	Euclid Street and McFadden Avenue	162	1227	146	148	2062	171	255	521	323	151	335	127
3	Euclid Street and Edinger Avenue	127	801	68	168	2442	224	160	700	428	125	761	139
4	Newhope Street and Hazard Avenue	78	590	84	88	1302	119	108	276	204	119	397	159
5	Newhope Street and McFadden Avenue	77	342	120	122	1213	113	135	492	160	190	484	108
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	84	1534	0	0	1465	19	81	0	133	836	44	117
7	Trask Avenue and SR-22 EB On-Ramp	0	0	0	0	0	0	713	893	0	0	852	159
8	Harbor Boulevard and Westminster Avenue	178	1173	251	258	2021	115	192	1010	36	415	1124	306
9	Harbor Boulevard and 1st Street	95	756	163	236	1989	129	138	919	178	196	497	116
10	Harbor Boulevard and McFadden Avenue	104	1059	101	190	2004	67	177	462	138	138	311	89
11	Harbor Boulevard and Edinger Avenue	103	772	146	204	2349	68	123	743	373	191	424	176
12	Harbor Boulevard and Warner Avenue	109	665	169	429	1933	116	101	1440	379	138	723	122
13	Harbor Boulevard and Segerstrom Avenue	107	759	48	169	2274	85	82	689	278	140	434	98
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	86	4	24	8	2	19	7	1934	767	68	517	21
15	Harbor Boulevard and MacArthur Boulevard	131	920	94	295	1701	118	131	1183	357	128	427	127
16	Harbor Boulevard and Sunflower Avenue	221	1128	209	233	2204	54	13	153	59	139	178	101
17	Harbor Boulevard and I-405 NB Off-Ramp	0	1915	0	0	1978	0	0	0	0	399	0	702
18	Harbor Boulevard and I-405 SB Off-Ramp	0	1963	0	0	1253	0	475	0	529	0	0	0
19	Fairview Street and Civic Center Drive	7	1569	508	332	1915	8	7	25	25	100	3	52
20	Fairview Street and 1st Street	200	1538	289	245	1426	164	200	1153	179	120	539	181

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
21	Fairview Street and McFadden Avenue	141	1510	202	154	1878	136	221	522	120	147	380	30
22	Fairview Street and Edinger Avenue	200	883	123	223	1558	132	361	1002	268	421	553	110
23	Fairview Street and Warner Avenue	222	981	129	194	1543	113	68	991	295	267	807	261
24	Fairview Street and MacArthur Boulevard	261	811	94	290	1460	163	121	984	145	235	494	140
25	Fairview Road and Sunflower Avenue	185	1071	163	191	1627	104	49	322	65	357	299	154
26	Greenville Street and Edinger Avenue	186	0	251	0	0	0	0	1821	444	153	813	0
27	Greenville Street and Segerstrom Avenue	47	193	78	154	472	160	46	1035	165	190	768	88
28	Raitt Street and McFadden Avenue	67	618	98	123	938	128	122	743	95	146	461	82
29	Raitt Street and Edinger Avenue	197	524	189	163	770	91	324	1980	285	122	954	56
30	Bear Street and MacArthur Boulevard	71	245	104	199	756	300	92	1581	108	62	1041	88
31	Bristol Street and 17th Street	251	1292	218	487	2001	263	324	963	156	368	845	280
32	Bristol Street and Civic Center Drive	133	1178	104	403	1628	101	165	836	103	127	421	87
33	Bristol Street and Santa Ana Boulevard	69	1502	209	153	1684	46	171	831	72	185	462	79
34	Bristol Street and 1st Street	205	1430	181	315	1298	183	200	1231	124	90	678	99
35	Bristol Street and McFadden Avenue	125	1117	56	204	1986	205	309	531	261	262	729	84
36	Bristol Street and Warner Avenue	221	993	183	600	2033	230	165	919	229	231	1058	180
37	Bristol Street and Segerstrom Avenue	70	778	146	283	1011	119	280	1354	125	134	607	78
38	Bristol Street and Alton Avenue	11	739	55	230	1591	36	164	101	211	41	87	31
39	Bristol Street and MacArthur Boulevard	102	531	133	329	1434	150	166	1203	244	159	758	110
40	Bristol Street and Sunflower Avenue	111	546	161	242	1370	103	112	926	375	295	480	166
41	Bristol Street and I-405 NB Ramps	0	1638	210	0	1918	8	0	0	36	145	87	796
42	Bristol Street and I-405 SB Ramps	125	1225	0	0	1030	886	696	0	636	0	0	0
43	Flower Street and Santa Ana Boulevard	100	936	136	214	723	97	211	1315	150	143	458	191
44	Flower Street and 1st Street	139	602	159	334	1058	111	148	1355	54	209	861	123
45	Flower Street and McFadden Avenue	70	511	44	118	655	95	112	1278	97	113	764	103
46	Flower Street and Segerstrom Avenue	86	451	100	98	544	120	223	1531	427	104	764	84
47	Flower Street and MacArthur Boulevard	26	170	88	167	361	270	151	1716	73	62	1049	67
48	Main Street and	105	724	375	198	1034	173	361	510	222	316	276	230

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
	La Veta Avenue												
49	Main Street and Mainplace Drive / Memory Lane	34	920	301	36	1386	290	185	291	20	132	151	10
50	Main Street and 17th Street	133	788	169	237	1322	85	127	1336	67	356	1425	21
51	Main Street and Civic Center Drive	142	925	81	55	970	148	120	727	132	43	566	34
52	Main Street and Santa Ana Boulevard	66	1050	0	0	1135	100	0	0	0	90	1250	96
53	Main Street and 4th Street	0	939	22	0	961	24	0	70	11	0	140	34
54	Main Street and 1st Street	103	532	54	77	772	57	106	1241	131	86	1072	60
55	Main Street and McFadden Avenue	93	874	44	162	1259	25	86	815	89	164	438	126
56	Main Street and Edinger Avenue	99	561	61	211	975	51	96	1248	168	108	630	77
57	Main Street and MacArthur Boulevard	51	295	250	539	709	160	230	1336	242	138	411	206
58	Penn Way and 17th Street	52	0	260	0	0	0	0	1341	684	214	1722	0
59	Santiago Street / I-5 NB Ramps and 17th Street	720	33	21	54	0	279	89	932	337	0	1245	20
60	Penn Way and I-5 SB Ramps	0	260	230	951	196	0	0	0	0	196	0	110
61	Santiago Street and Civic Center Drive	487	338	47	10	590	144	182	69	369	108	99	20
62	Santiago Street and Santa Ana Boulevard	188	611	303	409	972	253	118	732	99	297	699	258
63	Standard Avenue and 4th Street	191	473	248	431	604	332	298	624	219	250	550	340
64	Standard Avenue and 1st Street	45	631	312	123	901	41	161	1,959	121	194	1,282	120
65	Standard Avenue and McFadden Avenue	94	360	162	226	547	38	34	1178	142	150	397	89
66	Halladay Street and Warner Avenue	95	0	220	0	0	0	0	1833	207	260	986	0
67	Halladay Street and Dyer Road	15	24	65	450	91	96	46	1537	11	104	566	91
68	SR-55 SB Ramps and MacArthur Boulevard	0	0	0	998	0	903	0	1349	961	0	1187	135
69	SR-55 NB Ramps and MacArthur Boulevard	946	0	1017	0	0	0	0	1468	726	0	517	244
70	SR-55 SB Ramps and Dyer Road	286	34	654	50	242	60	37	1422	303	348	552	92
71	Glassell Street and La Veta Avenue	263	412	125	14	295	65	57	293	563	367	387	9
72	Glassell Street and SR-22 WB Ramps	511	574	0	0	1017	473	0	0	0	323	6	483
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	0	918	245	373	977	0	270	0	1058	0	0	0
74	Grand Avenue and Fairhaven Avenue	21	840	121	207	1,718	38	99	60	59	213	24	192
75	Grand Avenue and Santa Clara Avenue	75	528	136	345	1,687	380	143	233	48	200	385	352
76	Grand Avenue and 17th Street	186	543	373	340	1,426	280	198	739	94	342	894	98

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
77	Grand Avenue and I-5 NB Ramps	0	1056	610	90	2893	0	0	0	0	507	0	140
78	Grand Avenue and Santa Ana Boulevard	49	694	35	202	1670	1473	268	221	436	6	475	43
79	Grand Avenue and 1st Street	208	732	34	99	1432	174	436	1041	295	216	759	87
80	Grand Avenue and Chestnut Avenue	53	737	163	161	1937	53	34	239	63	130	384	239
81	Grand Avenue and McFadden Avenue	181	764	114	249	1672	163	205	663	201	123	440	111
82	Grand Avenue and Edinger Avenue	47	472	92	243	1244	243	347	1447	139	189	724	158
83	Grand Avenue and Warner Avenue	142	429	184	183	528	178	333	1188	467	92	406	137
84	SR-55 NB Ramps and Dyer Road	610	0	499	0	0	0	0	1618	647	0	599	361
85	Cambridge Street and La Veta Avenue	185	235	0	0	480	245	273	0	436	0	0	0
86	Cambridge Street and Fairhaven Avenue	0	0	0	567	0	183	80	216	0	0	195	152
87	Mabury Street and 1st Street	6	0	157	248	147	554	0	1230	13	38	579	0
88	Tustin Street and La Veta Avenue	7	301	87	67	1307	4	9	11	35	307	1	47
89	Tustin Street and SR-22 WB On-Ramp	614	571	0	0	1171	699	0	0	0	0	0	0
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	0	953	5	17	1049	0	275	27	1182	6	0	43
91	Tustin Street and Fairhaven Avenue	101	586	103	280	2,411	48	84	317	546	416	460	601
92	Tustin Avenue and Santa Clara Avenue	83	453	84	151	3,094	98	335	847	618	160	332	166
93	Tustin Avenue and 17th Street	127	226	269	716	2,067	23	621	2,450	418	664	1,047	256
94	Tustin Avenue and 4th Street	80	408	365	601	765	237	126	748	31	125	704	457
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	456	68	540	50	30	8	36	1426	527	510	1202	157
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	392	104	66	21	512	750	269	163	155	8	223	4
97	Red Hill Avenue and Edinger Avenue	101	374	106	195	828	388	397	1276	271	255	1234	173
98	Red Hill Avenue and Warner Avenue	68	414	56	20	935	188	273	464	342	120	427	76
99	Red Hill Avenue and Barranca Parkway	152	379	125	163	719	94	124	748	296	511	571	111
100	Red Hill Avenue and Alton Parkway	225	663	415	212	962	154	158	490	490	342	290	163
101	Red Hill Avenue and MacArthur Boulevard	83	742	13	186	481	441	1153	596	98	32	308	789
102	Red Hill Avenue and Main Street	201	691	449	56	261	90	139	1309	254	154	309	73
103	I-5 SB Ramps and Santa Ana Boulevard	0	0	0	382	0	38	332	569	0	0	1267	370

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
104	Tustin Ranch Road and Warner Avenue	0	0	0	141	0	18	27	357	0	0	2130	490
105	Von Karman Avenue and Barranca Parkway	401	533	319	104	1021	446	219	823	275	902	1482	46

Table 6-2 Future Year (2045) No Project Volumes – PM Peak Hour

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
1	Euclid Street and Bolsa Avenue	169	1569	126	152	866	164	212	678	106	209	877	209
2	Euclid Street and McFadden Avenue	242	1973	127	96	1179	143	207	475	210	114	479	221
3	Euclid Street and Edinger Avenue	539	1610	115	136	897	228	141	544	163	128	1181	191
4	Newhope Street and Hazard Avenue	105	1159	45	46	982	117	75	148	91	88	556	160
5	Newhope Street and McFadden Avenue	188	1009	177	140	625	121	61	372	54	104	574	164
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	109	2457	0	0	1801	58	102	0	86	576	78	165
7	Trask Avenue and SR-22 EB On-Ramp	0	0	0	0	0	0	927	695	0	0	786	74
8	Harbor Boulevard and Westminster Avenue	237	1178	279	254	1752	202	215	768	37	357	1238	281
9	Harbor Boulevard and 1st Street	290	1497	166	245	1073	145	179	730	138	199	929	151
10	Harbor Boulevard and McFadden Avenue	169	1737	127	256	1094	99	241	585	73	198	474	137
11	Harbor Boulevard and Edinger Avenue	254	1597	193	290	843	77	109	460	81	196	1138	379
12	Harbor Boulevard and Warner Avenue	762	3656	275	262	1457	174	217	1539	352	249	2589	827
13	Harbor Boulevard and Segerstrom Avenue	273	1717	55	87	986	87	118	585	192	117	1269	461
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	1201	7	70	12	4	14	36	891	160	25	2350	12
15	Harbor Boulevard and MacArthur Boulevard	558	1441	83	204	1028	169	140	489	181	81	1373	258
16	Harbor Boulevard and Sunflower Avenue	154	1532	228	114	1417	43	81	220	229	301	632	236
17	Harbor Boulevard and I-405 NB Off-Ramp	0	1529	0	0	2570	0	0	0	0	496	0	801
18	Harbor Boulevard and I-405 SB Off-Ramp	0	1881	0	0	2281	0	177	0	815	0	0	0
19	Fairview Street and Civic Center Drive	6	1690	475	192	1784	0	2	6	4	424	0	157
20	Fairview Street and 1st Street	169	1241	112	236	1468	291	193	781	136	140	1060	164
21	Fairview Street and McFadden Avenue	164	1507	131	191	1553	242	158	427	106	158	545	134
22	Fairview Street and Edinger Avenue	184	1759	108	204	635	156	205	628	168	650	1375	302
23	Fairview Street and Warner Avenue	213	1695	158	182	921	93	168	815	126	168	989	214
24	Fairview Street and MacArthur Boulevard	225	1550	84	171	955	88	240	627	211	167	1272	223
25	Fairview Road and Sunflower Avenue	192	1725	375	140	1162	81	262	555	123	227	569	148

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
26	Greenville Street and Edinger Avenue	293	0	195	0	0	0	0	1061	216	153	1811	0
27	Greenville Street and Segerstrom Avenue	50	414	31	52	171	52	127	967	55	37	1414	202
28	Raitt Street and McFadden Avenue	61	872	136	51	533	86	108	640	56	98	827	114
29	Raitt Street and Edinger Avenue	171	736	206	114	396	99	125	862	123	192	2171	194
30	Bear Street and MacArthur Boulevard	273	1314	343	115	278	84	80	753	78	67	1211	193
31	Bristol Street and 17th Street	375	1823	303	337	1794	305	238	530	96	311	1170	396
32	Bristol Street and Civic Center Drive	222	1550	81	159	1458	149	195	549	65	184	789	89
33	Bristol Street and Santa Ana Boulevard	84	1702	97	117	1558	59	155	428	100	392	624	168
34	Bristol Street and 1st Street	392	1693	250	223	1209	273	160	900	115	196	1204	114
35	Bristol Street and McFadden Avenue	224	1649	90	111	1554	358	245	478	95	209	1088	127
36	Bristol Street and Warner Avenue	316	1182	216	338	1128	219	176	791	140	251	1481	434
37	Bristol Street and Segerstrom Avenue	182	1347	237	101	927	194	224	803	64	145	1313	66
38	Bristol Street and Alton Avenue	43	1681	158	116	870	54	25	35	65	91	150	29
39	Bristol Street and MacArthur Boulevard	321	1369	249	233	858	135	335	746	158	236	1370	259
40	Bristol Street and Sunflower Avenue	651	1376	222	215	804	230	301	588	228	247	952	303
41	Bristol Street and I-405 NB Ramps	0	2094	183	0	2375	22	0	0	204	350	300	1162
42	Bristol Street and I-405 SB Ramps	128	1570	0	0	1611	942	740	0	331	0	0	0
43	Flower Street and Santa Ana Boulevard	198	1206	99	87	442	40	357	1029	168	186	649	192
44	Flower Street and 1st Street	224	1063	253	200	549	159	102	895	74	210	1415	147
45	Flower Street and McFadden Avenue	91	1234	76	46	352	57	124	928	37	93	1159	166
46	Flower Street and Segerstrom Avenue	122	859	82	84	469	135	203	1011	107	92	1545	99
47	Flower Street and MacArthur Boulevard	130	621	72	93	224	215	199	947	60	62	1989	177
48	Main Street and La Veta Avenue	347	1059	496	164	1031	266	327	466	209	282	563	226
49	Main Street and Mainplace Drive / Memory Lane	113	1186	225	52	1083	143	391	433	116	278	227	110
50	Main Street and 17th Street	197	1019	222	222	969	150	224	1256	74	199	1220	81
51	Main Street and Civic Center Drive	92	1169	98	52	853	54	239	1322	158	38	384	39
52	Main Street and Santa Ana Boulevard	51	1152	0	0	1083	53	0	0	0	92	924	120
53	Main Street and 4th Street	0	950	45	0	864	39	0	70	39	0	229	58

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
54	Main Street and 1st Street	152	745	65	146	559	119	116	1172	87	111	1244	87
55	Main Street and McFadden Avenue	132	1037	64	123	834	61	182	805	98	133	752	338
56	Main Street and Edinger Avenue	101	1069	49	129	646	88	118	698	78	102	1364	141
57	Main Street and MacArthur Boulevard	446	1067	293	265	345	260	313	643	62	193	1529	444
58	Penn Way and 17th Street	1113	0	543	0	0	0	0	1672	539	123	1440	0
59	Santiago Street / I-5 NB Ramps and 17th Street	330	44	17	50	0	130	114	1047	688	0	1564	42
60	Penn Way and I-5 SB Ramps	0	631	414	592	137	0	0	0	0	214	0	183
61	Santiago Street and Civic Center Drive	194	598	60	32	456	117	266	76	269	14	19	18
62	Santiago Street and Santa Ana Boulevard	135	833	236	378	639	103	164	673	87	255	546	347
63	Standard Avenue and 4th Street	251	543	214	254	428	297	302	477	201	233	648	351
64	Standard Avenue and 1st Street	109	724	259	142	679	47	168	1,279	65	264	1,888	116
65	Standard Avenue and McFadden Avenue	194	765	94	237	520	90	95	632	108	123	749	217
66	Halladay Street and Warner Avenue	338	0	704	0	0	0	2	868	87	272	2159	0
67	Halladay Street and Dyer Road	61	266	307	296	39	83	147	1271	9	51	1655	132
68	SR-55 SB Ramps and MacArthur Boulevard	0	0	0	299	0	724	0	1187	1058	0	1474	579
69	SR-55 NB Ramps and MacArthur Boulevard	620	0	412	0	0	0	0	711	731	0	1467	1056
70	SR-55 SB Ramps and Dyer Road	386	12	291	103	226	110	59	1379	187	566	1008	65
71	Glassell Street and La Veta Avenue	573	595	194	14	471	35	106	346	594	211	382	15
72	Glassell Street and SR-22 WB Ramps	660	1079	0	0	1007	293	0	0	0	251	9	446
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	0	1450	370	461	824	0	229	4	503	0	0	0
74	Grand Avenue and Fairhaven Avenue	54	1,420	284	242	974	89	79	45	33	221	42	157
75	Grand Avenue and Santa Clara Avenue	103	1,386	288	240	946	240	114	139	26	157	282	300
76	Grand Avenue and 17th Street	288	1,026	259	294	634	140	321	823	138	279	1,031	187
77	Grand Avenue and I-5 NB Ramps	0	1855	1432	62	1501	0	0	0	0	151	0	182
78	Grand Avenue and Santa Ana Boulevard	185	2091	34	38	839	595	377	230	363	34	228	165
79	Grand Avenue and 1st Street	188	1435	43	113	667	266	326	1080	107	154	958	176
80	Grand Avenue and Chestnut Avenue	152	1142	198	161	716	121	70	214	47	139	433	252
81	Grand Avenue and McFadden Avenue	222	1264	218	153	696	187	122	454	79	96	762	168

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
82	Grand Avenue and Edinger Avenue	244	1411	122	203	501	281	182	787	63	93	1673	217
83	Grand Avenue and Warner Avenue	183	660	146	140	452	208	306	587	127	241	1539	504
84	SR-55 NB Ramps and Dyer Road	181	0	49	0	0	0	0	1183	602	0	1488	929
85	Cambridge Street and La Veta Avenue	235	327	0	0	206	191	375	0	247	0	0	0
86	Cambridge Street and Fairhaven Avenue	0	0	0	219	0	76	132	230	0	0	237	295
87	Mabury Street and 1st Street	23	0	233	195	83	367	0	1334	21	40	549	0
88	Tustin Street and La Veta Avenue	38	863	205	79	701	13	13	5	20	146	4	90
89	Tustin Street and SR-22 WB On-Ramp	466	1340	0	0	573	294	0	0	0	0	0	0
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	0	1416	4	40	550	0	440	39	558	28	0	67
91	Tustin Street and Fairhaven Avenue	280	1,492	132	356	940	108	89	200	163	100	220	208
92	Tustin Avenue and Santa Clara Avenue	191	923	142	199	1,574	109	72	227	133	133	166	157
93	Tustin Avenue and 17th Street	253	1,083	557	377	404	40	524	1,029	139	243	798	444
94	Tustin Avenue and 4th Street	28	299	97	459	339	124	208	743	38	118	798	491
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	401	32	423	110	50	37	47	1677	472	468	1220	146
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	879	262	51	17	209	803	156	54	32	23	348	16
97	Red Hill Avenue and Edinger Avenue	204	1469	233	105	209	169	410	1051	128	90	1161	567
98	Red Hill Avenue and Warner Avenue	374	1281	147	79	304	385	246	668	104	76	1598	210
99	Red Hill Avenue and Barranca Parkway	338	1270	327	241	408	192	172	637	84	110	839	245
100	Red Hill Avenue and Alton Parkway	26	1458	211	122	519	4	434	1065	545	1299	222	801
101	Red Hill Avenue and MacArthur Boulevard	175	1133	14	315	654	1148	499	230	35	39	810	568
102	Red Hill Avenue and Main Street	436	941	254	88	640	348	200	714	193	277	1575	88
103	I-5 SB Ramps and Santa Ana Boulevard	0	0	0	304	0	67	765	865	0	0	621	170
104	Tustin Ranch Road and Warner Avenue	0	0	0	553	0	38	65	2154	0	0	856	369
105	Von Karman Avenue and Barranca Parkway	346	1992	434	80	407	280	765	1397	195	232	734	250

6.1 FUTURE YEAR (2045) NO PROJECT VEHICLE MILES TRAVELED (VMT)

Table 7-6 presents the VMT analysis results for the Future Year (2045) No Project scenario. VMT calculations are based on the scenario parameters and methodology as described in Sections 2.6 and 3.1, respectively.

Table 6-3 Future Year (2045) VMT Summary

	I – I VMT	I – X VMT	X – I VMT	Total VMT	Service Population	VMT/SP
City	692,704	5,737,798	5,733,292	12,163,794	534,238	22.8
County	52,994,916	29,554,879	29,660,308	112,210,103	4,221,830	26.6

SP = Service Population = Total Employees + Total Population. Reduction factor applied to Total Employees as noted in Section 3.1 and shown in Appendix F. I-I = Internal-Internal; I-X = Internal-External; X-I = External-Internal.

6.2 ROADWAY SEGMENT LEVEL OF SERVICE

A summary of the forecast roadway segment volumes and corresponding level of service results for the future year 2045 No Project condition is shown in Table 6-4. The following roadway segments are forecast to operate at a deficient LOS:

- Segment 8 – Harbor Boulevard from Segerstrom Avenue to MacArthur Boulevard
- Segment 23 – Main Street from 1st Street to Bishop Street
- Segment 39 – Bristol Street from Edinger Avenue to Warner Avenue
- Segment 43 – Flower Street from Warner Avenue to Segerstrom Avenue
- Segment 45 – Main Street from McFadden Avenue to Edinger Avenue
- Segment 52 – Edinger Avenue from Richie Street to Newport Avenue
- Segment 57 – Dyer Road from Grand Avenue to Pullman Street
- Segment 58 – McFadden Avenue from Bristol Street to Flower Street
- Segment 62 – Fourth Street from French Street to Standard Avenue
- Segment 63 – Broadway from 17th Street to Civic Center Drive
- Segment 72 – McFadden Avenue from Main Street to Standard Avenue
- Segment 73 – Penn Way/Santiago Street from I-5 SB Ramps to Santa Ana Boulevard
- Segment 74 – Raitt Street from Santa Ana Boulevard to 1st Street
- Segment 84 – Dyer Road from Pullman Street to Red Hill Avenue

Table 6-4 Future Year (2045) No Project Roadway Segment LOS

ID	Street	Segment	Lanes	ADT	LOS
1	1st Street	Euclid Street to Ward Street	6D	21,700	A
2	Euclid Street	1st Street to McFadden Avenue	6D	35,900	B
3	Westminster Avenue	Harbor Boulevard to Fairview Street	6D	25,400	A
4	Harbor Boulevard	Westminster Avenue/17th Street to Hazard Avenue	6D	41,100	C
5	1st Street	Harbor Boulevard to Jackson	6D	23,700	A
6	Edinger Avenue	Harbor Boulevard to Fairview Street	6D	23,300	A
7	Warner Avenue	Harbor Boulevard to Fairview Street	6D	28,500	A
8	Harbor Boulevard	Segerstrom Avenue to MacArthur Boulevard	6D	59,600	F
9	Fairview Street	1st Street to Willits Street	6D	38,800	B
10	1st Street	Sullivan Street to Raitt Street	6D	24,400	A
11	Bristol Street	17th Street to Santa Clara Avenue	6D	43,200	C
12	17th Street	College Avenue to Bristol Street	6D	30,800	A
13	Bristol Street	17th Street to Washington Avenue	6D	47,300	D
14	Fairview Street	Trask Avenue to 17th Street	6D	47,400	D
15	Bristol Street	1st Street to Bishop Street	6D	45,500	D
16	Civic Center Drive	Bristol Street to Flower Street	4U	18,400	C
17	Flower Street	1st Street to Bishop Street	4U	9,400	A
18	Main Street	17th Street to 20th Street	6D	40,800	C
19	Main Street	Washington Street to Civic Center Drive	4U	16,600	B
20	Civic Center Drive	Flower Street to Ross Street	4U	10,200	A
21	Santa Ana Boulevard	Flower Street to Ross Street	6D	22,200	A
22	1st Street	Main Street to Standard Avenue	6D	38,200	B
23	Main Street	1st Street to Bishop Street	4U	29,400	F
24	Grand Avenue	Santa Clara Avenue to Fairhaven Street	6D	31,200	A
25	Grand Avenue	Santa Ana Boulevard to 4th Street	6D	24,600	A
26	Santa Clara Avenue	Grand Avenue to Tustin Avenue	4U	10,800	A
27	Tustin Avenue	Santa Clara Avenue to Fairhaven Street	6D	23,400	A
28	17th Street	Cabrillo Park Drive to Tustin Avenue	6D	32,700	A
29	Tustin Avenue	Fruit Street to 4th Street	6D	22,100	A
30	1st Street	Grand Avenue to Elk Lane	6D	29,300	A
31	1st Street	Cabrillo Park Drive to Tustin Avenue	6D	15,600	A
32	Fairview Street	Edinger Avenue to Harvard Street	6D	46,200	D
33	Fairview Street	Warner Avenue to Segerstrom Avenue	6D	43,200	C
34	MacArthur Boulevard	Harbor Boulevard to Fairview Street	6D	33,500	A
35	Edinger Avenue	Fairview Street to Greenville Street	6D	20,400	A
36	McFadden Avenue	Fairview Street to Raitt Street	4U	20,000	D
37	MacArthur Boulevard	Fairview Street to Raitt Street	6D	29,700	A
38	Segerstrom Avenue	Fairview Street to Raitt Street	6D	26,300	A
39	Bristol Street	Edinger Avenue to Warner Avenue	6D	53,500	E
40	Bristol Street	Warner Avenue to Segerstrom Avenue	6D	45,100	D

ID	Street	Segment	Lanes	ADT	LOS
41	Warner Avenue	Raitt Street to Bristol Street	6D	22,600	A
42	Bristol Street	MacArthur Boulevard to Sunflower Avenue	6D	49,100	D
43	Flower Street	Warner Avenue to Segerstrom Avenue	4D	36,200	E
44	Edinger Avenue	Flower Street to Main Street	6D	23,200	A
45	Main Street	McFadden Avenue to Edinger Avenue	4U	25,100	F
46	Main Street	Edinger Avenue to Warner Avenue	5D	34,400	C
47	Main Street	Warner Avenue to Dyer Road	6D	36,700	B
48	Segerstrom Avenue	Bristol Street to Flower Street	6D	24,400	A
49	MacArthur Boulevard	Flower Street to Main Street	6D	35,400	B
50	Main Street	MacArthur Boulevard to Sunflower Avenue	6D	26,300	A
51	Grand Avenue	Edinger Avenue to Warner Avenue	6D	34,100	B
52	Edinger Avenue	Richie Street to Newport Avenue	6D	52,800	E
53	Warner Avenue	Grand Avenue to Red Hill Avenue	6D	31,800	A
54	Warner Avenue	Main Street to Standard Avenue	6D	22,700	A
55	McFadden Avenue	Newhope Street to Harbor Boulevard	4U	13,800	A
56	McFadden Avenue	Standard Avenue to Grand Avenue	4U	16,100	B
57	Dyer Road	Grand Avenue to Pullman Street	6D	73,900	F
58	McFadden Avenue	Bristol Street to Flower Street	4U	23,300	E
59	Main Street	La Veta Avenue to Memory Lane	8D	48,800	B
60	1st Street	Bristol Street to Flower Street	6D	26,600	A
61	Fairhaven Avenue	Grand Avenue to Tustin Avenue	4D	13,500	A
62	4th Street	French Street to Standard Avenue	4U	22,800	E
63	Broadway	17th Street to Civic Center Drive	4U	29,600	F
64	Broadway	Civic Center Drive to 1st Street	4U	12,200	A
65	Cambridge Street	SR-22 to Fairhaven Avenue	4U	9,200	A
66	Chestnut Avenue	Standard Avenue to Lyon Street	4U	11,900	A
67	Civic Center Drive	French Street to Santiago Street	4U	2,100	A
68	Civic Center Drive	Fairview Road to Bristol Street	4U	20,300	D
69	Flower Street	Edinger Avenue to Warner Avenue	4U	13,300	A
70	Halladay Avenue	Warner Avenue to Dyer Road	4U	22,100	D
71	Hazard Avenue	Euclid Street to Harbor Boulevard	4U	15,400	B
72	McFadden Avenue	Main Street to Standard Avenue	4U	24,700	E
73	Penn Way/Santiago Street	I-5 SB Ramps to Santa Ana Boulevard	4U	26,300	F
74	Raitt Street	Santa Ana Boulevard to 1st Street	4U	23,100	E
75	Raitt Street	Warner Avenue to Segerstrom Avenue	4U	20,000	D
76	Santa Ana Boulevard	French Street to Santiago Street	4D	16,500	A
77	Santa Ana Boulevard	Raitt Street to Bristol Street	6D	27,000	A
78	Standard Avenue	Chestnut Avenue to McFadden Avenue	4U	19,600	C
79	Standard Avenue	Edinger Avenue to Warner Avenue	4U	18,200	C
80	Greenville Street	Edinger Avenue to Warner Avenue	2U	6,600	A
81	Greenville Street	Warner Avenue to Segerstrom Avenue	4D	8,400	A
82	Flower Street	17th Street to Northern Terminus	2D	5,900	A

ID	Street	Segment	Lanes	ADT	LOS
83	Logan Street	Civic Center Drive to Santa Ana Boulevard	2U	- *	-
84	Dyer Road	Pullman Street to Red Hill Avenue	6D	58,000	F
85	Fairhaven Avenue	Tustin Street to Yorba Street	4U	17,214	B
86	Santa Clara Avenue	Tustin Street to Yorba Street	4U	9,004	A
87	Harbor Boulevard	McFadden Avenue to Edinger Avenue	6D	36,400	B
88	Harbor Boulevard	Edinger Avenue to Warner Avenue	6D	44,900	C

Notes:
* Not available.
(1) ADT – Average Daily Traffic Volumes
(2) LOS – Level of Service
(3) #D – total number of lanes in both directions divided by raised or striped median; #U – total number of undivided lanes in both directions.
(4) Roadway capacities shown in Table 3-1.

6.3 INTERSECTION LEVEL OF SERVICE

A summary of the AM and PM peak hour level of service analysis results for the Future Year (2045) No Project condition is provided in Table 6-5. Intersections are considered unacceptable if the level of service (LOS) is "E" or "F". It should be noted that Caltrans and CMP intersection have a minimum LOS of C and E, respectively. The following intersections are forecast to have unacceptable level of service in the Future Year (2045) No Project condition:

- INT 2 – Euclid Street and McFadden Avenue (City of Santa Ana)
- INT 3 – Euclid Street and Edinger Avenue (City of Fountain Valley)
- INT 8 – Harbor Boulevard and Westminster Avenue (City of Garden Grove / City of Santa Ana)
- INT 12 – Harbor Boulevard and Warner Avenue (City of Santa Ana – CMP)
- INT 13 – Harbor Boulevard and Segerstrom Avenue (City of Santa Ana)
- INT 14 – Hyland Avenue and MacArthur Boulevard (City of Costa Mesa)
- INT 22 – Fairview Street and Edinger Avenue (City of Santa Ana)
- INT 29 – Raitt Street and Edinger Avenue (City of Santa Ana)
- INT 32 – Bristol Street and Civic Center Drive (City of Santa Ana)
- INT 35 – Bristol Street and McFadden Avenue (City of Santa Ana)
- INT 36 – Bristol Street and Warner Avenue (City of Santa Ana)
- INT 44 – Flower Street and 1st Street (City of Santa Ana)
- INT 45 – Flower Street and McFadden Avenue (City of Santa Ana)
- INT 51 – Main Street and Civic Center Drive (City of Santa Ana)
- INT 52 – Main Street and Santa Ana Boulevard (City of Santa Ana)
- INT 55 – Main Street and McFadden Avenue (City of Santa Ana)
- INT 61 – Santiago Street and Civic Center Drive (City of Santa Ana)
- INT 62 – Santiago Street and Santa Ana Boulevard (City of Santa Ana)

- INT 63 – Standard Avenue and 4th Street (City of Santa Ana)
- INT 64 – Standard Avenue and 1st Street (City of Santa Ana)
- INT 66 – Halladay Street and Warner Avenue (City of Santa Ana)
- INT 67 – Halladay Street and Dyer Road (City of Santa Ana)
- INT 82 – Grand Avenue and Edinger Avenue (City of Santa Ana)
- INT 91 – Tustin Street and Fairhaven Avenue (City of Orange)
- INT 92 – Tustin Avenue and Santa Clara Avenue (City of Santa Ana)
- INT 93 – Tustin Avenue and 17th Street (City of Santa Ana)
- INT 96 – SR-55 NB Ramps / Del Amo Avenue and Newport Avenue (Caltrans)
- INT 100 – Red Hill Avenue and Alton Parkway (City of Irvine)
- INT 105 – Von Karman Avenue and Barranca Parkway (City of Irvine)

Table 6-5: Future Year (2045) No Project Intersection LOS Summary

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
1	Euclid Street and Bolsa Avenue	0.86	D	0.86	D
2	Euclid Street and McFadden Avenue	0.98	E	0.90	D
3	Euclid Street and Edinger Avenue	0.99	E	0.89	D
4	Newhope Street and Hazard Avenue	0.78	C	0.72	C
5	Newhope Street and McFadden Avenue	0.83	D	0.78	C
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	28.4	C	24.2	C
7	Trask Avenue and SR-22 EB On-Ramp	12.0	B	13.6	B
8	Harbor Boulevard and Westminster Avenue	0.99	E	0.88	D
9	Harbor Boulevard and 1st Street	0.79	C	0.78	C
10	Harbor Boulevard and McFadden Avenue	0.79	C	0.81	D
11	Harbor Boulevard and Edinger Avenue	0.84	D	0.73	C
12	Harbor Boulevard and Warner Avenue	0.79	C	1.54	F
13	Harbor Boulevard and Segerstrom Avenue	0.97	E	0.92	E
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	0.61	B	0.92	E
15	Harbor Boulevard and MacArthur Boulevard	0.74	C	0.78	C
16	Harbor Boulevard and Sunflower Avenue	0.70	B	0.72	C
17	Harbor Boulevard and I-405 NB Off-Ramp	18.0	B	18.3	B
18	Harbor Boulevard and I-405 SB Off-Ramp	15.0	B	17.9	B
19	Fairview Street and Civic Center Drive	0.74	C	0.76	C
20	Fairview Street and 1st Street	0.86	D	0.90	D
21	Fairview Street and McFadden Avenue	0.80	C	0.78	C
22	Fairview Street and Edinger Avenue	0.86	D	0.92	E
23	Fairview Street and Warner Avenue	0.82	D	0.80	C
24	Fairview Street and MacArthur Boulevard	0.68	B	0.77	C
25	Fairview Road and Sunflower Avenue	0.70	B	0.72	C
26	Greenville Street and Edinger Avenue	0.77	C	0.60	A
27	Greenville Street and Segerstrom Avenue	0.84	D	0.78	C
28	Raitt Street and McFadden Avenue	0.78	C	0.76	C
29	Raitt Street and Edinger Avenue	0.99	E	0.99	E
30	Bear Street and MacArthur Boulevard	0.71	C	0.85	D
31	Bristol Street and 17th Street	0.87	D	0.82	D
32	Bristol Street and Civic Center Drive	0.94	E	0.91	E
33	Bristol Street and Santa Ana Boulevard	0.81	D	0.85	D
34	Bristol Street and 1st Street	0.77	C	0.83	D
35	Bristol Street and McFadden Avenue	0.96	E	1.03	F
36	Bristol Street and Warner Avenue	0.92	E	0.85	D
37	Bristol Street and Segerstrom Avenue	0.81	D	0.87	D
38	Bristol Street and Alton Avenue	0.55	A	0.63	B
39	Bristol Street and MacArthur Boulevard	0.70	B	0.77	C

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
40	Bristol Street and Sunflower Avenue	0.65	B	0.69	B
41	Bristol Street and I-405 NB Ramps	20.8	C	28.5	C
42	Bristol Street and I-405 SB Ramps	23.9	C	18.3	B
43	Flower Street and Santa Ana Boulevard	0.81	D	0.86	D
44	Flower Street and 1st Street	0.93	E	0.88	D
45	Flower Street and McFadden Avenue	0.90	D	1.04	F
46	Flower Street and Segerstrom Avenue	0.78	C	0.87	D
47	Flower Street and MacArthur Boulevard	0.68	B	0.90	D
48	Main Street and La Veta Avenue	0.59	A	0.70	B
49	Main Street and Mainplace Drive / Memory Lane	0.51	A	0.56	A
50	Main Street and 17th Street	0.88	D	0.76	C
51	Main Street and Civic Center Drive	0.78	C	0.97	E
52	Main Street and Santa Ana Boulevard	0.93	E	0.79	C
53	Main Street and 4th Street	0.41	A	0.45	A
54	Main Street and 1st Street	0.68	B	0.74	C
55	Main Street and McFadden Avenue	0.89	D	0.93	E
56	Main Street and Edinger Avenue	0.80	C	0.87	D
57	Main Street and MacArthur Boulevard	0.68	B	0.75	C
58	Penn Way and 17th Street	12.2	B	25.5	C
59	Santiago Street / I-5 NB Ramps and 17th Street	30.0	C	19.0	B
60	Penn Way and I-5 SB Ramps	21.2	C	23.0	C
61	Santiago Street and Civic Center Drive	159.2	F	110.0	F
62	Santiago Street and Santa Ana Boulevard	1.04	F	1.02	F
63*	Standard Avenue and 4th Street	0.94	E	0.89	D
64	Standard Avenue and 1st Street	0.98	E	0.97	E
65	Standard Avenue and McFadden Avenue	0.85	D	0.83	D
66	Halladay Street and Warner Avenue	0.78	C	0.97	E
67	Halladay Street and Dyer Road	0.77	C	1.06	F
68	SR-55 SB Ramps and MacArthur Boulevard	19.9	B	17.8	B
69	SR-55 NB Ramps and MacArthur Boulevard	19.3	B	14.6	B
70	SR-55 SB Ramps and Dyer Road	25.7	C	26.5	C
71	Glassell Street and La Veta Avenue	0.80	C	0.74	C
72	Glassell Street and SR-22 WB Ramps	32.6	C	30.5	C
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	30.6	C	31.6	C
74	Grand Avenue and Fairhaven Avenue	0.61	B	0.72	C
75	Grand Avenue and Santa Clara Avenue	0.84	D	0.81	D
76	Grand Avenue and 17th Street	0.79	C	0.86	D
77	Grand Avenue and I-5 NB Ramps	13.2	B	10.1	B
78	Grand Avenue and Santa Ana Boulevard	26.0	C	25.3	C
79	Grand Avenue and 1st Street	0.74	C	0.73	C

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
80	Grand Avenue and Chestnut Avenue	0.70	B	0.69	B
81	Grand Avenue and McFadden Avenue	0.89	D	0.82	D
82	Grand Avenue and Edinger Avenue	0.84	D	1.00	E
83	Grand Avenue and Warner Avenue	0.61	B	0.83	D
84	SR-55 NB Ramps and Dyer Road	17.1	B	5.7	A
85	Cambridge Street and La Veta Avenue	31.6	D	19.7	C
86	Cambridge Street and Fairhaven Avenue	0.56	A	0.45	A
87	Mabury Street and 1st Street	27.4	C	27.1	C
88	Tustin Street and La Veta Avenue	0.45	A	0.38	A
89	Tustin Street and SR-22 WB On-Ramp	12.2	B	11.1	B
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	25.0	C	23.1	C
91	Tustin Street and Fairhaven Avenue	1.20	F	0.69	B
92	Tustin Avenue and Santa Clara Avenue	1.04	F	0.71	C
93	Tustin Avenue and 17th Street	0.91	E	0.80	C
94	Tustin Avenue and 4th Street	0.83	D	0.71	C
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	25.2	C	25.5	C
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	25.4	C	39.1	D
97	Red Hill Avenue and Edinger Avenue	0.61	B	0.85	D
98	Red Hill Avenue and Warner Avenue	0.56	A	0.88	D
99	Red Hill Avenue and Barranca Parkway	0.55	A	0.54	A
100	Red Hill Avenue and Alton Parkway	0.86	D	1.18	F
101	Red Hill Avenue and MacArthur Boulevard	0.69	B	0.70	B
102	Red Hill Avenue and Main Street	0.72	C	0.81	D
103	I-5 SB Ramps and Santa Ana Boulevard	17.4	B	18.4	B
104	Tustin Ranch Road and Warner Avenue	0.52	A	0.65	B
105	Von Karman Avenue and Barranca Parkway	0.93	E	1.23	F

Notes: (1) LOS – Level of Service; (2) V/C – Volume to Capacity

7.0 Future Year (2045) With Project

This network alternative includes all the improvements listed in the No Project alternative, in addition to the improvements presented in Section 2.7.

Separate OCTAM 5.0 forecasts were produced for the With Project condition in order to understand traffic changes resulting from the proposed roadway improvements listed above. The Future Year (2045) With Project – AM and PM peak hour intersection turning movement volumes are shown in Tables 7-1 and 7-2.

Table 7-1 Future Year (2045) With Project Volumes – AM Peak Hour

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
1	Euclid Street and Bolsa Avenue	100	845	145	194	1725	97	194	721	136	190	606	194
2	Euclid Street and McFadden Avenue	156	1185	141	146	2031	168	227	463	287	106	234	89
3	Euclid Street and Edinger Avenue	127	801	68	180	2613	240	136	595	364	133	812	148
4	Newhope Street and Hazard Avenue	94	708	101	86	1262	116	17	44	33	17	57	23
5	Newhope Street and McFadden Avenue	77	342	120	116	1153	107	106	386	125	122	311	69
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	83	1508	0	0	1354	18	81	0	133	836	44	117
7	Trask Avenue and SR-22 EB On-Ramp	0	0	0	0	0	0	558	699	0	0	624	117
8	Harbor Boulevard and Westminster Avenue	159	1045	224	251	1970	113	173	910	32	406	1100	299
9	Harbor Boulevard and 1st Street	102	816	176	223	1876	122	118	788	153	229	580	135
10	Harbor Boulevard and McFadden Avenue	101	1026	98	179	1891	63	136	353	106	85	193	55
11	Harbor Boulevard and Edinger Avenue	95	713	135	212	2441	71	123	743	373	211	469	195
12	Harbor Boulevard and Warner Avenue	106	647	164	451	2034	122	100	1422	374	125	654	111
13	Harbor Boulevard and Segerstrom Avenue	107	759	48	173	2324	87	90	753	303	146	453	103
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	86	4	24	8	2	19	7	1915	760	82	626	26
15	Harbor Boulevard and MacArthur Boulevard	128	898	92	289	1662	115	133	1204	363	152	506	151
16	Harbor Boulevard and Sunflower Avenue	221	1128	209	242	2284	56	9	109	42	149	190	107
17	Harbor Boulevard and I-405 NB Off-Ramp	0	1915	0	0	2007	0	0	0	0	399	0	702
18	Harbor Boulevard and I-405 SB Off-Ramp	0	1993	0	0	1278	0	475	0	529	0	0	0
19	Fairview Street and Civic Center Drive	7	1435	465	314	1812	8	7	25	25	50	2	26
20	Fairview Street and 1st Street	196	1508	284	272	1579	181	170	977	151	180	809	271

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
21	Fairview Street and McFadden Avenue	138	1479	198	184	2242	162	92	216	50	93	240	19
22	Fairview Street and Edinger Avenue	212	935	131	225	1576	133	361	1002	268	463	608	121
23	Fairview Street and Warner Avenue	235	1039	136	205	1628	119	69	1010	301	277	836	271
24	Fairview Street and MacArthur Boulevard	280	870	100	269	1357	152	121	984	145	298	627	178
25	Fairview Road and Sunflower Avenue	182	1051	160	191	1627	104	44	286	58	357	299	154
26	Greenville Street and Edinger Avenue	140	0	188	0	0	0	0	1788	436	178	949	0
27	Greenville Street and Segerstrom Avenue	47	193	78	154	472	160	50	1127	180	210	847	97
28	Raitt Street and McFadden Avenue	34	309	49	69	528	72	52	313	40	60	190	34
29	Raitt Street and Edinger Avenue	85	228	82	80	376	45	330	2016	290	127	992	59
30	Bear Street and MacArthur Boulevard	61	210	89	192	728	289	99	1690	116	103	1735	147
31	Bristol Street and 17th Street	241	1241	210	449	1845	243	341	1015	164	386	886	293
32	Bristol Street and Civic Center Drive	129	1141	101	396	1597	100	80	404	50	145	481	100
33	Bristol Street and Santa Ana Boulevard	68	1482	206	172	1891	51	54	264	23	52	129	22
34	Bristol Street and 1st Street	208	1451	184	315	1298	183	206	1268	128	126	949	139
35	Bristol Street and McFadden Avenue	130	1159	58	228	2223	229	155	266	131	145	405	47
36	Bristol Street and Warner Avenue	221	993	183	643	2178	247	172	958	238	231	1058	180
37	Bristol Street and Segerstrom Avenue	70	778	146	283	1011	119	306	1480	136	157	712	91
38	Bristol Street and Alton Avenue	10	702	53	224	1551	36	190	117	244	41	87	31
39	Bristol Street and MacArthur Boulevard	95	491	123	319	1389	145	211	1531	311	191	910	132
40	Bristol Street and Sunflower Avenue	119	583	172	232	1316	99	135	1115	451	295	480	166
41	Bristol Street and I-405 NB Ramps	0	1638	210	0	2088	8	0	0	36	147	89	807
42	Bristol Street and I-405 SB Ramps	122	1195	0	0	1097	943	675	0	618	0	0	0
43	Flower Street and Santa Ana Boulevard	64	593	86	275	929	124	63	394	45	118	377	158
44	Flower Street and 1st Street	89	387	102	366	1158	121	107	983	39	161	664	95
45	Flower Street and McFadden Avenue	30	219	19	66	367	53	58	658	50	54	366	49
46	Flower Street and Segerstrom Avenue	86	451	100	98	544	120	237	1631	455	115	846	93
47	Flower Street and MacArthur Boulevard	26	170	88	163	352	264	163	1852	79	79	1329	85
48	Main Street and	123	844	438	161	843	141	350	495	215	334	291	243

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
	La Veta Avenue												
49	Main Street and Mainplace Drive / Memory Lane	35	955	313	27	1066	223	123	194	13	264	301	20
50	Main Street and 17th Street	156	929	199	225	1251	81	114	1203	60	369	1475	22
51	Main Street and Civic Center Drive	138	901	79	69	1222	186	75	454	83	52	679	41
52	Main Street and Santa Ana Boulevard	66	1050	0	0	1162	103	0	0	0	61	848	65
53	Main Street and 4th Street	0	1052	25	0	1098	27	0	93	14	0	105	26
54	Main Street and 1st Street	103	532	54	94	937	69	69	805	85	78	972	54
55	Main Street and McFadden Avenue	93	874	44	184	1434	28	44	419	46	97	259	74
56	Main Street and Edinger Avenue	104	589	64	239	1103	58	99	1288	174	149	867	106
57	Main Street and MacArthur Boulevard	60	344	292	539	709	160	230	1336	242	187	556	279
58	Penn Way and 17th Street	49	0	250	0	0	0	0	1279	652	236	1901	0
59	Santiago Street / I-5 NB Ramps and 17th Street	720	33	21	60	0	312	101	1062	384	0	1508	24
60	Penn Way and I-5 SB Ramps	0	192	170	837	173	0	0	0	0	170	0	95
61	Santiago Street and Civic Center Drive	318	221	31	6	335	82	212	81	431	126	116	23
62	Santiago Street and Santa Ana Boulevard	188	611	303	409	972	253	118	732	99	297	699	258
63	Standard Avenue and 4th Street	191	473	248	431	604	332	298	624	219	250	550	340
64	Standard Avenue and 1st Street	45	631	312	123	901	41	161	1959	121	194	1282	120
65	Standard Avenue and McFadden Avenue	44	170	77	123	297	21	21	736	89	81	214	48
66	Halladay Street and Warner Avenue	69	0	160	0	0	0	0	1772	200	210	797	0
67	Halladay Street and Dyer Road	16	26	71	155	31	33	54	1820	13	126	686	111
68	SR-55 SB Ramps and MacArthur Boulevard	0	0	0	998	0	903	0	1423	1014	0	1363	155
69	SR-55 NB Ramps and MacArthur Boulevard	965	0	1037	0	0	0	0	1503	744	0	591	279
70	SR-55 SB Ramps and Dyer Road	312	37	713	50	242	60	34	1282	273	418	663	111
71	Glassell Street and La Veta Avenue	292	458	139	13	274	60	57	293	563	380	401	10
72	Glassell Street and SR-22 WB Ramps	568	638	0	0	1017	473	0	0	0	247	4	369
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	0	968	258	345	904	0	258	0	1012	0	0	0
74	Grand Avenue and Fairhaven Avenue	25	1,032	148	184	1,531	34	99	60	59	152	17	137
75	Grand Avenue and Santa Clara Avenue	92	648	167	307	1,503	338	179	291	60	140	270	246
76	Grand Avenue and 17th Street	228	666	458	303	1,270	249	246	915	116	401	1,047	114

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
77	Grand Avenue and I-5 NB Ramps	0	1145	662	104	3338	0	0	0	0	557	0	154
78	Grand Avenue and Santa Ana Boulevard	79	1119	57	231	1908	1684	242	200	394	5	407	37
79	Grand Avenue and 1st Street	186	655	31	121	1753	213	318	760	216	268	939	107
80	Grand Avenue and Chestnut Avenue	53	737	163	174	2086	57	64	449	118	81	237	148
81	Grand Avenue and McFadden Avenue	262	1104	165	294	1974	192	109	352	107	95	340	86
82	Grand Avenue and Edinger Avenue	65	649	127	253	1293	253	396	1654	159	170	651	142
83	Grand Avenue and Warner Avenue	187	564	241	204	589	199	314	1120	440	140	617	208
84	SR-55 NB Ramps and Dyer Road	637	0	521	0	0	0	0	1550	620	0	859	517
85	Cambridge Street and La Veta Avenue	185	235	0	0	480	245	195	0	312	0	0	0
86	Cambridge Street and Fairhaven Avenue	0	0	0	618	0	199	69	185	0	0	130	101
87	Mabury Street and 1st Street	5	0	122	276	164	618	0	922	10	46	701	0
88	Tustin Street and La Veta Avenue	9	365	105	48	944	3	9	11	35	279	1	43
89	Tustin Street and SR-22 WB On-Ramp	762	708	0	0	897	536	0	0	0	0	0	0
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	0	1213	6	13	779	0	252	25	1084	6	0	43
91	Tustin Street and Fairhaven Avenue	125	720	126	249	2,148	42	78	297	511	306	338	442
92	Tustin Avenue and Santa Clara Avenue	102	556	104	135	2,756	87	267	673	491	118	244	122
93	Tustin Avenue and 17th Street	155	277	330	638	1,841	20	494	1,948	333	488	770	188
94	Tustin Avenue and 4th Street	40	204	183	743	946	293	159	942	39	129	727	472
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	456	68	540	50	30	8	34	1334	493	510	1202	157
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	413	109	69	20	497	728	269	163	155	8	223	4
97	Red Hill Avenue and Edinger Avenue	122	449	128	203	861	403	397	1276	271	250	1213	170
98	Red Hill Avenue and Warner Avenue	118	716	97	20	949	191	239	407	300	152	543	96
99	Red Hill Avenue and Barranca Parkway	184	458	151	184	809	106	126	758	300	522	583	114
100	Red Hill Avenue and Alton Parkway	235	693	434	233	1059	170	185	574	574	335	284	159
101	Red Hill Avenue and MacArthur Boulevard	83	742	13	205	529	485	1194	617	101	34	329	843
102	Red Hill Avenue and Main Street	201	691	449	78	365	126	139	1309	254	167	335	79
103	I-5 SB Ramps and Santa Ana Boulevard	0	0	0	382	0	38	287	492	0	0	1027	300

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
104	Tustin Ranch Road and Warner Avenue	0	0	0	174	0	22	27	357	0	0	2130	490
105	Von Karman Avenue and Barranca Parkway	375	497	298	98	960	420	247	928	310	917	1506	47

Table 7-2 Future Year (2045) With Project Volumes – PM Peak Hour

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
1	Euclid Street and Bolsa Avenue	165	1532	123	137	781	148	201	641	100	168	702	168
2	Euclid Street and McFadden Avenue	248	2020	130	87	1070	130	134	307	136	86	359	166
3	Euclid Street and Edinger Avenue	551	1648	117	136	897	228	121	467	140	119	1103	179
4	Newhope Street and Hazard Avenue	102	1129	44	45	954	114	33	66	40	8	51	15
5	Newhope Street and McFadden Avenue	188	1009	177	121	539	104	45	273	40	72	398	113
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	103	2324	0	0	1823	59	102	0	86	558	75	160
7	Trask Avenue and SR-22 EB On-Ramp	0	0	0	0	0	0	785	588	0	0	449	42
8	Harbor Boulevard and Westminster Avenue	222	1106	262	254	1752	202	227	808	39	294	1018	231
9	Harbor Boulevard and 1st Street	280	1446	160	240	1053	142	192	784	148	185	865	141
10	Harbor Boulevard and McFadden Avenue	182	1866	136	261	1114	101	147	358	45	63	151	43
11	Harbor Boulevard and Edinger Avenue	262	1645	199	283	822	75	109	460	81	188	1089	363
12	Harbor Boulevard and Warner Avenue	768	3685	277	250	1389	166	198	1399	320	253	2626	838
13	Harbor Boulevard and Segerstrom Avenue	275	1732	55	86	973	86	118	585	192	121	1308	475
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	1139	7	66	12	4	14	35	869	156	25	2320	12
15	Harbor Boulevard and MacArthur Boulevard	527	1362	79	206	1039	170	143	501	185	85	1429	269
16	Harbor Boulevard and Sunflower Avenue	156	1552	230	118	1464	44	85	230	239	282	592	221
17	Harbor Boulevard and I-405 NB Off-Ramp	0	1488	0	0	2570	0	0	0	0	513	0	828
18	Harbor Boulevard and I-405 SB Off-Ramp	0	1881	0	0	2254	0	181	0	833	0	0	0
19	Fairview Street and Civic Center Drive	6	1777	499	205	1903	0	2	6	4	164	0	61
20	Fairview Street and 1st Street	182	1339	121	236	1468	291	215	870	151	126	952	147
21	Fairview Street and McFadden Avenue	174	1596	139	195	1577	246	79	214	53	51	177	43
22	Fairview Street and Edinger Avenue	190	1810	111	198	616	151	205	628	168	639	1353	297
23	Fairview Street and Warner Avenue	211	1679	156	179	906	92	163	792	123	178	1049	227
24	Fairview Street and MacArthur Boulevard	228	1568	85	162	902	83	253	661	223	159	1210	212
25	Fairview Road and Sunflower Avenue	190	1705	371	138	1145	79	245	520	115	208	522	136

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
26	Greenville Street and Edinger Avenue	327	0	218	0	0	0	0	1178	240	155	1840	0
27	Greenville Street and Segerstrom Avenue	50	414	31	44	143	44	138	1049	60	39	1490	213
28	Raitt Street and McFadden Avenue	34	482	75	24	252	40	59	347	30	38	318	44
29	Raitt Street and Edinger Avenue	84	361	101	61	209	52	177	1226	175	195	2203	197
30	Bear Street and MacArthur Boulevard	262	1258	328	115	278	84	90	847	88	82	1475	235
31	Bristol Street and 17th Street	370	1801	300	347	1847	314	243	543	98	280	1055	357
32	Bristol Street and Civic Center Drive	214	1494	78	173	1589	163	130	366	43	149	635	72
33	Bristol Street and Santa Ana Boulevard	85	1722	98	120	1597	60	70	194	45	125	199	54
34	Bristol Street and 1st Street	434	1872	276	216	1169	264	259	1454	186	155	953	90
35	Bristol Street and McFadden Avenue	249	1833	99	116	1618	373	114	222	44	82	424	50
36	Bristol Street and Warner Avenue	312	1170	213	343	1144	223	159	715	126	282	1662	487
37	Bristol Street and Segerstrom Avenue	177	1309	231	98	894	187	279	998	79	156	1408	71
38	Bristol Street and Alton Avenue	43	1667	157	114	858	54	50	70	130	0	0	0
39	Bristol Street and MacArthur Boulevard	335	1428	260	237	871	137	357	796	169	247	1432	270
40	Bristol Street and Sunflower Avenue	687	1452	234	226	844	242	391	764	296	254	976	311
41	Bristol Street and I-405 NB Ramps	0	2235	195	0	2458	23	0	0	204	357	306	1184
42	Bristol Street and I-405 SB Ramps	135	1647	0	0	1657	968	740	0	331	0	0	0
43	Flower Street and Santa Ana Boulevard	215	1307	107	95	486	44	104	300	49	106	371	110
44	Flower Street and 1st Street	211	1000	238	140	383	111	135	1181	98	144	969	101
45	Flower Street and McFadden Avenue	54	734	45	26	201	33	56	422	17	43	532	76
46	Flower Street and Segerstrom Avenue	120	843	80	80	449	129	241	1198	126	101	1699	109
47	Flower Street and MacArthur Boulevard	116	553	65	97	233	224	264	1254	80	61	1967	175
48	Main Street and La Veta Avenue	310	948	444	191	1199	309	347	495	222	332	662	266
49	Main Street and Mainplace Drive / Memory Lane	102	1075	204	48	999	132	195	217	58	370	302	146
50	Main Street and 17th Street	239	1237	270	243	1062	164	174	975	58	187	1147	76
51	Main Street and Civic Center Drive	98	1234	103	63	1031	65	168	930	111	38	384	39
52	Main Street and Santa Ana Boulevard	56	1280	0	0	1108	54	0	0	0	65	656	85
53	Main Street and 4th Street	0	1108	53	0	951	43	0	112	63	0	157	40

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
54	Main Street and 1st Street	179	875	76	160	615	131	91	921	68	75	834	58
55	Main Street and McFadden Avenue	149	1169	72	138	933	68	78	345	42	71	400	180
56	Main Street and Edinger Avenue	111	1181	54	129	646	88	159	940	105	117	1569	162
57	Main Street and MacArthur Boulevard	488	1169	321	271	352	266	385	792	76	188	1488	432
58	Penn Way and 17th Street	795	0	388	0	0	0	0	1712	552	126	1480	0
59	Santiago Street / I-5 NB Ramps and 17th Street	375	50	20	55	0	142	128	1168	767	0	1622	44
60	Penn Way and I-5 SB Ramps	0	363	238	508	117	0	0	0	0	214	0	183
61	Santiago Street and Civic Center Drive	133	411	41	20	281	72	266	76	269	14	19	18
62	Santiago Street and Santa Ana Boulevard	135	833	236	378	639	103	164	673	87	255	546	347
63	Standard Avenue and 4th Street	251	543	214	254	428	297	302	477	201	233	648	351
64	Standard Avenue and 1st Street	109	724	259	142	679	47	168	1279	65	264	1888	116
65	Standard Avenue and McFadden Avenue	103	407	50	110	240	42	53	351	60	68	412	119
66	Halladay Street and Warner Avenue	200	0	417	0	0	0	2	955	96	287	2284	0
67	Halladay Street and Dyer Road	57	249	287	125	17	35	166	1433	10	52	1680	134
68	SR-55 SB Ramps and MacArthur Boulevard	0	0	0	321	0	777	0	1305	1163	0	1547	608
69	SR-55 NB Ramps and MacArthur Boulevard	726	0	483	0	0	0	0	764	785	0	1444	1040
70	SR-55 SB Ramps and Dyer Road	386	12	291	103	226	110	66	1544	210	507	904	58
71	Glassell Street and La Veta Avenue	573	595	194	15	499	37	112	367	631	225	407	16
72	Glassell Street and SR-22 WB Ramps	640	1045	0	0	1110	323	0	0	0	268	9	476
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	0	1316	336	505	903	0	238	4	522	0	0	0
74	Grand Avenue and Fairhaven Avenue	50	1,311	262	242	974	89	79	45	33	153	29	109
75	Grand Avenue and Santa Clara Avenue	95	1,280	266	240	946	240	114	139	26	115	206	220
76	Grand Avenue and 17th Street	266	947	239	294	634	140	371	949	160	284	1,046	190
77	Grand Avenue and I-5 NB Ramps	0	2036	1571	67	1623	0	0	0	0	168	0	202
78	Grand Avenue and Santa Ana Boulevard	213	2411	40	44	964	684	370	226	356	44	295	213
79	Grand Avenue and 1st Street	195	1493	45	133	784	313	272	900	89	121	753	138
80	Grand Avenue and Chestnut Avenue	180	1352	234	149	664	112	47	143	31	91	283	165
81	Grand Avenue and McFadden Avenue	232	1320	227	176	800	215	64	238	42	96	762	168

ID	Intersection	Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
82	Grand Avenue and Edinger Avenue	259	1494	129	236	583	327	207	895	72	98	1758	228
83	Grand Avenue and Warner Avenue	218	788	174	178	575	265	342	656	142	244	1556	510
84	SR-55 NB Ramps and Dyer Road	188	0	51	0	0	0	0	1355	689	0	1411	882
85	Cambridge Street and La Veta Avenue	176	246	0	0	206	191	469	0	309	0	0	0
86	Cambridge Street and Fairhaven Avenue	0	0	0	195	0	68	85	148	0	0	218	272
87	Mabury Street and 1st Street	25	0	256	164	70	310	0	1275	20	31	423	0
88	Tustin Street and La Veta Avenue	31	693	164	96	851	16	13	5	20	134	4	82
89	Tustin Street and SR-22 WB On-Ramp	383	1100	0	0	642	330	0	0	0	0	0	0
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	0	1155	3	43	589	0	440	39	558	28	0	67
91	Tustin Street and Fairhaven Avenue	258	1,377	122	356	940	108	82	185	151	86	191	180
92	Tustin Avenue and Santa Clara Avenue	176	852	131	199	1,574	109	48	150	88	115	144	136
93	Tustin Avenue and 17th Street	233	1,000	514	377	404	40	346	680	92	211	693	385
94	Tustin Avenue and 4th Street	35	381	123	536	396	145	226	806	41	123	833	513
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	401	32	423	110	50	37	46	1649	464	437	1139	136
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	879	262	51	19	231	889	165	57	33	23	348	16
97	Red Hill Avenue and Edinger Avenue	208	1501	238	108	214	173	410	1051	128	91	1176	574
98	Red Hill Avenue and Warner Avenue	343	1175	135	89	341	432	324	880	137	78	1643	216
99	Red Hill Avenue and Barranca Parkway	344	1293	333	314	531	249	178	662	87	129	979	286
100	Red Hill Avenue and Alton Parkway	27	1513	219	148	628	5	453	1111	569	2003	342	1235
101	Red Hill Avenue and MacArthur Boulevard	179	1160	14	340	707	1240	515	237	36	39	818	574
102	Red Hill Avenue and Main Street	467	1006	272	88	640	348	212	757	205	284	1617	91
103	I-5 SB Ramps and Santa Ana Boulevard	0	0	0	357	0	78	595	672	0	0	590	162
104	Tustin Ranch Road and Warner Avenue	0	0	0	653	0	45	64	2124	0	0	925	398
105	Von Karman Avenue and Barranca Parkway	362	2082	454	80	407	280	785	1435	201	254	805	274

7.1 FUTURE YEAR (2045) WITH PROJECT VEHICLE MILES TRAVELED (VMT)

Table 7-3 presents the VMT analysis results for the Future Year (2045) With Project scenario. VMT calculations are based on the scenario parameters and methodology as described in Sections 2.7 and 3.1, respectively.

Table 7-3 Future Year (2045) VMT Summary

	I – I VMT	I – X VMT	X – I VMT	Total VMT	Service Population	VMT/SP
City	637,655	5,432,337	5,448,967	11,518,959	566,616	20.3
County	52,931,787	29,642,498	29,748,229	112,322,514	4,262,124	26.4

SP = Service Population = Total Employees + Total Population. Reduction factor applied to Total Employees as noted in Section 3.1 and shown in Appendix F. I-I = Internal-Internal; I-X = Internal-External; X-I = External-Internal.

7.2 ROADWAY SEGMENT LEVEL OF SERVICE

A summary of the forecast roadway segment volumes and corresponding level of service results for the Future Year (2045) With Project condition is shown in Table 7-4. The following roadway segments are forecast to operate at a deficient LOS:

- Segment 8 – Harbor Boulevard from Segerstrom Avenue to MacArthur Boulevard
- Segment 23 – Main Street from 1st Street to Bishop Street
- Segment 39 – Bristol Street from Edinger Avenue to Warner Avenue
- Segment 42 – Bristol Street from MacArthur Boulevard to Sunflower Avenue
- Segment 45 – Main Street from McFadden Avenue to Edinger Avenue
- Segment 46 – Main Street from Edinger Avenue to Warner Avenue
- Segment 57 – Dyer Road from Grand Avenue to Pullman Street
- Segment 63 – Broadway from 17th Street to Civic Center Drive
- Segment 84 – Dyer Road from Pullman Street to Red Hill Avenue

Table 7-4 Future Year (2045) With Project Roadway Segment LOS

ID	Street	Segment	Lanes	ADT	LOS
1	1st Street	Euclid Street to Ward Street	6D	18,700	A
2	Euclid Street	1st Street to McFadden Avenue	6D	34,000	B
3	Westminster Avenue	Harbor Boulevard to Fairview Street	6D	17,400	A
4	Harbor Boulevard	Westminster Avenue/17th Street to Hazard Avenue	6D	36,200	B
5	1st Street	Harbor Boulevard to Jackson	6D	23,100	A
6	Edinger Avenue	Harbor Boulevard to Fairview Street	6D	23,300	A
7	Warner Avenue	Harbor Boulevard to Fairview Street	6D	26,300	A
8	Harbor Boulevard	Segerstrom Avenue to MacArthur Boulevard	6D	56,900	F
9	Fairview Street	1st Street to Willits Street	6D	38,600	B
10	1st Street	Sullivan Street to Raitt Street	6D	26,600	A
11	Bristol Street	17th Street to Santa Clara Avenue	6D	41,500	C
12	17th Street	College Avenue to Bristol Street	6D	29,500	A
13	Bristol Street	17th Street to Washington Avenue	6D	45,100	D
14	Fairview Street	Trask Avenue to 17th Street	6D	48,100	D
15	Bristol Street	1st Street to Bishop Street	6D	49,000	D
16	Civic Center Drive	Bristol Street to Flower Street	4U	18,600	C
17	Flower Street	1st Street to Bishop Street	2D	6,900	A
18	Main Street	17th Street to 20th Street	6D	43,000	C
19	Main Street	Washington Street to Civic Center Drive	4U	19,000	C
20	Civic Center Drive	Flower Street to Ross Street	4U	10,200	A
21	Santa Ana Boulevard	Flower Street to Ross Street	4D	15,800	A
22	1st Street	Main Street to Standard Avenue	4D	32,900	D
23	Main Street	1st Street to Bishop Street	4U	30,500	F
24	Grand Avenue	Santa Clara Avenue to Fairhaven Street	6D	31,100	A
25	Grand Avenue	Santa Ana Boulevard to 4th Street	6D	35,000	B
26	Santa Clara Avenue	Grand Avenue to Tustin Avenue	2D	8,700	A
27	Tustin Avenue	Santa Clara Avenue to Fairhaven Street	6D	20,400	A
28	17th Street	Cabrillo Park Drive to Tustin Avenue	6D	34,600	B
29	Tustin Avenue	Fruit Street to 4th Street	6D	28,100	A
30	1st Street	Grand Avenue to Elk Lane	4D	30,800	D
31	1st Street	Cabrillo Park Drive to Tustin Avenue	4D	14,600	A
32	Fairview Street	Edinger Avenue to Harvard Street	6D	45,100	D
33	Fairview Street	Warner Avenue to Segerstrom Avenue	6D	41,800	C
34	MacArthur Boulevard	Harbor Boulevard to Fairview Street	6D	32,600	A
35	Edinger Avenue	Fairview Street to Greenville Street	6D	22,200	A
36	McFadden Avenue	Fairview Street to Raitt Street	2D	8,200	A
37	MacArthur Boulevard	Fairview Street to Raitt Street	6D	28,900	A
38	Segerstrom Avenue	Fairview Street to Raitt Street	6D	29,600	A
39	Bristol Street	Edinger Avenue to Warner Avenue	6D	54,500	E
40	Bristol Street	Warner Avenue to Segerstrom Avenue	6D	44,800	C

ID	Street	Segment	Lanes	ADT	LOS
41	Warner Avenue	Raitt Street to Bristol Street	6D	22,300	A
42	Bristol Street	MacArthur Boulevard to Sunflower Avenue	6D	50,800	E
43	Flower Street	Warner Avenue to Segerstrom Avenue	4D	33,300	D
44	Edinger Avenue	Flower Street to Main Street	6D	25,200	A
45	Main Street	McFadden Avenue to Edinger Avenue	4U	27,500	F
46	Main Street	Edinger Avenue to Warner Avenue	4D	38,200	F
47	Main Street	Warner Avenue to Dyer Road	6D	38,600	B
48	Segerstrom Avenue	Bristol Street to Flower Street	6D	25,900	A
49	MacArthur Boulevard	Flower Street to Main Street	6D	39,800	C
50	Main Street	MacArthur Boulevard to Sunflower Avenue	6D	29,000	A
51	Grand Avenue	Edinger Avenue to Warner Avenue	6D	37,300	B
52	Edinger Avenue	Richie Street to Newport Avenue	6D	49,700	D
53	Warner Avenue	Grand Avenue to Red Hill Avenue	6D	34,600	B
54	Warner Avenue	Main Street to Standard Avenue	6D	23,900	A
55	McFadden Avenue	Newhope Street to Harbor Boulevard	4U	8,700	A
56	McFadden Avenue	Standard Avenue to Grand Avenue	2D	8,600	A
57	Dyer Road	Grand Avenue to Pullman Street	6D	80,700	F
58	McFadden Avenue	Bristol Street to Flower Street	2D	11,800	B
59	Main Street	La Veta Avenue to Memory Lane	8D	50,200	B
60	1st Street	Bristol Street to Flower Street	4D	25,700	B
61	Fairhaven Avenue	Grand Avenue to Tustin Avenue	2D	11,100	B
62	4th Street	French Street to Standard Avenue	2D	16,500	D
63	Broadway	17th Street to Civic Center Drive	2D	22,700	F
64	Broadway	Civic Center Drive to 1st Street	2D	13,800	C
65	Cambridge Street	SR-22 to Fairhaven Avenue	2D	8,800	A
66	Chestnut Avenue	Standard Avenue to Lyon Street	2D	7,700	A
67	Civic Center Drive	French Street to Santiago Street	2U	1,900	A
68	Civic Center Drive	Fairview Road to Bristol Street	2D	12,200	C
69	Flower Street	Edinger Avenue to Warner Avenue	2D	6,300	A
70	Halladay Avenue	Warner Avenue to Dyer Road	2D	16,100	D
71	Hazard Avenue	Euclid Street to Harbor Boulevard	2D	7,900	A
72	McFadden Avenue	Main Street to Standard Avenue	2D	14,300	C
73	Penn Way/Santiago Street	I-5 SB Ramps to Santa Ana Boulevard	2D	19,400	D
74	Raitt Street	Santa Ana Boulevard to 1st Street	2D	15,500	D
75	Raitt Street	Warner Avenue to Segerstrom Avenue	2D	11,600	B
76	Santa Ana Boulevard	French Street to Santiago Street	2D	13,500	C
77	Santa Ana Boulevard	Raitt Street to Bristol Street	2D	13,000	C
78	Standard Avenue	Chestnut Avenue to McFadden Avenue	2D	11,000	B
79	Standard Avenue	Edinger Avenue to Warner Avenue	2D	10,000	B
80	Greenville Street	Edinger Avenue to Warner Avenue	2U	8,000	B
81	Greenville Street	Warner Avenue to Segerstrom Avenue	2D	8,000	A
82	Flower Street	17th Street to Northern Terminus	2D	4,700	A

ID	Street	Segment	Lanes	ADT	LOS
83	Logan Street	Civic Center Drive to Santa Ana Boulevard	2U	- *	-
84	Dyer Road	Pullman Street to Red Hill Avenue	6D	57,500	F
85	Fairhaven Avenue	Tustin Street to Yorba Street	4U	14,947	A
86	Santa Clara Avenue	Tustin Street to Yorba Street	4U	7,818	A
87	Harbor Boulevard	McFadden Avenue to Edinger Avenue	6D	35,100	B
88	Harbor Boulevard	Edinger Avenue to Warner Avenue	6D	43,100	C

Notes:
* Not available.
(1) ADT – Average Daily Traffic Volumes
(2) LOS – Level of Service
(3) #D – total number of lanes in both directions divided by raised or striped median; #U – total number of undivided lanes in both directions.
(4) Roadway capacities shown in Table 3-1.
(5) Yellow and red shading indicates an unacceptable level of service

7.3 INTERSECTION LEVEL OF SERVICE

A summary of the AM and PM peak hour intersection level of service analysis results for the Future Year (2045) With Project condition is included in Table 7-5. The following intersections are expected to operate at an unacceptable level of service:

- INT 2 – Euclid street and McFadden Avenue (City of Santa Ana)
- INT 3 – Euclid Street and Edinger Avenue (City of Fountain Valley)
- INT 8 – Harbor Boulevard and Westminster Avenue (City of Santa Ana)
- INT 12 – Harbor Boulevard and Warner Avenue (City of Santa Ana – CMP)
- INT 13 – Harbor Boulevard and Segerstrom Avenue (City of Santa Ana)
- INT 22 – Fairview Street and Edinger Avenue (City of Santa Ana)
- INT 29 – Raitt Street and Edinger Avenue (City of Santa Ana)
- INT 32 – Bristol Street and Civic Center Drive (City of Santa Ana)
- INT 34 – Bristol Street and 1st Street (City of Santa Ana)
- INT 35 – Bristol Street and McFadden Avenue (City of Santa Ana)
- INT 36 – Bristol Street and Warner Avenue (City of Santa Ana)
- INT 37 – Bristol Street and Segerstrom Avenue (City of Santa Ana)
- INT 44 – Flower Street and 1st Street (City of Santa Ana)
- INT 45 – Flower Street and McFadden Avenue (City of Santa Ana)
- INT 46 – Flower Street and Segerstrom Avenue (City of Santa Ana)
- INT 47 – Flower Street and MacArthur Boulevard (City of Santa Ana)
- INT 55 – Main Street and McFadden Avenue (City of Santa Ana)
- INT 56 – Main Street and Edinger Avenue (City of Santa Ana)
- INT 61 – Santiago Street and Civic Center Drive (City of Santa Ana)

- INT 62 – Santiago Street and Santa Ana Boulevard (City of Santa Ana)
- INT 63 – Standard Avenue and 4th Street (City of Santa Ana)
- INT 64 – Standard Avenue and 1st Street (City of Santa Ana)
- INT 67 – Halladay Street and Dyer Road (City of Santa Ana)
- INT 80 – Grand Avenue and Chestnut Avenue (City of Santa Ana)
- INT 81 – Grand Avenue and McFadden Avenue (City of Santa Ana)
- INT 82 – Grand Avenue and Edinger Avenue (City of Santa Ana)
- INT 91 – Tustin Street and Fairhaven Avenue (City of Santa Ana)
- INT 92 – Tustin Avenue and Santa Clara Avenue (City of Santa Ana)
- INT 96 – SR-55 NB Ramps / Del Amo Avenue and Newport Avenue (Caltrans)
- INT 98 – Red Hill Avenue and Warner Avenue (City of Tustin)
- INT 100 – Red Hill Avenue and Alton Parkway (City of Irvine)
- INT 105 – Von Karman Avenue and Barranca Parkway (City of Irvine)

Table 7-5: Future Year (2045) With Project Intersection LOS Summary

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
1	Euclid Street and Bolsa Avenue	0.79	C	0.79	C
2	Euclid Street and McFadden Avenue	0.91	E	0.79	C
3	Euclid Street and Edinger Avenue	1.01	F	0.86	D
4	Newhope Street and Hazard Avenue	0.60	A	0.52	A
5	Newhope Street and McFadden Avenue	0.73	C	0.68	B
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	28.5	C	23.8	C
7	Trask Avenue and SR-22 EB On-Ramp	11.0	B	11.0	B
8	Harbor Boulevard and Westminster Avenue	0.94	E	0.84	D
9	Harbor Boulevard and 1st Street	0.75	C	0.75	C
10	Harbor Boulevard and McFadden Avenue	0.73	C	0.71	C
11	Harbor Boulevard and Edinger Avenue	0.86	D	0.72	C
12	Harbor Boulevard and Warner Avenue	0.80	C	1.54	F
13	Harbor Boulevard and Segerstrom Avenue	1.01	F	0.93	E
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	0.62	B	0.89	D
15	Harbor Boulevard and MacArthur Boulevard	0.75	C	0.79	C
16	Harbor Boulevard and Sunflower Avenue	0.71	C	0.71	C
17	Harbor Boulevard and I-405 NB Off-Ramp	17.9	B	18.8	B
18	Harbor Boulevard and I-405 SB Off-Ramp	15.0	B	18.1	B
19	Fairview Street and Civic Center Drive	0.68	B	0.71	C
20	Fairview Street and 1st Street	0.89	D	0.89	D
21	Fairview Street and McFadden Avenue	0.80	C	0.68	B
22	Fairview Street and Edinger Avenue	0.88	D	0.92	E
23	Fairview Street and Warner Avenue	0.85	D	0.81	D
24	Fairview Street and MacArthur Boulevard	0.69	B	0.76	C
25	Fairview Road and Sunflower Avenue	0.69	B	0.69	B
26	Greenville Street and Edinger Avenue	0.74	C	0.65	B
27	Greenville Street and Segerstrom Avenue	0.88	D	0.80	C
28	Raitt Street and McFadden Avenue	0.70	B	0.68	B
29	Raitt Street and Edinger Avenue	0.93	E	0.99	E
30	Bear Street and MacArthur Boulevard	0.76	C	0.90	D
31	Bristol Street and 17th Street	0.85	D	0.81	D
32	Bristol Street and Civic Center Drive	0.93	E	0.90	D
33	Bristol Street and Santa Ana Boulevard	0.72	C	0.73	C
34	Bristol Street and 1st Street	0.90	D	0.97	E
35	Bristol Street and McFadden Avenue	0.95	E	0.89	D
36	Bristol Street and Warner Avenue	0.96	E	0.87	D
37	Bristol Street and Segerstrom Avenue	0.85	D	0.92	E
38	Bristol Street and Alton Avenue	0.55	A	0.58	A
39	Bristol Street and MacArthur Boulevard	0.76	C	0.80	C

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
40	Bristol Street and Sunflower Avenue	0.68	B	0.74	C
41	Bristol Street and I-405 NB Ramps	20.9	C	29.0	C
42	Bristol Street and I-405 SB Ramps	23.6	C	18.2	B
43	Flower Street and Santa Ana Boulevard	0.59	A	0.67	B
44	Flower Street and 1st Street	0.93	E	1.22	F
45	Flower Street and McFadden Avenue	0.81	D	0.97	E
46	Flower Street and Segerstrom Avenue	0.82	D	0.92	E
47	Flower Street and MacArthur Boulevard	0.71	C	0.91	E
48	Main Street and La Veta Avenue	0.54	A	0.76	C
49	Main Street and Mainplace Drive / Memory Lane	0.46	A	0.50	A
50	Main Street and 17th Street	0.85	D	0.80	C
51	Main Street and Civic Center Drive	0.85	D	0.86	D
52	Main Street and Santa Ana Boulevard	0.79	C	0.70	B
53	Main Street and 4th Street	0.44	A	0.47	A
54	Main Street and 1st Street	0.75	C	0.80	C
55	Main Street and McFadden Avenue	0.92	E	0.94	E
56	Main Street and Edinger Avenue	0.88	D	0.98	E
57	Main Street and MacArthur Boulevard	0.72	C	0.78	C
58	Penn Way and 17th Street	12.1	B	20.3	C
59	Santiago Street / I-5 NB Ramps and 17th Street	31.4	C	20.3	C
60	Penn Way and I-5 SB Ramps	19.5	B	22.8	C
61	Santiago Street and Civic Center Drive	62.6	F	27.6	D
62	Santiago Street and Santa Ana Boulevard	1.44	F	1.41	F
63*	Standard Avenue and 4th Street	1.340	F	1.340	F
64	Standard Avenue and 1st Street	1.52	F	1.48	F
65	Standard Avenue and McFadden Avenue	0.84	D	0.77	C
66	Halladay Street and Warner Avenue	0.69	B	0.82	D
67	Halladay Street and Dyer Road	0.67	B	0.95	E
68	SR-55 SB Ramps and MacArthur Boulevard	20.2	C	18.4	B
69	SR-55 NB Ramps and MacArthur Boulevard	19.5	B	16.2	B
70	SR-55 SB Ramps and Dyer Road	25.9	C	26.5	C
71	Glassell Street and La Veta Avenue	0.83	D	0.77	C
72	Glassell Street and SR-22 WB Ramps	30.1	C	33.4	C
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	29.6	C	31.8	C
74	Grand Avenue and Fairhaven Avenue	0.57	A	0.67	B
75	Grand Avenue and Santa Clara Avenue	0.80	C	0.73	C
76	Grand Avenue and 17th Street	0.86	D	0.85	D
77	Grand Avenue and I-5 NB Ramps	15.3	B	11.3	B
78	Grand Avenue and Santa Ana Boulevard	26.3	C	28.5	C
79	Grand Avenue and 1st Street	0.83	D	0.72	C

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
80	Grand Avenue and Chestnut Avenue	0.94	E	0.78	C
81	Grand Avenue and McFadden Avenue	1.01	F	0.81	D
82	Grand Avenue and Edinger Avenue	0.90	D	1.08	F
83	Grand Avenue and Warner Avenue	0.66	B	0.90	D
84	SR-55 NB Ramps and Dyer Road	17.3	B	6.0	A
85	Cambridge Street and La Veta Avenue	23.4	C	26.1	D
86	Cambridge Street and Fairhaven Avenue	0.62	B	0.53	A
87	Mabury Street and 1st Street	27.4	C	27.2	C
88	Tustin Street and La Veta Avenue	0.36	A	0.34	A
89	Tustin Street and SR-22 WB On-Ramp	13.2	B	7.7	A
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	23.8	C	23.3	C
91	Tustin Street and Fairhaven Avenue	1.24	F	0.76	C
92	Tustin Avenue and Santa Clara Avenue	1.10	F	0.78	C
93	Tustin Avenue and 17th Street	0.81	D	0.74	C
94	Tustin Avenue and 4th Street	0.79	C	0.78	C
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	25.1	C	25.4	C
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	25.6	C	46.2	D
97	Red Hill Avenue and Edinger Avenue	0.62	B	0.87	D
98	Red Hill Avenue and Warner Avenue	0.58	A	0.95	E
99	Red Hill Avenue and Barranca Parkway	0.58	A	0.59	A
100	Red Hill Avenue and Alton Parkway	0.93	E	1.49	F
101	Red Hill Avenue and MacArthur Boulevard	0.71	C	0.72	C
102	Red Hill Avenue and Main Street	0.73	C	0.84	D
103	I-5 SB Ramps and Santa Ana Boulevard	17.8	B	19.9	B
104	Tustin Ranch Road and Warner Avenue	0.53	A	0.67	B
105	Von Karman Avenue and Barranca Parkway	0.93	E	1.28	F

Notes: (1) LOS – Level of Service; (2) V/C – Volume to Capacity

8.0 VMT and LOS Analysis

This section presents the significant impact analysis for the Future Year (2045) With Project scenario. Significant impacts are identified based on the criteria established in Section 3.1.

8.1 VMT IMPACT ANALYSIS

Per the City's VMT Guidelines, VMT impacts are to be identified for the Future Year (2045) With Project scenario. VMT impacts were assessed using the methodology described in Section 3.1. The following presents the screening and impact analysis process. First, the two general conditions are considered:

- **Does the project have the potential to reduce VMT/SP?**
    - It should be noted that the project consists of land use and the transportation network changes. Due to the scale of land use changes not all land uses are high-density and/or transit-oriented, thus the land use changes cannot be assumed to have the same VMT-reducing effect as, for example, a TOD Specific Plan. The proposed transportation network, however, has the potential to reduce VMT/SP since it proposes to reclassify streets in order to implement transit, Complete Streets, and active transportation improvements.
- **Is the project consistent with the Regional Transportation Plan (RTP) / Sustainable Communities Strategy's (SCS)?**
    - While the proposed General Plan does forecast growth beyond the RTP/SCS, it is occurring in a manner consistent with the goals of the RTP/SCS in that growth occurs in high density in/near high-quality transit corridors (HQTC). Additionally, the proposed transportation network supports active transportation and the reduction of VMT.

Since it is not clear that the land use changes will reduce VMT/SP, the project is not eligible to be screened from a full VMT analysis. Project and cumulative impacts are assessed below.

Project Level Impact

A project is considered to have a significant impact if the project VMT/SP (for the land use plan) exceeds 15% below the existing total daily VMT/SP for the County. Table 8-1 provides a summary of the VMT impact analysis for project level impacts. A significant impact at the project level is not expected due to the implementation of the project.

Table 8-1: Future Year (2045) VMT Impact Analysis – Project Impact

Metric	2045 – With Project City VMT/SP	2020 – No Project County VMT/SP	VMT Threshold 15% below 2020 – No Project County VMT/SP	Impact?
VMT/SP	20.3	25.9	22.0	NO

Cumulative Impact

A project is considered to have a significant cumulative impact if the project results in a negative effect on VMT/SP at the citywide level (City VMT/SP is higher with the project than without it). Table 8-2 provides a summary of the VMT impact analysis for project level impacts. A significant cumulative impact is not expected due to the implementation of the project.

Table 8-2: Future Year (2045) VMT Impact Analysis – Cumulative Impact

Metric	2045 – No Project City VMT/SP	2045 – With Project City VMT/SP	Impact?
VMT/SP	22.8	20.3	NO

The VMT impact analysis results show that the project is not expected to cause a significant project level or cumulative impact.

8.2 LEVEL OF SERVICE ASSESSMENT

If an intersection is expected to be significantly impacted due to the implementation of the proposed project, mitigation measures are to be identified such that the project impact is mitigated. This is generally accomplished by returning the V/C or Delay to pre-project levels and/or the resulting LOS to an acceptable LOS. This analysis for intersection LOS is provided here only for analysis with regard to MPAH reclassifications and consistency with OCTA's MPAH guidelines. Intersection LOS analysis is no longer required under CEQA, and the deficient LOS values identified here are not considered to be significant environmental impacts.

The cities of Santa Ana, Costa Mesa, Irvine, Fountain Valley, Tustin, and Orange have established LOS D as their minimum acceptable LOS. Caltrans and the OC CMP established LOS C and E as their minimum acceptable LOS, respectively.

Strategies and improvements to provide acceptable intersection LOS are developed in a manner which first considers lower intensity modifications, such as striping modifications, before considering more complex modifications such as signal controls or physical improvements. All strategies and improvements are subject to the approval of the presiding public authority, including funding and implementation. The City of Santa Ana will pursue the development of a Transportation System Improvement Assessment (TSIA) in order to provide funding for the implementation of the full transportation network buildout, including the strategies and improvements identified in this report.

The Future Year (2045) significant impact summary is provided in Table 8-3. Improvements are identified in Table 8-4. Table 8-5 provides a summary of the intersection performance with the implementation of the mitigation measures.

Unacceptable LOS and traffic impacts are expected at the intersections listed below (peak hour / jurisdiction). The intersection impacts were investigated to determine a probable cause for the impact (land use, transportation network, or both). In order to do this, link volumes and intersection LOS were compared for two scenarios: 1) a year 2045 scenario which includes the proposed General Plan land use updates and utilizes the 2045 baseline (No Project) network described in Section 2.6; and 2) the 2045 With Project scenario which includes all proposed General Plan land use updates and transportation network modifications described in Section 2.7. OCTAM volume comparison plots and a LOS comparison table are provided in Appendix G.

- **INT 3 – Euclid Street and Edinger Avenue (AM peak hour / Fountain Valley)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4. Additionally, the City of Santa will contribute to improvements based on the calculated fair-share percentage presented in Table 8-4.
- **INT 13 – Harbor Boulevard and Segerstrom Avenue (AM peak hour / Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed land use changes. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report.
- **INT 34 – Bristol Street and 1st Street (AM and PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 36 – Bristol Street and Warner Avenue (AM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 37 – Bristol Street and Segerstrom Avenue (PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of both the proposed land use changes and reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City

of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.

- **INT 44 – Flower Street 1st Street (PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of both the proposed land use changes and reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 46 – Flower Street and Segerstrom Avenue (PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of both the proposed land use changes and reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 47 – Flower Street and MacArthur Boulevard (PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed land use changes. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report.
- **INT 55 – Main Street and McFadden Avenue (AM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of both the proposed land use changes and reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 56 – Main Street and Edinger Avenue (PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.

- **INT 62 – Santiago Street & Santa Ana Boulevard (AM & PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 63 – Standard Avenue and 4th Street (AM and PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 64 – Standard Avenue and 1st Street (AM and PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 80 – Grand Avenue and Chestnut Avenue (AM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 81 – Grand Avenue and McFadden Avenue (AM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter

into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.

- **INT 82 – Grand Avenue and Edinger Avenue (PM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 91 – Tustin Street and Fairhaven Avenue (AM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 92 – Tustin Avenue and Santa Clara Avenue (AM peak hour / City of Santa Ana)**
    - The impact at this intersection is expected to occur as a result of the proposed reclassifications. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. As this impact is in part caused by the proposed MPAH reclassifications, OCTA and the City of Santa Ana will enter into a memorandum of understanding (MOU) that describes the timing and triggers for implementation of the improvements identified in Table 8.4.
- **INT 96 – SR-55 NB Ramps/Del Amo Avenue & Newport Avenue (PM peak hour / Caltrans)**
    - The impact at this intersection is expected to occur as a result of the proposed land use changes. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. Additionally, the City of Santa will contribute to improvements based on the calculated fair-share percentage presented in Table 8-4. Additionally, the City of Santa will contribute to improvements based on the calculated fair-share percentage presented in Table 8-4.
- **INT 98 – Red Hill Avenue and Warner Avenue (PM peak hour / City of Tustin)**
    - The impact at this intersection is expected to occur as a result of the proposed land use changes. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. Additionally, the City of Santa will

contribute to improvements based on the calculated fair-share percentage presented in Table 8-4.

- **INT 100 – Red Hill Avenue and Alton Parkway (AM and PM peak hour / City of Irvine)**
    - The impact at this intersection is expected to occur as a result of the proposed land use changes. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. Additionally, the City of Santa will contribute to improvements based on the calculated fair-share percentage presented in Table 8-4.
- **INT 105 – Von Karman Avenue and Barranca Parkway (PM peak hour / City of Irvine)**
    - The impact at this intersection is expected to occur as a result of the proposed land use changes. Specific improvements to this intersection to address this identified impact are presented in Table 8.4 later in this report. Additionally, the City of Santa will contribute to improvements based on the calculated fair-share percentage presented in Table 8-4.

In addition to assessing intersection impacts, a performance assessment of study roadway segments was conducted in order to determine the potential adverse effects of the project. Although not considered an environmental impact, changes in roadway performance monitored for congestion management and fair-share contribution purposes. Highlighted below is a roadway segment expected to operate beyond capacity in the future 2045 scenarios; improvements are thus required to accomodate forecasted volumes.

- **Segment #84 – Dyer Road from Pullman Street to Red Hill Avenue (City of Santa Ana)**
    - This segment is expected to operate at LOS F in both the 2045 No Project and 2045 With Project scenarios. Planned improvements include a widening of this section of Dyer Road in order to accommodate forecasted traffic volumes. As of the time this report is written, the City of Irvine is expected to be fully responsible for the improvements. However, considering the project's contribution to traffic volumes the City of Santa Ana will provide a fair-share contribution of 23% for future improvements.

Fair-Share Calculation

As noted, the City of Santa Ana will contribute to intersection improvements based on the fair-share contribution to intersection volumes due to the proposed MPAH reclassifications. The fair-share for a given intersection is calculated using the formula shown below and is presented in Table 8-4 for each intersection which is not, or only partially, under the jurisdiction of the City of Santa Ana. Fair-share is the portion of new traffic generated by the project as a percentage of the total change in traffic from the existing year analysis.

$$Fair - Share\ (\%) = \left(\frac{Future\ With\ Project\ Volume - Future\ No\ Project\ Volume}{Future\ With\ Project\ Volume - Existing\ No\ Project\ Volume}\right) \times 100\%$$

Table 8-3: Future Year (2045) LOS Impact Summary

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
1	Euclid Street and Bolsa Avenue	AM	0.86	D	0.79	C	-0.07	NO
		PM	0.86	D	0.79	C	-0.07	NO
2	Euclid Street and McFadden Avenue	AM	0.98	E	0.91	E	-0.07	NO
		PM	0.90	D	0.79	C	-0.11	NO
3	Euclid Street and Edinger Avenue	AM	0.99	E	1.01	F	0.02	YES
		PM	0.89	D	0.86	D	-0.03	NO
4	Newhope Street and Hazard Avenue	AM	0.78	C	0.60	A	-0.18	NO
		PM	0.72	C	0.52	A	-0.20	NO
5	Newhope Street and McFadden Avenue	AM	0.83	D	0.73	C	-0.10	NO
		PM	0.78	C	0.68	B	-0.10	NO
6	Harbor Boulevard and SR-22 WB Off-Ramp / Banner Drive	AM	28.4	C	28.5	C	0.1	NO / NO *
		PM	24.2	C	23.8	C	-0.4	NO / NO *
7	Trask Avenue and SR-22 EB On-Ramp	AM	12.0	B	11.0	B	-1.0	NO
		PM	13.6	B	11.0	B	-2.6	NO
8	Harbor Boulevard and Westminster Avenue	AM	0.99	E	0.94	E	-0.05	NO
		PM	0.88	D	0.84	D	-0.04	NO
9	Harbor Boulevard and 1st Street	AM	0.79	C	0.75	C	-0.04	NO
		PM	0.78	C	0.75	C	-0.03	NO
10	Harbor Boulevard and McFadden Avenue	AM	0.79	C	0.73	C	-0.06	NO
		PM	0.81	D	0.71	C	-0.10	NO
11	Harbor Boulevard and Edinger Avenue	AM	0.84	D	0.86	D	0.02	NO
		PM	0.73	C	0.72	C	-0.01	NO
12	Harbor Boulevard and Warner Avenue	AM	0.79	C	0.80	C	0.01	NO
		PM	1.54	F	1.54	F	0.00	NO
13	Harbor Boulevard and Segerstrom Avenue	AM	0.97	E	1.01	F	0.04	YES

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
		PM	0.92	E	0.93	E	0.01	NO
14	Hyland Avenue / OCTA Bus Base and MacArthur Boulevard	AM	0.61	B	0.62	B	0.01	NO
		PM	0.92	E	0.89	D	-0.03	NO
15	Harbor Boulevard and MacArthur Boulevard	AM	0.74	C	0.75	C	0.01	NO
		PM	0.78	C	0.79	C	0.01	NO
16	Harbor Boulevard and Sunflower Avenue	AM	0.70	B	0.71	C	0.01	NO
		PM	0.72	C	0.71	C	-0.01	NO
17	Harbor Boulevard and I-405 NB Off-Ramp	AM	18.0	B	17.9	B	-0.1	NO / NO *
		PM	18.3	B	18.8	B	0.5	NO / NO *
18	Harbor Boulevard and I-405 SB Off-Ramp	AM	15.0	B	15.0	B	0.0	NO / NO *
		PM	17.9	B	18.1	B	0.2	NO / NO *
19	Fairview Street and Civic Center Drive	AM	0.74	C	0.68	B	-0.06	NO
		PM	0.76	C	0.71	C	-0.05	NO
20	Fairview Street and 1st Street	AM	0.86	D	0.89	D	0.03	NO
		PM	0.90	D	0.89	D	-0.01	NO
21	Fairview Street and McFadden Avenue	AM	0.80	C	0.80	C	0.00	NO
		PM	0.78	C	0.68	B	-0.10	NO
22	Fairview Street and Edinger Avenue	AM	0.86	D	0.88	D	0.02	NO
		PM	0.92	E	0.92	E	0.00	NO
23	Fairview Street and Warner Avenue	AM	0.82	D	0.85	D	0.03	NO
		PM	0.80	C	0.81	D	0.01	NO
24	Fairview Street and MacArthur Boulevard	AM	0.68	B	0.69	B	0.01	NO
		PM	0.77	C	0.76	C	-0.01	NO
25	Fairview Road and Sunflower Avenue	AM	0.70	B	0.69	B	-0.01	NO
		PM	0.72	C	0.69	B	-0.03	NO
26	Greenville Street and Edinger Avenue	AM	0.77	C	0.74	C	-0.03	NO
		PM	0.60	A	0.65	B	0.05	NO

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
27	Greenville Street and Segerstrom Avenue	AM	0.84	D	0.88	D	0.04	NO
		PM	0.78	C	0.80	C	0.02	NO
28	Raitt Street and McFadden Avenue	AM	0.78	C	0.70	B	-0.08	NO
		PM	0.76	C	0.68	B	-0.08	NO
29	Raitt Street and Edinger Avenue	AM	0.99	E	0.93	E	-0.06	NO
		PM	0.99	E	0.99	E	0.00	NO
30	Bear Street and MacArthur Boulevard	AM	0.71	C	0.76	C	0.05	NO
		PM	0.85	D	0.90	D	0.05	NO
31	Bristol Street and 17th Street	AM	0.87	D	0.85	D	-0.02	NO
		PM	0.82	D	0.81	D	-0.01	NO
32	Bristol Street and Civic Center Drive	AM	0.94	E	0.93	E	-0.01	NO
		PM	0.91	E	0.90	D	-0.01	NO
33	Bristol Street and Santa Ana Boulevard	AM	0.81	D	0.72	C	-0.09	NO
		PM	0.85	D	0.73	C	-0.12	NO
34	Bristol Street and 1st Street	AM	0.77	C	0.90	D	0.13	NO
		PM	0.83	D	0.97	E	0.14	YES
35	Bristol Street and McFadden Avenue	AM	0.96	E	0.95	E	-0.01	NO
		PM	1.03	F	0.89	D	-0.14	NO
36	Bristol Street and Warner Avenue	AM	0.92	E	0.96	E	0.04	YES
		PM	0.85	D	0.87	D	0.02	NO
37	Bristol Street and Segerstrom Avenue	AM	0.81	D	0.85	D	0.04	NO
		PM	0.87	D	0.92	E	0.05	YES
38	Bristol Street and Alton Avenue	AM	0.55	A	0.55	A	0.00	NO
		PM	0.63	B	0.58	A	-0.05	NO
39	Bristol Street and MacArthur Boulevard	AM	0.70	B	0.76	C	0.06	NO
		PM	0.77	C	0.80	C	0.03	NO
40	Bristol Street and Sunflower Avenue	AM	0.65	B	0.68	B	0.03	NO

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
		PM	0.69	B	0.74	C	0.05	NO
41	Bristol Street and I-405 NB Ramps	AM	20.8	C	20.9	C	0.1	NO
		PM	28.5	C	29.0	C	0.5	NO
42	Bristol Street and I-405 SB Ramps	AM	23.9	C	23.6	C	-0.3	NO
		PM	18.3	B	18.2	B	-0.1	NO
43	Flower Street and Santa Ana Boulevard	AM	0.81	D	0.59	A	-0.22	NO
		PM	0.86	D	0.67	B	-0.19	NO
44	Flower Street and 1st Street	AM	0.93	E	0.93	E	0.00	NO
		PM	0.88	D	1.22	F	0.34	YES
45	Flower Street and McFadden Avenue	AM	0.90	D	0.81	D	-0.09	NO
		PM	1.04	F	0.97	E	-0.07	NO
46	Flower Street and Segerstrom Avenue	AM	0.78	C	0.82	D	0.04	NO
		PM	0.87	D	0.92	E	0.05	YES
47	Flower Street and MacArthur Boulevard	AM	0.68	B	0.71	C	0.03	NO
		PM	0.90	D	0.91	E	0.01	YES
48	Main Street and La Veta Avenue	AM	0.59	A	0.54	A	-0.05	NO
		PM	0.70	B	0.76	C	0.06	NO
49	Main Street and Mainplace Drive / Memory Lane	AM	0.51	A	0.46	A	-0.05	NO
		PM	0.56	A	0.50	A	-0.06	NO
50	Main Street and 17th Street	AM	0.88	D	0.85	D	-0.03	NO
		PM	0.76	C	0.80	C	0.04	NO
51	Main Street and Civic Center Drive	AM	0.78	C	0.85	D	0.07	NO
		PM	0.97	E	0.86	D	-0.11	NO
52	Main Street and Santa Ana Boulevard	AM	0.93	E	0.79	C	-0.14	NO
		PM	0.79	C	0.70	B	-0.09	NO
53	Main Street and 4th Street	AM	0.41	A	0.44	A	0.03	NO
		PM	0.45	A	0.47	A	0.02	NO

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
54	Main Street and 1st Street	AM	0.68	B	0.75	C	0.07	NO
		PM	0.74	C	0.80	C	0.06	NO
55	Main Street and McFadden Avenue	AM	0.89	D	0.92	E	0.03	YES
		PM	0.93	E	0.94	E	0.01	NO
56	Main Street and Edinger Avenue	AM	0.80	C	0.88	D	0.08	NO
		PM	0.87	D	0.98	E	0.11	YES
57	Main Street and MacArthur Boulevard	AM	0.68	B	0.72	C	0.04	NO
		PM	0.75	C	0.78	C	0.03	NO
58	Penn Way and 17th Street	AM	12.2	B	12.1	B	-0.1	NO
		PM	25.5	C	20.3	C	-5.2	NO
59	Santiago Street / I-5 NB Ramps and 17th Street	AM	30.0	C	31.4	C	1.4	NO
		PM	19.0	B	20.3	C	1.3	NO
60	Penn Way and I-5 SB Ramps	AM	21.2	C	19.5	B	-1.7	NO
		PM	23.0	C	22.8	C	-0.2	NO
61	Santiago Street and Civic Center Drive	AM	159.2	F	62.6	F	-96.6	NO
		PM	110.0	F	27.6	D	-82.4	NO
62	Santiago Street and Santa Ana Boulevard	AM	1.04	F	1.44	F	0.40	YES
		PM	1.02	F	1.41	F	0.39	YES
63	Standard Avenue and 4th Street	AM	0.94	E	1.34	F	0.40	YES
		PM	0.89	D	1.34	F	0.45	YES
64	Standard Avenue and 1st Street	AM	0.98	E	1.52	F	0.54	YES
		PM	0.97	E	1.48	F	0.51	YES
65	Standard Avenue and McFadden Avenue	AM	0.85	D	0.84	D	-0.01	NO
		PM	0.83	D	0.77	C	-0.06	NO
66	Halladay Street and Warner Avenue	AM	0.78	C	0.69	B	-0.09	NO
		PM	0.97	E	0.82	D	-0.16	NO
67	Halladay Street and Dyer Road	AM	0.77	C	0.67	B	-0.10	NO

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
		PM	1.06	F	0.95	E	-0.11	NO
68	SR-55 SB Ramps and MacArthur Boulevard	AM	19.9	B	20.2	C	0.3	NO
		PM	17.8	B	18.4	B	0.6	NO
69	SR-55 NB Ramps and MacArthur Boulevard	AM	19.3	B	19.5	B	0.2	NO
		PM	14.6	B	16.2	B	1.6	NO
70	SR-55 SB Ramps and Dyer Road	AM	25.7	C	25.9	C	0.2	NO
		PM	26.5	C	26.5	C	0.0	NO
71	Glassell Street and La Veta Avenue	AM	0.80	C	0.83	D	0.03	NO
		PM	0.74	C	0.77	C	0.03	NO
72	Glassell Street and SR-22 WB Ramps	AM	32.6	C	30.1	C	-2.5	NO
		PM	30.5	C	33.4	C	2.9	NO
73	Glassell Street / Grand Avenue and SR-22 EB Ramps	AM	30.6	C	29.6	C	-1.0	NO
		PM	31.6	C	31.8	C	0.2	NO
74	Grand Avenue and Fairhaven Avenue	AM	0.61	B	0.57	A	-0.04	NO
		PM	0.72	C	0.67	B	-0.05	NO
75	Grand Avenue and Santa Clara Avenue	AM	0.84	D	0.80	C	-0.04	NO
		PM	0.81	D	0.73	C	-0.08	NO
76	Grand Avenue and 17th Street	AM	0.79	C	0.86	D	0.07	NO
		PM	0.86	D	0.85	D	-0.01	NO
77	Grand Avenue and I-5 NB Ramps	AM	13.2	B	15.3	B	2.1	NO
		PM	10.1	B	11.3	B	1.2	NO
78	Grand Avenue and Santa Ana Boulevard	AM	26.0	C	26.3	C	0.3	NO
		PM	25.3	C	28.5	C	3.2	NO
79	Grand Avenue and 1st Street	AM	0.74	C	0.83	D	0.09	NO
		PM	0.73	C	0.72	C	-0.01	NO
80	Grand Avenue and Chestnut Avenue	AM	0.70	B	0.94	E	0.24	YES
		PM	0.69	B	0.78	C	0.09	NO

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
81	Grand Avenue and McFadden Avenue	AM	0.89	D	1.01	F	0.12	YES
		PM	0.82	D	0.81	D	-0.01	NO
82	Grand Avenue and Edinger Avenue	AM	0.84	D	0.90	D	0.06	NO
		PM	1.00	E	1.08	F	0.08	YES
83	Grand Avenue and Warner Avenue	AM	0.61	B	0.66	B	0.05	NO
		PM	0.83	D	0.90	D	0.07	NO
84	SR-55 NB Ramps and Dyer Road	AM	17.1	B	17.3	B	0.2	NO
		PM	5.7	A	6.0	A	0.3	NO
85	Cambridge Street and La Veta Avenue	AM	31.6	D	23.4	C	-8.2	NO
		PM	19.7	C	26.1	D	6.4	NO
86	Cambridge Street and Fairhaven Avenue	AM	0.56	A	0.62	B	0.06	NO
		PM	0.45	A	0.53	A	0.08	NO
87	Mabury Street and 1st Street	AM	27.4	C	27.4	C	0.0	NO / NO *
		PM	27.1	C	27.2	C	0.1	NO / NO *
88	Tustin Street and La Veta Avenue	AM	0.45	A	0.36	A	-0.09	NO
		PM	0.38	A	0.34	A	-0.04	NO
89	Tustin Street and SR-22 WB On-Ramp	AM	12.2	B	13.2	B	1.0	NO
		PM	11.1	B	7.7	A	-3.4	NO
90	Tustin Street and SR-22 EB Off-Ramp / Seba Avenue	AM	25.0	C	23.8	C	-1.2	NO
		PM	23.1	C	23.3	C	0.2	NO
91	Tustin Street and Fairhaven Avenue	AM	1.20	F	1.24	F	0.04	YES
		PM	0.69	B	0.76	C	0.07	NO
92	Tustin Avenue and Santa Clara Avenue	AM	1.04	F	1.10	F	0.06	YES
		PM	0.71	C	0.78	C	0.07	NO
93	Tustin Avenue and 17th Street	AM	0.91	E	0.81	D	-0.10	NO
		PM	0.80	C	0.74	C	-0.06	NO
94	Tustin Avenue and 4th Street	AM	0.83	D	0.79	C	-0.04	NO

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
		PM	0.71	C	0.78	C	0.07	NO
95	SR-55 SB Ramps / Auto Mall Drive and Edinger Avenue	AM	25.2	C	25.1	C	-0.1	NO / NO *
		PM	25.5	C	25.4	C	-0.1	NO / NO *
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	AM	25.4	C	25.6	C	0.2	NO
		PM	39.1	D	46.2	D	7.1	YES
97	Red Hill Avenue and Edinger Avenue	AM	0.61	B	0.62	B	0.01	NO
		PM	0.85	D	0.87	D	0.02	NO
98	Red Hill Avenue and Warner Avenue	AM	0.56	A	0.58	A	0.02	NO
		PM	0.88	D	0.95	E	0.07	YES
99	Red Hill Avenue and Barranca Parkway	AM	0.55	A	0.58	A	0.03	NO
		PM	0.54	A	0.59	A	0.05	NO
100	Red Hill Avenue and Alton Parkway	AM	0.86	D	0.93	E	0.07	YES
		PM	1.18	F	1.49	F	0.31	YES
101	Red Hill Avenue and MacArthur Boulevard	AM	0.69	B	0.71	C	0.02	NO
		PM	0.70	B	0.72	C	0.02	NO
102	Red Hill Avenue and Main Street	AM	0.72	C	0.73	C	0.01	NO
		PM	0.81	D	0.84	D	0.03	NO
103	I-5 SB Ramps and Santa Ana Boulevard	AM	17.4	B	17.8	B	0.4	NO
		PM	18.4	B	19.9	B	1.5	NO
104	Tustin Ranch Road and Warner Avenue	AM	0.52	A	0.53	A	0.01	NO
		PM	0.65	B	0.67	B	0.02	NO
105	Von Karman Avenue and Barranca Parkway	AM	0.93	E	0.93	E	0.00	NO
		PM	1.23	F	1.28	F	0.05	YES

**Intersection is a Caltrans intersection and also part of OC CMP; XX/YY denotes LOS impacts per Caltrans/CMP impact criteria, respectively.*

Table 8-4: LOS Improvement Measures

ID	INTERSECTION	IMPROVEMENT
3	Euclid Street and Edinger Avenue	• Alternative 1 o Convert the WB right-turn lane into a shared thru-right. • Alternative 2 o Add EB-LT lane. • Alternative 3 o Add LT lane for EB and WB directions. • Fair-Share: 9.0% (AM)
13	Harbor Boulevard and Segerstrom Avenue	• Add a second WB left-turn lane. • Change WB and EB left-turn control to protected.
34	Bristol Street and 1st Street	• Maintain 2045 NP configuration for WB approach. o WB approach to be: 1L, 2T, 1TR • Add EB right-turn pocket.
36	Bristol Street and Warner Avenue	• Feasible improvements could not be identified.
37	Bristol Street and Segerstrom Avenue	• Maintain 2045 NP configurations for EB/WB approaches. o EB/WB approaches to be: 1LT, 2T, 1TR • Add NB right-turn pocket.
44	Flower Street and 1st Street	• Maintain 2045 NP configurations for NB approach. o NB approach to be: 1L, 2T, 1R
46	Flower Street and Segerstrom Avenue	• Feasible improvements could not be identified.
47	Flower Street and MacArthur Boulevard	• Feasible improvements could not be identified.
55	Main Street and McFadden Avenue	• Feasible improvements could not be identified.
56	Main Street and Edinger Avenue	• Feasible improvements could not be identified.
62	Santiago Street and Santa Ana Boulevard	• Feasible improvements could not be identified.

ID	INTERSECTION	IMPROVEMENT
63	Standard Avenue and 4th Street	• Maintain 2045 NP conditions. o NB / SB to be: 1L, 1T, 1R o EB / WB to be: 1L, 1T, 1TR
64	Standard Avenue and 1st Street	• Feasible improvements could not be identified.
80	Grand Avenue and Chestnut Avenue	• Feasible improvements could not be identified.
81	Grand Avenue and McFadden Avenue	• Maintain 2045 NP configuration for EB approach o EB approach to be: 1L, 1T, 1TR
82	Grand Avenue and Edinger Avenue	• Feasible improvements could not be identified.
91	Tustin Street and Fairhaven Avenue	• Maintain 2045 NP lane configurations for EB and WB approaches o EB approach to be: 1L, 1T, 1TR o WB approach to be: 1L, 1T, 1R
92	Tustin Avenue and Santa Clara Avenue	• Maintain 2045 NP lane configurations for EB and WB approaches. o EB and WB approaches to be: 1L, 1T, 1TR
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	• Add a second SB right-turn lane. • Fair-Share: 10.6% (PM)
98	Red Hill Avenue and Warner Avenue	• Add a left-turn lane to the EB approach. • Fair-Share: 17.3% (PM)
100	Red Hill Avenue and Alton Parkway	• Add a NB thru lane. • Add a left-turn lane and a shared thru-right to the EB approach. • Convert the WB right-turn lane into a shared thru-right. • Fair-Share: 21.0% (AM) / 34.7% (PM)
105	Von Karman Avenue and Barranca Parkway	• Convert one (1) WB thru lane into a shared thru-right. • Fair-Share: 14.1% (PM)

Table 8-5: Future Year (2045) With Project – Mitigated Impact Summary

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	IMPACT?	2045 With Project – Mit.		DELTA	IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS			V/C or Delay	LOS		
3	Euclid Street and Edinger Avenue (with Alternative 1 measure)	AM	0.99	E	1.01	F	0.02	YES	1.00	E	0.01	NO
		PM	0.89	D	0.86	D	-0.03	NO	0.80	D	-0.09	NO
3	Euclid Street and Edinger Avenue (with Alternative 2 measure)	AM	0.99	E	1.01	F	0.02	YES	1.00	E	0.01	NO
		PM	0.89	D	0.86	D	-0.03	NO	0.82	D	-0.07	NO
3	Euclid Street and Edinger Avenue (with Alternative 3 measure)	AM	0.99	E	1.01	F	0.02	YES	0.97	E	-0.02	NO
		PM	0.89	D	0.86	D	-0.03	NO	0.82	D	-0.07	NO
13	Harbor Boulevard and Segerstrom Avenue	AM	0.97	E	1.01	F	0.04	YES	0.96	E	-0.01	NO
		PM	0.92	E	0.93	E	0.01	NO	0.93	E	0.01	NO
34	Bristol Street and 1st Street	AM	0.77	C	0.90	D	0.13	NO	0.79	C	0.02	NO
		PM	0.83	D	0.97	E	0.14	YES	0.87	D	0.04	NO
36	Bristol Street and Warner Avenue	AM	0.92	E	0.96	E	0.04	YES	0.96	E	0.04	YES
		PM	0.85	D	0.87	D	0.02	NO	0.87	D	0.02	NO
37	Bristol Street and Segerstrom Avenue	AM	0.81	D	0.85	D	0.04	NO	0.81	D	0.00	NO
		PM	0.87	D	0.92	E	0.05	YES	0.87	D	0.00	NO
44	Flower Street and 1st Street	AM	0.93	E	0.93	E	0.00	NO	0.93	E	0.00	NO
		PM	0.88	D	1.22	F	0.34	YES	0.92	E	0.04	YES
46	Flower Street and Segerstrom Avenue	AM	0.78	C	0.82	D	0.04	NO	0.82	D	0.04	NO
		PM	0.87	D	0.92	E	0.05	YES	0.92	E	0.05	YES
47	Flower Street and Macarthur Boulevard	AM	0.68	B	0.71	C	0.03	NO	0.71	C	0.03	NO
		PM	0.90	D	0.91	E	0.01	YES	0.91	E	0.01	YES
55	Main Street and McFadden Avenue	AM	0.89	D	0.92	E	0.03	YES	0.92	E	0.03	YES
		PM	0.93	E	0.94	E	0.01	NO	0.94	E	0.01	NO
56	Main Street and Edinger Avenue	AM	0.80	C	0.88	D	0.08	NO	0.88	D	0.08	NO
		PM	0.87	D	0.98	E	0.11	YES	0.98	E	0.11	YES

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	IMPACT?	2045 With Project – Mit.		DELTA	IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS			V/C or Delay	LOS		
62	Santiago Street and Santa Ana Boulevard	AM	1.04	F	1.44	F	0.40	YES	1.44	F	0.40	YES
		PM	1.02	F	1.41	F	0.39	YES	1.41	F	0.39	YES
63	Standard Avenue and 4th Street	AM	0.94	E	1.34	F	0.40	YES	1.06	F	0.12	YES
		PM	0.89	D	1.34	F	0.45	YES	1.03	F	0.14	YES
64	Standard Avenue and 1st Street	AM	0.98	E	1.52	F	0.54	YES	1.52	F	0.54	YES
		PM	0.97	E	1.48	F	0.51	YES	1.48	F	0.51	YES
80	Grand Avenue and Chestnut Avenue	AM	0.70	B	0.94	E	0.24	YES	0.94	E	0.24	YES
		PM	0.69	B	0.78	C	0.09	NO	0.78	C	0.09	NO
81	Grand Avenue and McFadden Avenue	AM	0.89	D	1.01	F	0.12	YES	0.86	D	-0.03	NO
		PM	0.82	D	0.81	D	-0.01	NO	0.81	D	-0.01	NO
82	Grand Avenue and Edinger Avenue	AM	0.84	D	0.90	D	0.06	NO	0.90	D	0.06	NO
		PM	1.00	E	1.08	F	0.08	YES	1.08	F	0.08	YES
91	Tustin Street and Fairhaven Avenue	AM	1.20	F	1.24	F	0.04	YES	1.06	F	-0.14	NO
		PM	0.69	B	0.76	C	0.07	NO	0.64	B	-0.05	NO
92	Tustin Avenue and Santa Clara Avenue	AM	1.04	F	1.10	F	0.06	YES	0.94	E	-0.10	NO
		PM	0.71	C	0.78	C	0.07	NO	0.68	B	-0.03	NO
96	SR-55 NB Ramps / Del Amo Avenue and Newport Avenue	AM	25.4	C	25.6	C	0.2	NO	24.4	C	-1.0	NO
		PM	39.1	D	46.2	D	7.1	YES	28.5	C	-10.6	NO
98	Red Hill Avenue and Warner Avenue	AM	0.56	A	0.58	A	0.02	NO	0.56	A	0.00	NO
		PM	0.88	D	0.95	E	0.07	YES	0.80	D	-0.08	NO
100	Red Hill Avenue and Alton Parkway	AM	0.86	D	0.93	E	0.07	YES	0.68	B	-0.18	NO
		PM	1.18	F	1.49	F	0.31	YES	1.28	F	0.10	YES
105	Von Karman Avenue and Barranca Parkway	AM	0.93	E	0.93	E	0.00	NO	0.93	E	0.00	NO
		PM	1.23	F	1.28	F	0.05	YES	1.24	F	0.01	NO

As shown in Table 8-5, impacts are expected to remain at the following intersections:

- **INT 36 – Bristol Street and Warner Avenue (City of Santa Ana)**
    - Due to limited right-of-way, feasible improvements could not be developed. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the AM peak hour.
- **INT 44 – Flower Street and 1st Street (City of Santa Ana)**
    - A mitigation measure was developed but only resulted in partial mitigation of the impact. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the PM peak hour.
- **INT 46 – Flower Street and Segerstrom Avenue (City of Santa Ana)**
    - Due to limited right-of-way, feasible improvements could not be developed. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the PM peak hour.
- **INT 47 – Flower Street and Segerstrom Avenue (City of Santa Ana)**
    - Due to limited right-of-way, feasible improvements could not be developed. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the PM peak hour.
- **INT 55 – Main Street and McFadden Avenue (City of Santa Ana)**
    - Due to limited right-of-way, feasible improvements could not be developed. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the AM peak hour.
- **INT 56 – Main Street and Edinger Avenue (City of Santa Ana)**
    - Due to limited right-of-way, feasible improvements could not be developed. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the PM peak hour.
- **INT 62 – Santiago Street and Santa Ana Boulevard (City of Santa Ana)**
    - Due to limited right-of-way and the implementation of the OC Streetcar, a mitigation measure was developed but only resulted in partial mitigation of the impact. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the AM and PM peak hours.
- **INT 63 – Standard Avenue and 4th Street (City of Santa Ana)**
    - A mitigation measure was developed but only resulted in partial mitigation of the impact. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the AM and PM peak hours.

- **INT 64 – Standard Avenue and 1st Street (City of Santa Ana)**
    - Due to limited right-of-way and the planned implementation of the bike lanes along both Standard Avenue and First Street, no feasible improvements were identified.The LOS cannot be returned to an acceptable LOS; the impact is to remain in the AM and PM peak hours.
- **INT 80 – Grand Avenue and Chestnut Avenue (City of Santa Ana)**
    - Due to limited right-of-way and the planned implementation of the bike lanes along Chestnut Avenue, no feasible improvements were identified. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the AM peak hour.
- **INT 82 – Grand Avenue and Edinger Avenue (City of Santa Ana)**
    - Due to limited right-of-way, feasible improvements could not be developed. The LOS cannot be returned to an acceptable LOS; the impact is to remain in the PM peak hour.
- **INT 100 – Red Hill Avenue and Alton Parkway (City of Irvine)**
    - Due to limited right-of-way, a mitigation measure was developed and resulted in mitigating the impacts in the AM peak hour only. The LOS cannot be returned to an acceptable LOS in the PM peak hour; additionally, the impact is to remain in the PM peak hour.

9.0 Conclusions

This traffic analysis report has been prepared in support of the General Plan Update (GPU) Draft Program Environmental Impact Report (PEIR) for the City of Santa Ana and to assess requested changes to the Orange County Transportation Authority's (OCTA) Master Plan of Arterial Highways (MPAH) by the City of Santa Ana. The purpose of this study is to identify traffic impacts due to the implementation of the proposed project (General Plan update). This study was prepared in conformance with CEQA guidelines and in consultation with the OPR Technical Advisory as well as the traffic impact analysis guidelines for the City of Santa Ana and local jurisdictions. CEQA identifies VMT as the preferred metric for identifying environmental impacts. However, intersection impacts and roadway LOS are also evaluated in order to address local network performance. A summary of the analysis is provided below.

9.1 VMT IMPACT ANALYSIS

A VMT analysis was conducted to determine impacts due to the implementation of the project. The project was evaluated to determine the potential project level and cumulative impacts.

A project is considered to have a significant impact at the project level if the project VMT/SP (for the land use plan) exceeds 15% below the existing total daily VMT/SP for the County. The VMT impact threshold (15% below the 2020 – No Project County VMT/SP) is 22.0 VMT/SP. The project resulted in a 2045 – With Project City VMT/SP of 20.3 VMT/SP. Thus, the project does not result in a project level VMT impact.

A project is considered to have a significant cumulative impact if the project results in a negative effect on VMT/SP at the citywide level (City VMT/SP is higher with the project than without it). The VMT impact threshold (2045 – No Project City VMT/SP) is 22.8 VMT/SP. The project resulted in a 2045 – With Project City VMT/SP of 20.3 VMT/SP. The project does not result in a negative impact on citywide VMT, therefore does not result in a cumulative impact.

9.2 INTERSECTION LOS ANALYSIS

An intersection impact analysis was conducted in order to determine projects impacts related to the OCTA MPAH and City-level LOS guidelines at study intersections. It should be noted that intersection impacts may be identified but are not indicative of an environmental impact, per CEQA. Significant impacts are expected at twenty-four (24) study intersections for the Future year (2045) With Project scenario. Mitigation of the impacts is not required for CEQA conformance, but measures were developed to address local network performance. All mitigation measures are subject to the approval of the presiding public authority, including funding and implementation. The City of Santa Ana will update its Transportation System Improvement Assessment (TSIA) in order to provide funding for the implementation of the City of Santa Ana Circulation Element Transportation Network buildout. For mitigation measures in adjoining jurisdictions, the City of Santa Ana will contribute to the fairshare of the corresponding mitigation measures.

All identified impacts are expected to be mitigated with the exception of:

- INT 36 – Bristol Street and Warner Avenue (City of Santa Ana)
- INT 44 – Flower Street and 1st Street (City of Santa Ana)
- INT 46 – Flower Street and Segerstrom Avenue (City of Santa Ana)
- INT 47 – Flower Street and Segerstrom Avenue (City of Santa Ana)
- INT 55 – Main Street and McFadden Avenue (City of Santa Ana)

- INT 56 – Main Street and Edinger Avenued (City of Santa Ana)
- INT 62 – Santiago Street and Santa Ana Boulevard (City of Santa Ana)
- INT 63 – Standard Avenue and 4th Street (City of Santa Ana)
- INT 64 – Standard Avenue and 1st Street (City of Santa Ana)
- INT 80 – Grand Avenue and Chestnut Avenue (City of Santa Ana)
- INT 82 – Grand Avenued and Alton Parkway (City of Santa Ana)
- INT 100 – Red Hill Avenue and Alton Parkway (City of Irvine)

9.3 ROADWAY LOS

Roadway LOS was assessed to determine conformance with the City of Santa Ana MPSH minimum level of service requirements. Eleven study roadways currently operate at an unacceptable LOS. Thirteen study roadways are expected to operate at an unacceptable LOS in the Future Year (2045) No Project scenario. Eight roadways are expected to operate at an unacceptable LOS in the Future Year (2045) With Project scenario. Although the LOS exceeds the standard established in the Circulation Element, physical improvements are not feasible due to right-of-way constraints.

10.0 Appendices

- APPENDIX A – LANE GEOMETRIES
- APPENDIX B – INTERSECTION VOLUMES
- APPENDIX C – OCTAM VOLUME PLOTS
- APPENDIX D – ANALYSIS WORKSHEETS
- APPENDIX E – MITIGATION WORKSHEETS
- APPENDIX F – VMT CALCULATIONS
- APPENDIX G – OCTAM 2045 VOLUME COMPARISON PLOTS
- APPENDIX H - COUNTS

APPENDIX A
LANE GEOMETRIES

APPENDIX A.1

LANE GEOMETRIES – 2020 NP

Santa Ana Circulation Element

Scenario Report

Scenario:	2020 NP AM Peak Hour
Command:	Default Command
Volume:	2020 NP AM
Geometry:	NP
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2020 NP AM Peak Hour Mon Oct 26, 2020 11:27:40 Page 2-1

Santa Ana Circulation Element

Lane Geometry Report

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
1	Euclid St and 1st St	102100	102100	102100	102100
2	Euclid St and McFadden Ave	102100	102100	101100	101100
3	Euclid St and Edinger Ave	202100	202100	102010	102010
4	Newhope St and Hazard Ave	101100	101100	101100	101100
5	Newhope St and McFadden Ave	101100	101100	101100	101100
6	Harbor Blvd and SR-22 WB Off-Ramp /	103000	002100	000001	110010
7	Trask Avenue and SR-22 EB On-Ramp	000000	000000	201000	001100
8	Harbor Blvd and Westminster Ave	103010	103010	102100	103010
9	Harbor Blvd and 1st St	103010	103010	202100	202100
10	Harbor Blvd and McFadden Ave	203010	202100	101100	101100
11	Harbor Blvd and Edinger Ave	203010	203010	202100	203010
12	Harbor Blvd and Warner Ave	202100	203010	203010	203010
13	Harbor Blvd and Segerstrom Ave	202100	102100	101100	102010
14	MacArthur Blvd and Hyland Ave	200100	101010	103010	103010
15	MacArthur Blvd and Harbor Blvd	203010	203010	103010	103010
16	Harbor Blvd and Sunflower Ave	203010	203010	101100	110100
17	Harbor Blvd and I-405 WB Off-Ramp	004000	004000	000000	100011
18	Harbor Blvd and I-405 EB Off-Ramp	003010	004000	100011	000000
19	Fairview St and Civic Center Dr	102100	102100	010100	110010
20	Fairview St and 1st St	103010	102100	102100	102100
21	Fairview St and McFadden Ave	103010	103010	101100	101100
22	Fairview St and Edinger Ave	202100	202100	202100	202100
23	Fairview St and Warner Ave	202100	202100	202100	202100
24	Fairview St and MacArthur Blvd	202100	203010	203010	203010
25	Fairview Rd and Sunflower Ave	203010	202100	201100	202010
26	Greenville St and Edinger Ave	100010	000000	002100	102000
27	Greenville St and Segerstrom Ave	101100	101010	101100	101100
28	Raitt St and McFadden Ave	101100	101100	101100	101100
29	Raitt St and Edinger Ave	101100	101100	101100	101100
30	Bear St and MacArthur Blvd	102010	102010	102100	102100
31	Bristol St and 17th St	203010	203010	202100	203010
32	Bristol St and Civic Center Dr	102100	102100	101100	101100
33	Bristol St and Santa Ana Blvd	102100	102100	101100	101100
34	Bristol St and 1st St	203010	203010	102100	102100
35	Bristol St and McFadden Ave	103010	103010	101100	101100
36	Bristol St and Warner Ave	202010	202100	103010	103010
37	Bristol St and Segerstrom Ave	102100	102100	101100	101100
38	Bristol St and Alton Ave	102100	103010	101100	100100
39	Bristol St and MacArthur Blvd	203010	202100	203010	203010
40	Bristol St and Sunflower Ave	202110	203010	202110	203010
41	Bristol St and I-405 WB Ramps	004010	004100	000020	111020
42	Bristol St and I-405 EB Ramps	104000	002110	300010	000000
43	Flower St and Santa Ana Blvd	102010	102010	103010	102010
44	Flower St and 1st St	102010	101100	102100	102100
45	Flower St and McFadden Ave	100100	100100	100100	100100
46	Flower St and Segerstrom Ave	101100	101100	101100	101100
47	Flower St and MacArthur Blvd	101100	101100	102100	102100

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Santa Ana Circulation Element

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
48	Main St and La Veta Ave	203010	202100	202100	202010
49	Main St and Mainplace Dr / Memory L	202100	202100	202100	202010
50	Main St and 17th St	202010	201100	202100	202100
51	Main St and Civic Center Dr	101100	101100	101100	101100
52	Main St and Santa Ana Blvd	102000	001100	000000	011100
53	Main St and 4th St	001100	001100	000100	000100
54	Main St and 1st St	101100	102010	102100	102100
55	Main St and McFadden Ave	101100	101100	100100	101010
56	Main St and Edinger Ave	101100	101100	102010	102100
57	Main St and MacArthur Blvd	203010	203010	203010	203010
58	Penn Wy and 17th St	200020	000000	002100	103000
59	I-5 NB Off Ramps/17th Street	110010	100010	103010	002100
60	Penn Wy and I-5 SB Ramps	002010	202000	000000	100020
61	Santiago St and Civic Center Dr	100100	100100	010010	000001
62	Santiago St and Santa Ana Blvd	101010	101010	101100	102010
64	Standard Ave and 1st St	100100	000001	101100	101100
65	Standard Ave and Mcfadden Ave	101100	101100	101100	101100
66	Halladay St and Warner Ave	100010	000000	001100	011000
67	Halladay St and Dyer Rd	100100	100100	102100	102100
68	SR-55 SB Ramps and MacArthur Blvd	000000	200020	002110	003010
69	SR-55 NB Ramps and MacArthur Blvd	200010	000000	002020	003010
70	SR-55 SB Ramps and Dyer Rd	110020	011010	103010	203010
71	Glassell St and La Veta Ave	201010	101100	101010	101100
72	Glassell St and SR-22 WB Ramps	102000	002010	000000	100011
73	Grand Ave / Glassell St and SR-22 E	002010	102000	100011	000000
74	Grand Ave and Fairhaven Ave	102100	102010	101100	101010
75	Grand Ave and Santa Clara Ave	102100	101100	100100	101010
76	Grand Ave and 17th St	102100	102010	202100	202100
77	Grand Ave and I-5 NB Ramps	002010	103000	000000	200010
78	Grand Ave and Santa Ana Blvd	102100	102020	201020	010100
79	Grand Ave and 1st St	202100	203010	202100	201100
80	Grand Ave and Chestnut Ave	102100	102100	101100	101100
81	Grand Ave and McFadden Ave	102100	102100	101100	101100
82	Grand Ave and Edinger Ave	102100	102100	102100	102100
83	Grand Ave and Warner Ave	102100	102100	203010	202010
84	SR-55 NB Ramps and Dyer Rd	100011	000000	003010	002100
85	Cambridge St and La Veta Ave	101000	001010	100010	000000
86	Cambridge St and Fairhaven Ave	000000	100010	102000	001100
87	Mabury St and 1st Street	100010	100011	002100	102100
88	Tustin St and La Veta Ave	102100	102100	101100	110010
89	Tustin St and SR-22 WB On-Ramp	202000	002100	000000	000000
90	Tustin St and SR-22 EB Off-Ramp / S	002100	103000	100011	000001
91	Tustin Ave and Fairhaven Ave	202100	202100	101100	101010
92	Tustin Ave and Santa Clara Ave	102100	202100	101100	101100
93	Tustin Ave and 17th St	202010	202100	203010	203010
94	Tustin Ave and 4th St	102100	202010	102100	102100
95	SR-55 SB Ramps / Auto Mall Dr and E	110020	101010	103010	202100
96	SR-55 NB Ramps / Del Amo Ave and Ne	202100	103010	201100	101100
97	Red Hill Ave and Edinger Ave	203010	203010	203010	203010
98	Red Hill Ave and Warner Ave	203100	202100	102100	203010

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Santa Ana Circulation Element

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
99	Red Hill Ave and Dyer Rd / barranca	204010	204010	203100	204010
100	Red Hill Ave and Alton Pkwy	103010	103010	102010	201010
101	Red Hill Ave and MacArthur Blvd	202100	203010	203010	103010
102	Red Hill Ave and Main St	202010	202010	202100	202100
103	I-5 SB Ramps and Santa Ana Blvd	000000	200010	203000	002100
104	Tustin Ranch Rd and Warner Ave	000000	200010	203000	003010
105	Von Karman Ave and Barranca Pkwy	201100	202020	203010	204010
106	Red Hill Avenue and El Camino Real	203010	102100	101010	100100
107	Red Hill Avenue and I-5 NB Ramps	103000	003010	000000	200010
108	Red Hill Avenue and I-5 SB Ramps	004010	103000	010010	000000
109	Red Hill Avenue and Nisson Road	103100	102100	100100	100100
110	Red Hill Avenue and Walnut Avenue	102100	102100	101100	201100
111	Red Hill Avenue and Valencia Avenue	103100	102100	101010	201010
112	Tustin Ranch Road and Warner Avenue	003010	203000	000000	300020
113	Tustin Ranch Road and Walnut Avenue	203010	203010	201100	202010
114	SR-55 SB Ramps and Irvine Boulevard	000000	100011	002100	103000
115	SR-55 NB Ramps and Irvine Boulevard	100011	000000	103000	002100

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APPENDIX A.2

LANE GEOMETRIES – 2045 NP

Santa Ana Circulation Element

Scenario Report

Scenario:	2045 NP AM Peak Hour
Command:	Default Command
Volume:	2045 NP AM
Geometry:	MPAH
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2045 NP AM Peak Hour Mon Oct 26, 2020 11:38:23 Page 2-1

Santa Ana Circulation Element

Lane Geometry Report

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
1	Euclid St and 1st St	102100	102100	102100	102100
2	Euclid St and McFadden Ave	102100	102100	101100	101100
3	Euclid St and Edinger Ave	202100	202100	102010	102010
4	Newhope St and Hazard Ave	101100	101100	101100	101100
5	Newhope St and McFadden Ave	101100	101100	101100	101100
6	Harbor Blvd and SR-22 WB Off-Ramp /	103000	002100	000001	110010
7	Trask Avenue and SR-22 EB On-Ramp	000000	000000	201000	001100
8	Harbor Blvd and Westminster Ave	103010	103010	102100	103010
9	Harbor Blvd and 1st St	103010	103010	202100	202100
10	Harbor Blvd and McFadden Ave	203010	202100	101100	101100
11	Harbor Blvd and Edinger Ave	203010	203010	202100	203010
12	Harbor Blvd and Warner Ave	202100	203010	203010	203010
13	Harbor Blvd and Segerstrom Ave	202100	102100	101100	102010
14	MacArthur Blvd and Hyland Ave	200100	101010	103010	103010
15	MacArthur Blvd and Harbor Blvd	203010	203010	103010	103010
16	Harbor Blvd and Sunflower Ave	203010	203010	101100	110100
17	Harbor Blvd and I-405 NB Off-Ramp	004000	004000	000000	100011
18	Harbor Blvd and I-405 SB Off-Ramp	003010	004000	100011	000000
19	Fairview St and Civic Center Dr	102100	102100	010100	110010
20	Fairview St and 1st St	103010	102100	102100	102100
21	Fairview St and McFadden Ave	103010	103010	101100	101100
22	Fairview St and Edinger Ave	202100	202100	202100	202100
23	Fairview St and Warner Ave	202100	202100	202100	202100
24	Fairview St and MacArthur Blvd	202100	203010	203010	203010
25	Fairview Rd and Sunflower Ave	203010	202100	201100	202010
26	Greenville St and Edinger Ave	100010	000000	002100	103000
27	Greenville St and Segerstrom Ave	100100	100100	102100	102100
28	Raitt St and McFadden Ave	101100	101100	101100	101100
29	Raitt St and Edinger Ave	101100	101100	102100	102100
30	Bear St and MacArthur Blvd	102010	102010	102100	102100
31	Bristol St and 17th St	203010	203010	202100	203010
32	Bristol St and Civic Center Dr	102100	102100	101100	101100
33	Bristol St and Santa Ana Blvd	102100	102100	102100	102100
34	Bristol St and 1st St	203010	203010	102100	102100
35	Bristol St and McFadden Ave	103010	103010	101100	101100
36	Bristol St and Warner Ave	202100	202100	103010	103010
37	Bristol St and Segerstrom Ave	102100	102100	102100	102100
38	Bristol St and Alton Ave	102100	103010	101100	100100
39	Bristol St and MacArthur Blvd	203010	202100	203010	203010
40	Bristol St and Sunflower Ave	202110	203010	202110	203010
41	Bristol St and I-405 NB Ramps	004010	004100	000020	111020
42	Bristol St and I-405 SB Ramps	104000	002110	300010	000000
43	Flower St and Santa Ana Blvd	102010	102010	103010	102100
44	Flower St and 1st St	102010	101100	102100	102100
45	Flower St and McFadden Ave	010100	010100	010100	010100
46	Flower St and Segerstrom Ave	101100	101100	102100	102100
47	Flower St and MacArthur Blvd	101100	101100	102100	102100

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Santa Ana Circulation Element

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
48	Main St and La Veta Ave	203010	202100	202100	202010
49	Main St and Mainplace Dr / Memory L	202100	202100	202100	202010
50	Main St and 17th St	202010	202010	202100	202100
51	Main St and Civic Center Dr	101100	101100	101100	101100
52	Main St and Santa Ana Blvd	102000	001100	000000	010100
53	Main St and 4th St	001100	001100	001100	001100
54	Main St and 1st St	101100	102010	102100	102100
55	Main St and McFadden Ave	101100	101100	101100	101100
56	Main St and Edinger Ave	101100	101100	102100	102100
57	Main St and MacArthur Blvd	203010	203010	203010	203010
58	Penn Wy and 17th St	200020	000000	002100	103000
59	I-5 NB Off Ramps/17th Street	110010	100010	103010	002100
60	Penn Wy and I-5 SB Ramps	002010	202000	000000	100020
61	Santiago St and Civic Center Dr	100100	100100	010010	000001
62	Santiago St and Santa Ana Blvd	101100	101100	101100	102010
63	Standard Ave and 4th St	102010	102010	101100	101100
64	Standard Ave and 1st St	101100	101100	102100	102100
65	Standard Ave and Mcfadden Ave	101100	101100	101100	101100
66	Halladay St and Warner Ave	100010	000000	002100	012000
67	Halladay St and Dyer Rd	100100	100100	102100	102100
68	SR-55 SB Ramps and MacArthur Blvd	000000	200020	002110	003010
69	SR-55 NB Ramps and MacArthur Blvd	200010	000000	002020	003010
70	SR-55 SB Ramps and Dyer Rd	110020	011010	103010	203010
71	Glassell St and La Veta Ave	201010	101100	101010	101100
72	Glassell St and SR-22 WB Ramps	102000	002010	000000	100011
73	Grand Ave / Glassell St and SR-22 E	002010	102000	100011	000000
74	Grand Ave and Fairhaven Ave	102100	102100	101100	101010
75	Grand Ave and Santa Clara Ave	102100	102100	100100	101010
76	Grand Ave and 17th St	102100	102100	202100	202100
77	Grand Ave and I-5 NB Ramps	002010	103000	000000	200010
78	Grand Ave and Santa Ana Blvd	102100	102020	201020	010100
79	Grand Ave and 1st St	202100	203010	202100	202100
80	Grand Ave and Chestnut Ave	102100	102100	101100	101100
81	Grand Ave and McFadden Ave	102100	102100	101100	101100
82	Grand Ave and Edinger Ave	102100	102100	102100	102100
83	Grand Ave and Warner Ave	102100	102100	203010	202100
84	SR-55 NB Ramps and Dyer Rd	100011	000000	003010	002100
85	Cambridge St and La Veta Ave	101000	001010	100010	000000
86	Cambridge St and Fairhaven Ave	000000	100010	102000	001100
87	Mabury St and 1st Street	100010	100011	002100	102100
88	Tustin St and La Veta Ave	102100	102100	101100	110010
89	Tustin St and SR-22 WB On-Ramp	202000	002100	000000	000000
90	Tustin St and SR-22 EB Off-Ramp / S	002100	103000	100011	000001
91	Tustin Ave and Fairhaven Ave	202100	202100	101100	101010
92	Tustin Ave and Santa Clara Ave	102100	202100	101100	101100
93	Tustin Ave and 17th St	202010	202100	203010	203010
94	Tustin Ave and 4th St	102100	202010	102110	102100
95	SR-55 SB Ramps / Auto Mall Dr and E	110020	101010	103010	202100
96	SR-55 NB Ramps / Del Amo Ave and Ne	202100	103010	201100	101100
97	Red Hill Ave and Edinger Ave	203010	203010	203010	203010

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Santa Ana Circulation Element

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
98	Red Hill Ave and Warner Ave	203100	202100	102100	203010
99	Red Hill Ave and Dyer Rd / barranca	204010	204010	203100	204010
100	Red Hill Ave and Alton Pkwy	103010	103010	102010	201010
101	Red Hill Ave and MacArthur Blvd	202100	203010	203010	103010
102	Red Hill Ave and Main St	202010	202010	202100	202100
103	I-5 SB Ramps and Santa Ana Blvd	000000	200010	203000	002100
104	Tustin Ranch Rd and Warner Ave	000000	200010	203000	003010
105	Von Karman Ave and Barranca Pkwy	201100	202020	203010	204010
106	Red Hill Avenue and El Camino Real	203010	102100	101010	100100
107	Red Hill Avenue and I-5 NB Ramps	103000	003010	000000	200010
108	Red Hill Avenue and I-5 SB Ramps	004010	103000	010010	000000
109	Red Hill Avenue and Nisson Road	103100	102100	100100	100100
110	Red Hill Avenue and Walnut Avenue	102100	102100	101100	201100
111	Red Hill Avenue and Valencia Avenue	103100	102100	101010	201010
112	Tustin Ranch Road and Warner Avenue	003010	203000	000000	300020
113	Tustin Ranch Road and Walnut Avenue	203010	203010	201100	202010
114	SR-55 SB Ramps and Irvine Boulevard	000000	100011	002100	103000
115	SR-55 NB Ramps and Irvine Boulevard	100011	000000	103000	002100

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APPENDIX A.3

LANE GEOMETRIES – 2045 WP

Santa Ana Circulation Element

Scenario Report

Scenario:	2045 WP AM Peak Hour
Command:	Default Command
Volume:	2045 AM
Geometry:	SACE
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2045 WP AM Peak Hour Mon Oct 26, 2020 11:49:33 Page 2-1

Santa Ana Circulation Element

Lane Geometry Report

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
1	Euclid St and 1st St	102100	102100	102100	102100
2	Euclid St and McFadden Ave	102100	102100	101100	101100
3	Euclid St and Edinger Ave	202100	202100	102010	102010
4	Newhope St and Hazard Ave	101100	101100	100100	100100
5	Newhope St and McFadden Ave	101100	101100	101100	101100
6	Harbor Blvd and SR-22 WB Off-Ramp /	103000	002100	000001	110010
7	Trask Avenue and SR-22 EB On-Ramp	000000	000000	201000	001100
8	Harbor Blvd and Westminster Ave	103010	103010	102100	103010
9	Harbor Blvd and 1st St	103010	103010	202100	202100
10	Harbor Blvd and McFadden Ave	203010	202100	101100	100100
11	Harbor Blvd and Edinger Ave	203010	203010	202100	203010
12	Harbor Blvd and Warner Ave	202100	203010	203010	203010
13	Harbor Blvd and Segerstrom Ave	202100	102100	101100	102010
14	MacArthur Blvd and Hyland Ave	200100	101010	103010	103010
15	MacArthur Blvd and Harbor Blvd	203010	203010	103010	103010
16	Harbor Blvd and Sunflower Ave	203010	203010	101100	110100
17	Harbor Blvd and I-405 NB Off-Ramp	004000	004000	000000	100011
18	Harbor Blvd and I-405 SB Off-Ramp	003010	004000	100011	000000
19	Fairview St and Civic Center Dr	102100	102100	010100	110010
20	Fairview St and 1st St	103010	102100	102100	102100
21	Fairview St and McFadden Ave	103010	103010	100100	100100
22	Fairview St and Edinger Ave	202100	202100	202100	202100
23	Fairview St and Warner Ave	202100	202100	202100	202100
24	Fairview St and MacArthur Blvd	202100	203010	203010	203010
25	Fairview Rd and Sunflower Ave	203010	202100	201100	202010
26	Greenville St and Edinger Ave	100010	000000	002100	103000
27	Greenville St and Segerstrom Ave	100100	100100	102100	102100
28	Raitt St and McFadden Ave	100100	100100	100100	100100
29	Raitt St and Edinger Ave	100100	100100	102100	102100
30	Bear St and MacArthur Blvd	102010	102010	102100	102100
31	Bristol St and 17th St	203010	203010	202100	203010
32	Bristol St and Civic Center Dr	102100	102100	100100	101100
33	Bristol St and Santa Ana Blvd	102100	102100	100100	100100
34	Bristol St and 1st St	203010	203010	102100	101100
35	Bristol St and McFadden Ave	103010	103010	100100	100100
36	Bristol St and Warner Ave	202100	202100	103010	103010
37	Bristol St and Segerstrom Ave	102100	102100	102100	102100
38	Bristol St and Alton Ave	102100	103010	101100	100100
39	Bristol St and MacArthur Blvd	203010	202100	203010	203010
40	Bristol St and Sunflower Ave	202110	203010	202110	203010
41	Bristol St and I-405 NB Ramps	004010	004100	000020	111020
42	Bristol St and I-405 SB Ramps	104000	002110	300010	000000
43	Flower St and Santa Ana Blvd	102010	102010	102010	102010
44	Flower St and 1st St	101010	101100	101100	101100
45	Flower St and McFadden Ave	100100	100100	100100	100100
46	Flower St and Segerstrom Ave	101100	101100	102100	102100
47	Flower St and MacArthur Blvd	101100	101100	102100	102100

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Santa Ana Circulation Element

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
48	Main St and La Veta Ave	203010	202100	202100	202010
49	Main St and Mainplace Dr / Memory L	202100	202100	202100	202010
50	Main St and 17th St	202010	202010	202100	202100
51	Main St and Civic Center Dr	101100	101100	101100	101100
52	Main St and Santa Ana Blvd	102000	001100	000000	010100
53	Main St and 4th St	001100	001100	001100	001100
54	Main St and 1st St	101100	102010	101100	101100
55	Main St and McFadden Ave	101100	101100	100100	100100
56	Main St and Edinger Ave	101100	101100	102100	102100
57	Main St and MacArthur Blvd	203010	203010	203010	203010
58	Penn Wy and 17th St	200020	000000	002100	103000
59	I-5 NB Off Ramps/17th Street	110010	100010	103010	002100
60	Penn Wy and I-5 SB Ramps	002010	202000	000000	100020
61	Santiago St and Civic Center Dr	100100	100100	100100	000001
62	Santiago St and Santa Ana Blvd	101010	101010	100100	102010
63	Standard Ave and 4th St	101010	101010	100100	100100
64	Standard Ave and 1st St	100100	000001	101100	101100
65	Standard Ave and Mcfadden Ave	100100	100100	100100	100100
66	Halladay St and Warner Ave	100010	000000	002100	012000
67	Halladay St and Dyer Rd	100100	100100	102100	102100
68	SR-55 SB Ramps and MacArthur Blvd	000000	200020	002110	003010
69	SR-55 NB Ramps and MacArthur Blvd	200010	000000	002020	003010
70	SR-55 SB Ramps and Dyer Rd	110020	011010	103010	203010
71	Glassell St and La Veta Ave	201010	101100	101010	101100
72	Glassell St and SR-22 WB Ramps	102000	002010	000000	100011
73	Grand Ave / Glassell St and SR-22 E	002010	102000	100011	000000
74	Grand Ave and Fairhaven Ave	102100	102100	101100	100100
75	Grand Ave and Santa Clara Ave	102100	102100	100100	101010
76	Grand Ave and 17th St	102100	102100	202100	202100
77	Grand Ave and I-5 NB Ramps	002010	103000	000000	200010
78	Grand Ave and Santa Ana Blvd	102100	102020	201020	010100
79	Grand Ave and 1st St	202100	203010	202010	202010
80	Grand Ave and Chestnut Ave	102100	102100	100100	100100
81	Grand Ave and McFadden Ave	102100	102100	100100	101100
82	Grand Ave and Edinger Ave	102100	102100	102100	102100
83	Grand Ave and Warner Ave	102100	102100	203010	202100
84	SR-55 NB Ramps and Dyer Rd	100011	000000	003010	002100
85	Cambridge St and La Veta Ave	101000	001010	100010	000000
86	Cambridge St and Fairhaven Ave	000000	100010	101000	000100
87	Mabury St and 1st Street	100010	100011	001100	101100
88	Tustin St and La Veta Ave	102100	102100	101100	110010
89	Tustin St and SR-22 WB On-Ramp	202000	002100	000000	000000
90	Tustin St and SR-22 EB Off-Ramp / S	002100	103000	100011	000001
91	Tustin Ave and Fairhaven Ave	202100	202100	100100	100100
92	Tustin Ave and Santa Clara Ave	102100	202100	100100	100100
93	Tustin Ave and 17th St	202010	202100	203010	203010
94	Tustin Ave and 4th St	102100	202010	102110	102100
95	SR-55 SB Ramps / Auto Mall Dr and E	110020	101010	103010	202100
96	SR-55 NB Ramps / Del Amo Ave and Ne	202100	103010	201100	101100
97	Red Hill Ave and Edinger Ave	203010	203010	203010	203010

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Santa Ana Circulation Element

Number of approach lanes: (L) (LT) (T) (RT) (R) (LTR)

Node	Intersection	NB	SB	EB	WB
98	Red Hill Ave and Warner Ave	203100	202100	102100	203010
99	Red Hill Ave and Dyer Rd / barranca	204010	204010	203100	204010
100	Red Hill Ave and Alton Pkwy	103010	103010	102010	201010
101	Red Hill Ave and MacArthur Blvd	202100	203010	203010	103010
102	Red Hill Ave and Main St	202010	202010	202100	202100
103	I-5 SB Ramps and Santa Ana Blvd	000000	200010	203000	002100
104	Tustin Ranch Rd and Warner Ave	000000	200010	203000	003010
105	Von Karman Ave and Barranca Pkwy	201100	202020	203010	204010
106	Red Hill Avenue and El Camino Real	203010	102100	101010	100100
107	Red Hill Avenue and I-5 NB Ramps	103000	003010	000000	200010
108	Red Hill Avenue and I-5 SB Ramps	004010	103000	010010	000000
109	Red Hill Avenue and Nisson Road	103100	102100	100100	100100
110	Red Hill Avenue and Walnut Avenue	102100	102100	101100	201100
111	Red Hill Avenue and Valencia Avenue	103100	102100	101010	201010
112	Tustin Ranch Road and Warner Avenue	003010	203000	000000	300020
113	Tustin Ranch Road and Walnut Avenue	203010	203010	201100	202010
114	SR-55 SB Ramps and Irvine Boulevard	000000	100011	002100	103000
115	SR-55 NB Ramps and Irvine Boulevard	100011	000000	103000	002100

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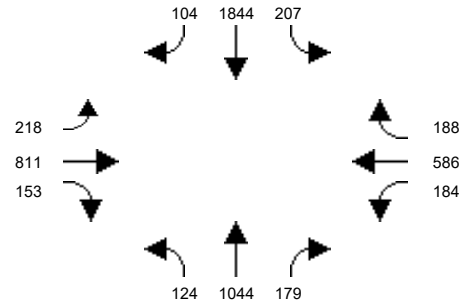
APPENDIX B
INTERSECTION VOLUMES

APPENDIX B.1

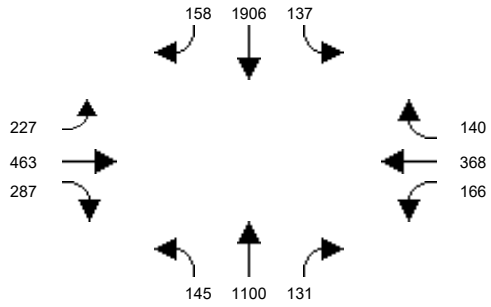
INTERSECTION VOLUMES –
2020 NP (AM PEAK HOUR)

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

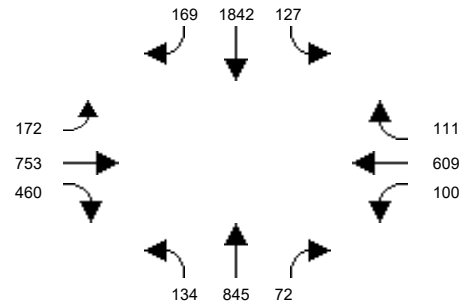
Intersection #1: Euclid St and 1st St



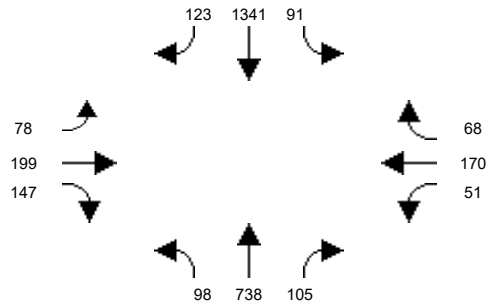
Intersection #2: Euclid St and McFadden Ave



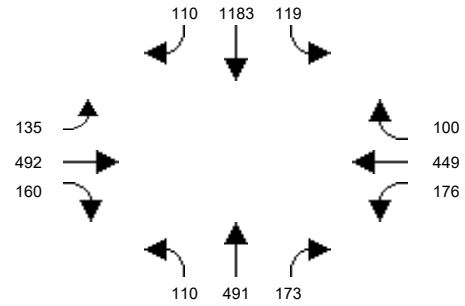
Intersection #3: Euclid St and Edinger Ave



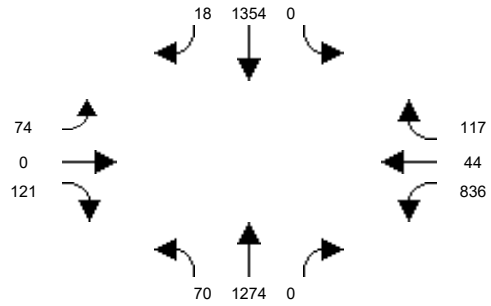
Intersection #4: Newhope St and Hazard Ave



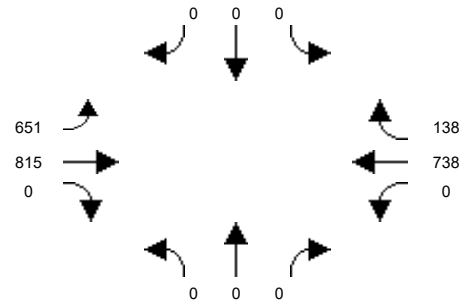
Intersection #5: Newhope St and McFadden Ave



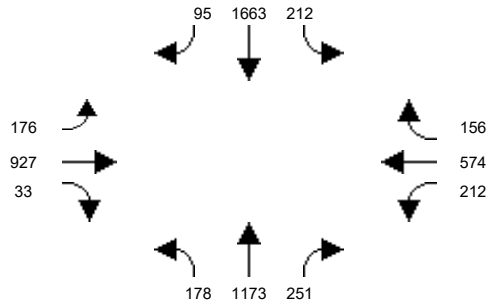
Intersection #6: Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr



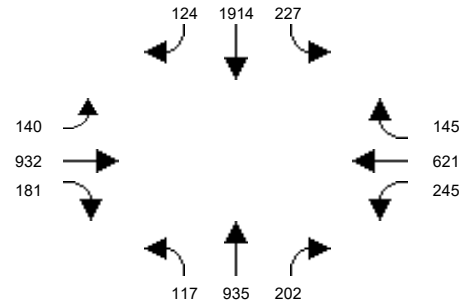
Intersection #7: Trask Avenue and SR-22 EB On-Ramp



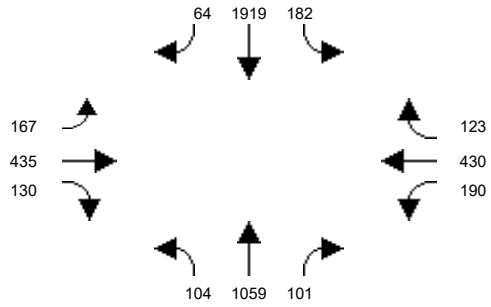
Intersection #8: Harbor Blvd and Westminster Ave



Intersection #9: Harbor Blvd and 1st St



Intersection #10: Harbor Blvd and McFadden Ave



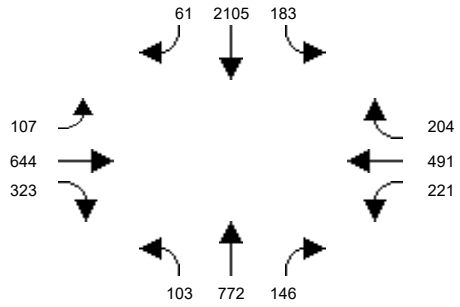
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Attachment 8

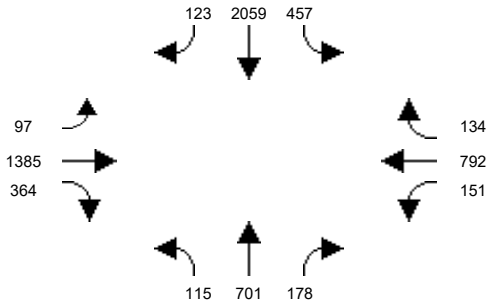
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

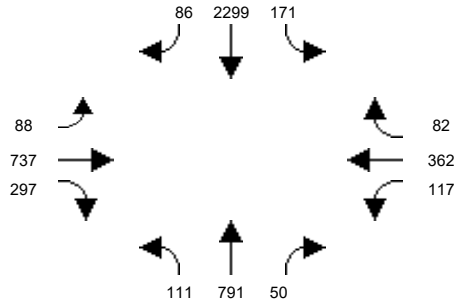
Intersection #11: Harbor Blvd and Edinger Ave



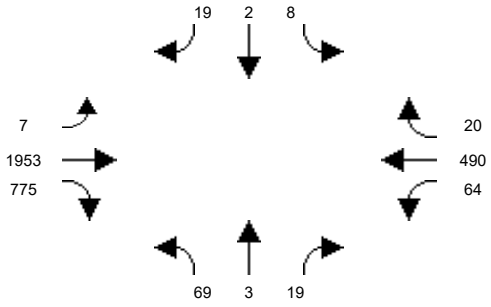
Intersection #12: Harbor Blvd and Warner Ave



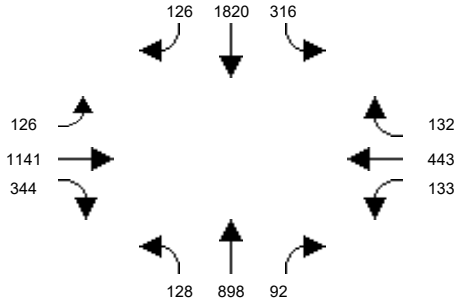
Intersection #13: Harbor Blvd and Segerstrom Ave



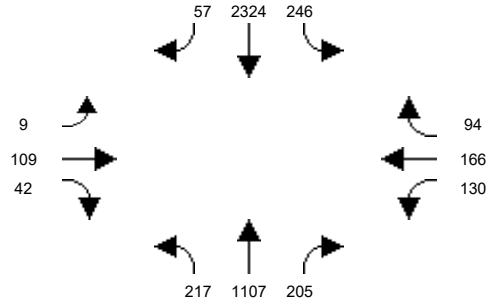
Intersection #14: MacArthur Blvd and Hyland Ave



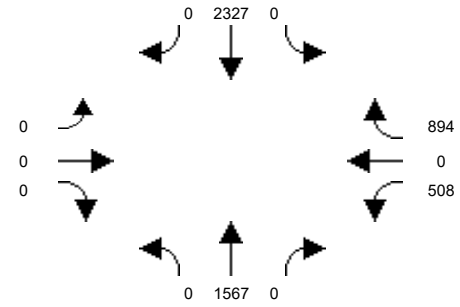
Intersection #15: MacArthur Blvd and Harbor Blvd



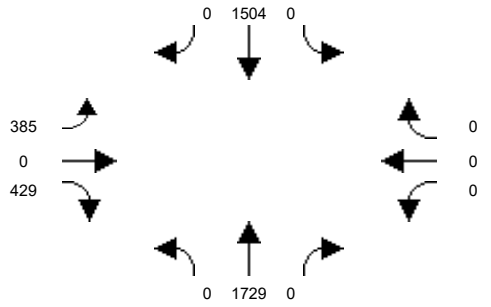
Intersection #16: Harbor Blvd and Sunflower Ave



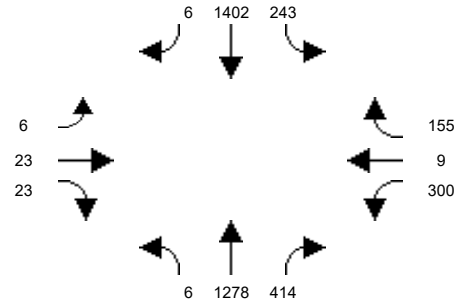
Intersection #17: Harbor Blvd and I-405 WB Off-Ramp



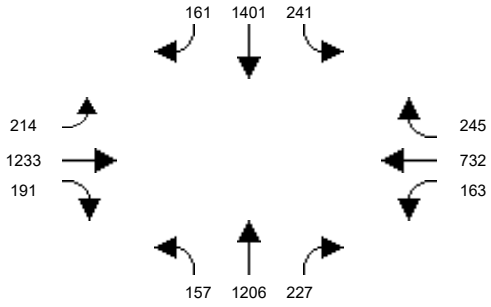
Intersection #18: Harbor Blvd and I-405 EB Off-Ramp



Intersection #19: Fairview St and Civic Center Dr



Intersection #20: Fairview St and 1st St



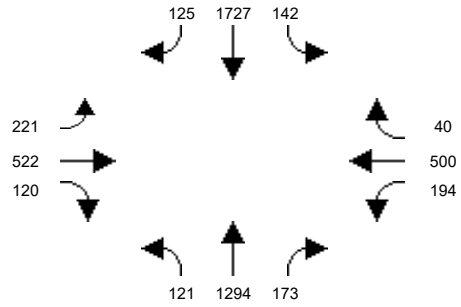
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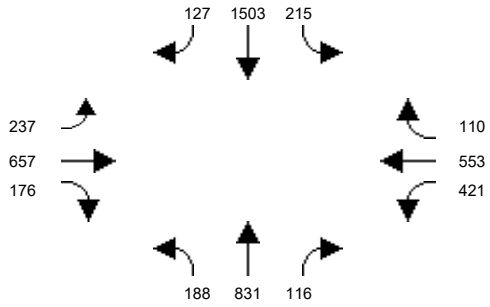
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

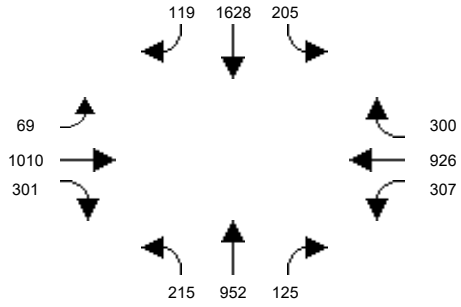
Intersection #21: Fairview St and McFadden Ave



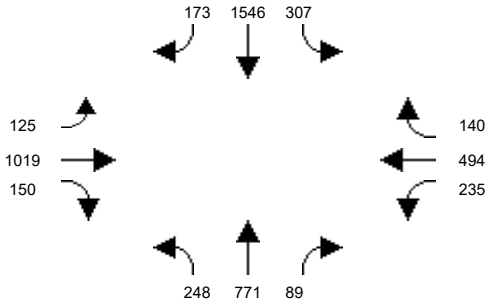
Intersection #22: Fairview St and Edinger Ave



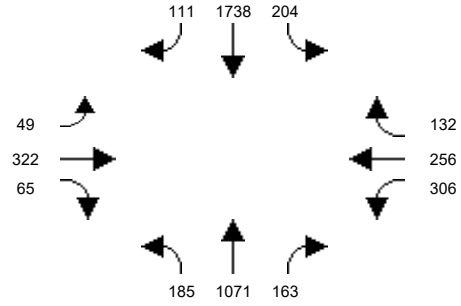
Intersection #23: Fairview St and Warner Ave



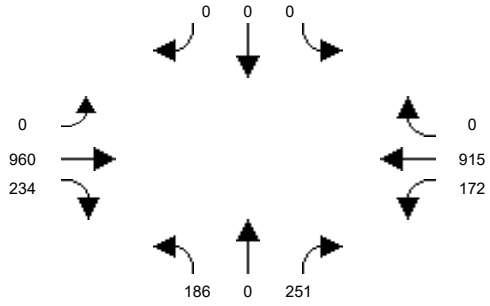
Intersection #24: Fairview St and MacArthur Blvd



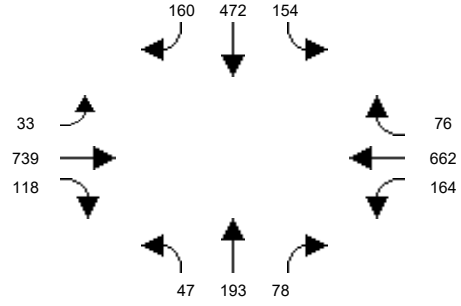
Intersection #25: Fairview Rd and Sunflower Ave



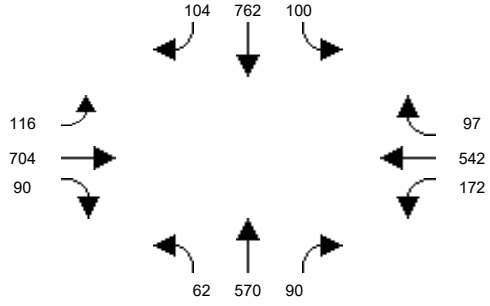
Intersection #26: Greenville St and Edinger Ave



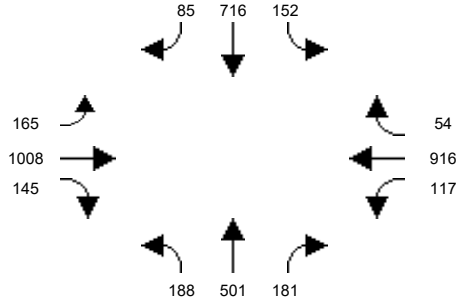
Intersection #27: Greenville St and Segerstrom Ave



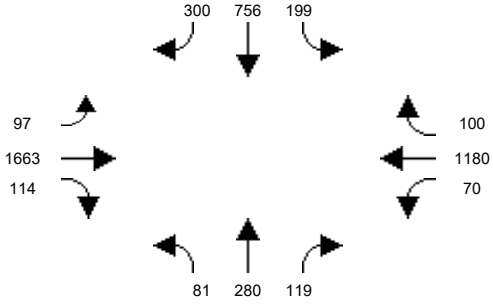
Intersection #28: Raitt St and McFadden Ave



Intersection #29: Raitt St and Edinger Ave



Intersection #30: Bear St and MacArthur Blvd



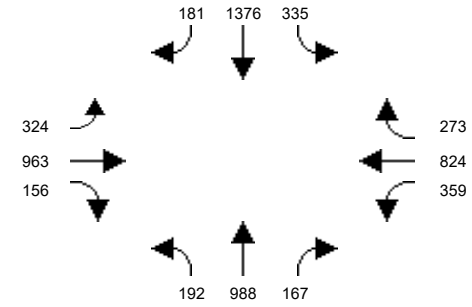
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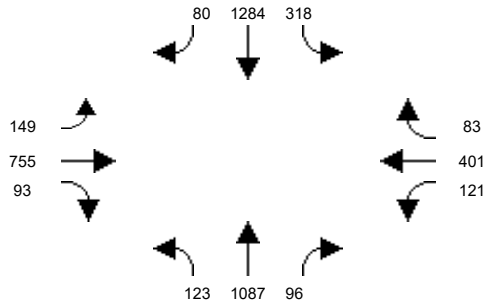
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

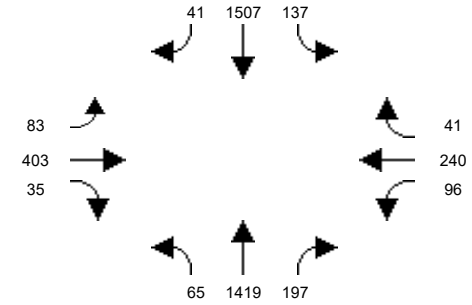
Intersection #31: Bristol St and 17th St



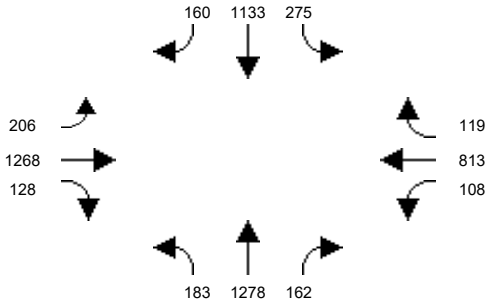
Intersection #32: Bristol St and Civic Center Dr



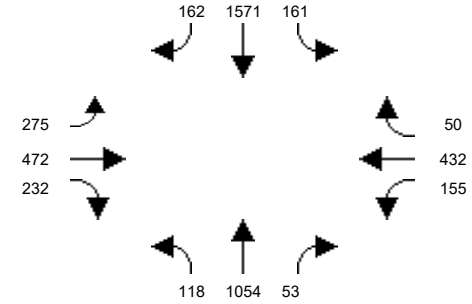
Intersection #33: Bristol St and Santa Ana Blvd



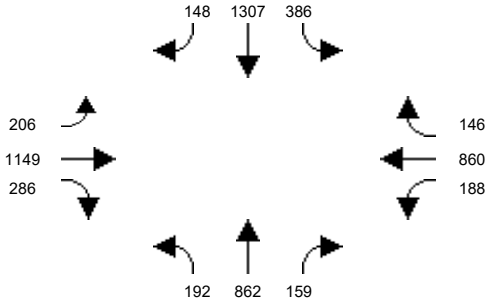
Intersection #34: Bristol St and 1st St



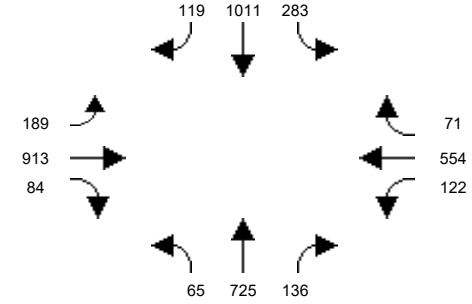
Intersection #35: Bristol St and McFadden Ave



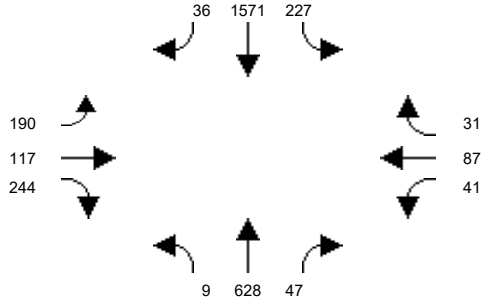
Intersection #36: Bristol St and Warner Ave



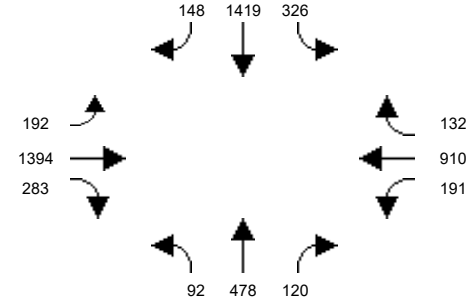
Intersection #37: Bristol St and Segerstrom Ave



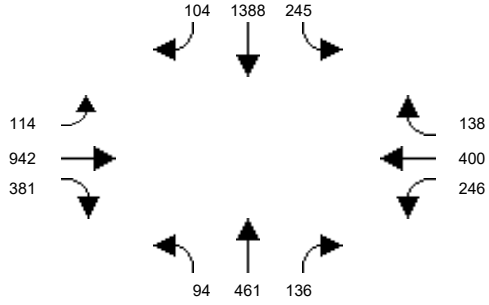
Intersection #38: Bristol St and Alton Ave



Intersection #39: Bristol St and MacArthur Blvd



Intersection #40: Bristol St and Sunflower Ave



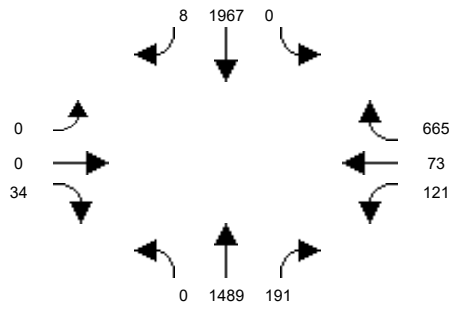
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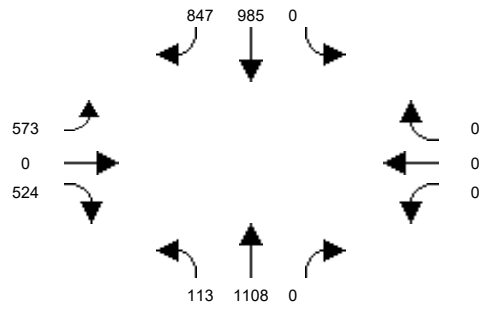
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

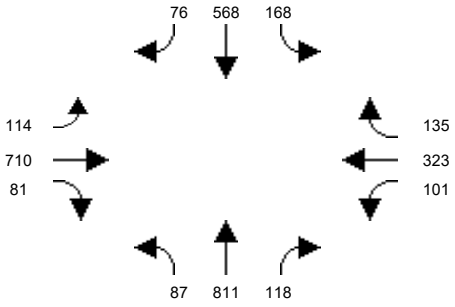
Intersection #41: Bristol St and I-405 WB Ramps



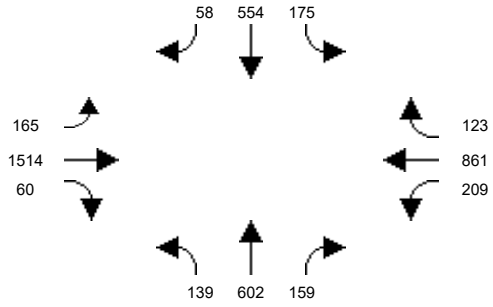
Intersection #42: Bristol St and I-405 EB Ramps



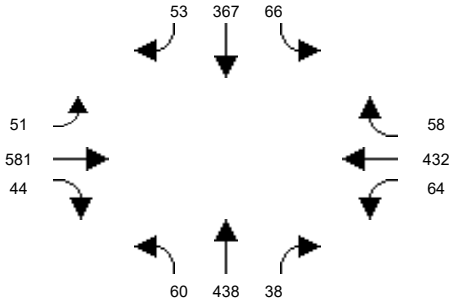
Intersection #43: Flower St and Santa Ana Blvd



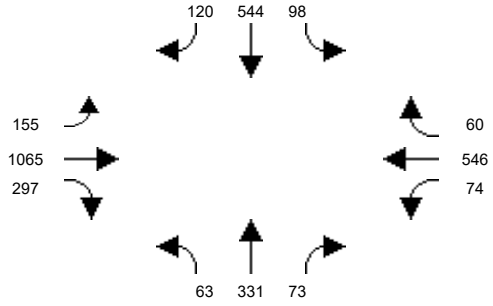
Intersection #44: Flower St and 1st St



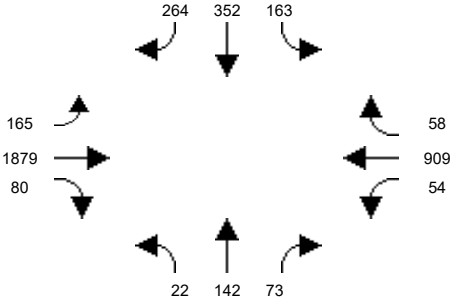
Intersection #45: Flower St and McFadden Ave



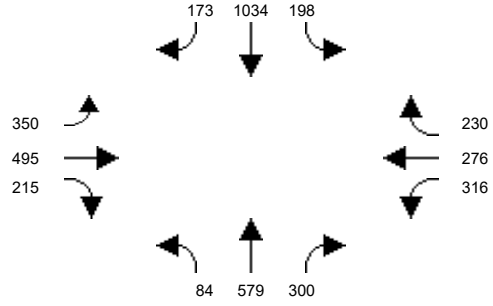
Intersection #46: Flower St and Segerstrom Ave



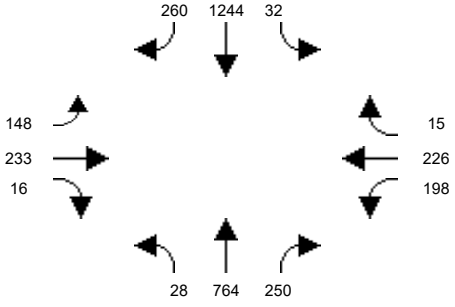
Intersection #47: Flower St and MacArthur Blvd



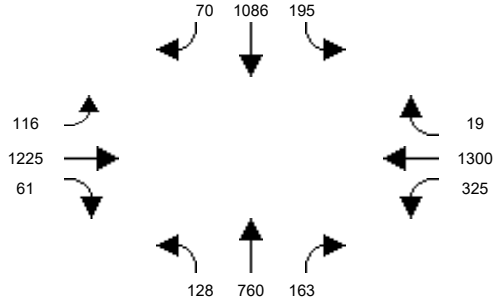
Intersection #48: Main St and La Veta Ave



Intersection #49: Main St and Mainplace Dr / Memory Ln



Intersection #50: Main St and 17th St



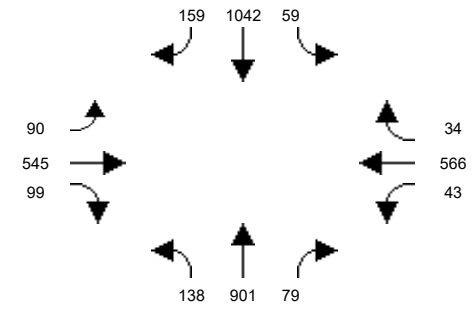
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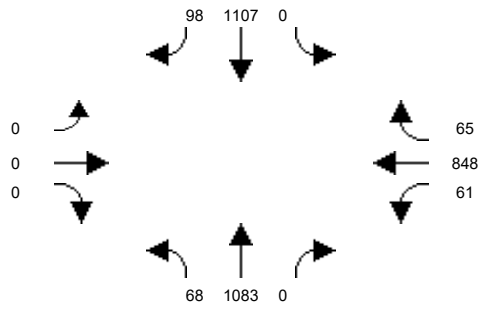
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

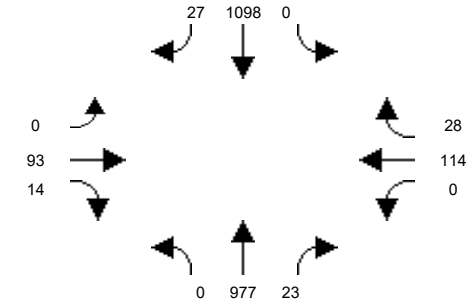
Intersection #51: Main St and Civic Center Dr



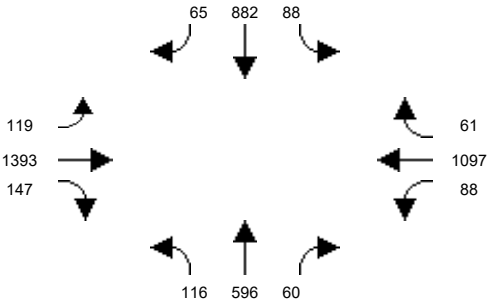
Intersection #52: Main St and Santa Ana Blvd



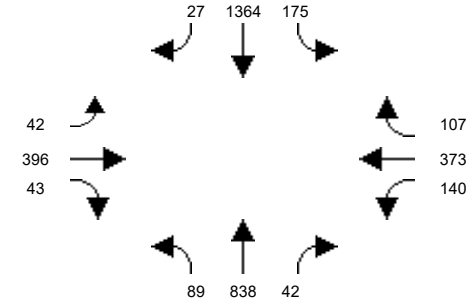
Intersection #53: Main St and 4th St



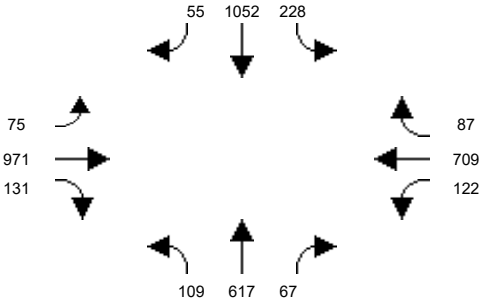
Intersection #54: Main St and 1st St



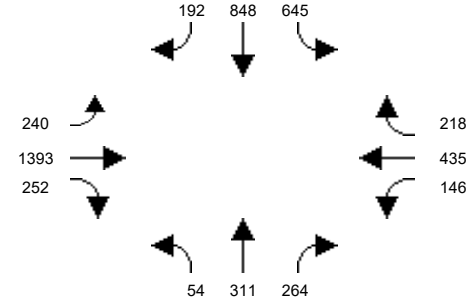
Intersection #55: Main St and McFadden Ave



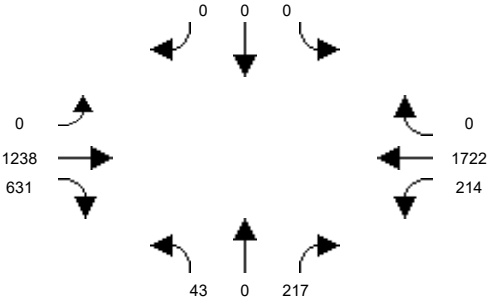
Intersection #56: Main St and Edinger Ave



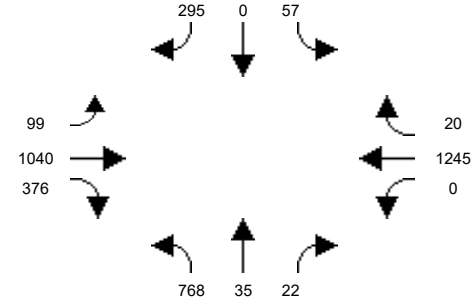
Intersection #57: Main St and MacArthur Blvd



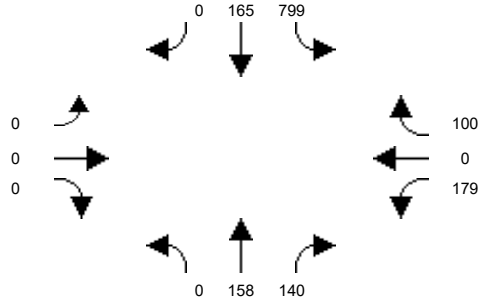
Intersection #58: Penn Wy and 17th St



Intersection #59: I-5 NB Off Ramps/17th Street



Intersection #60: Penn Wy and I-5 SB Ramps



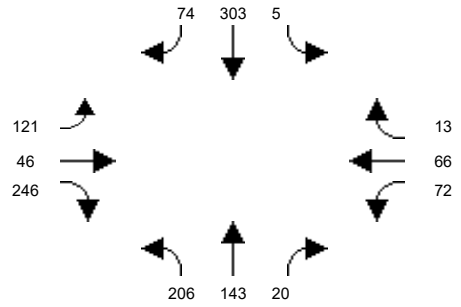
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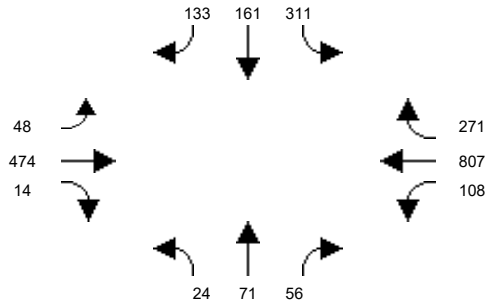
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

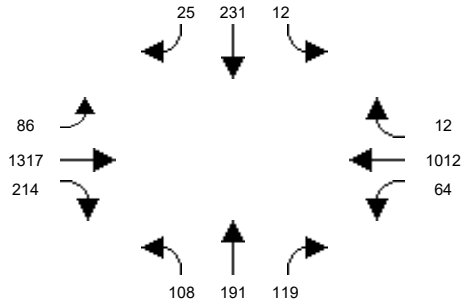
Intersection #61: Santiago St and Civic Center Dr



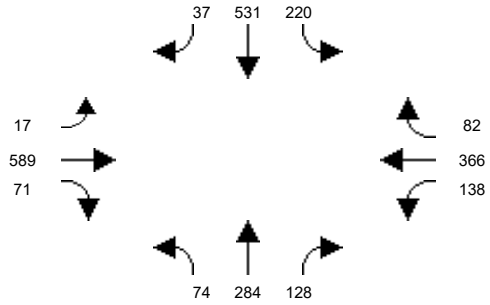
Intersection #62: Santiago St and Santa Ana Blvd



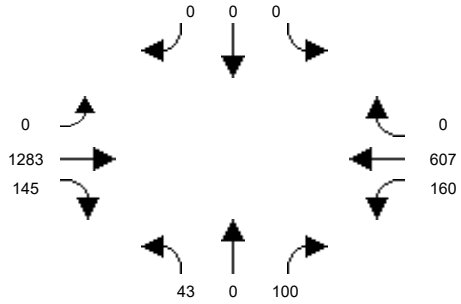
Intersection #64: Standard Ave and 1st St



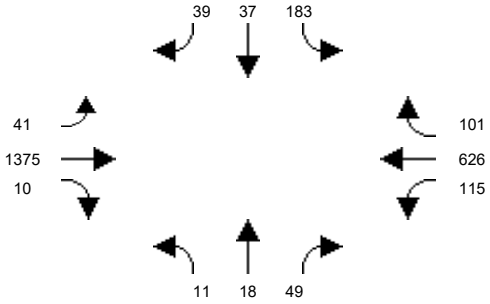
Intersection #65: Standard Ave and Mcfadden Ave



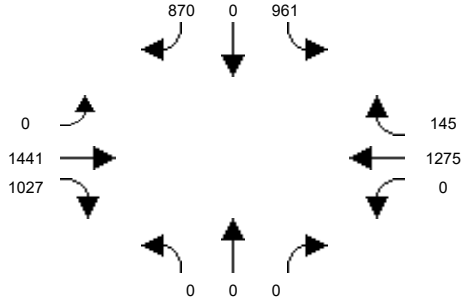
Intersection #66: Halladay St and Warner Ave



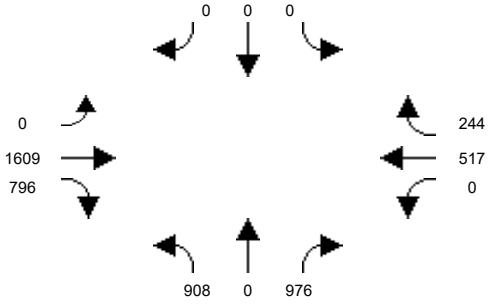
Intersection #67: Halladay St and Dyer Rd



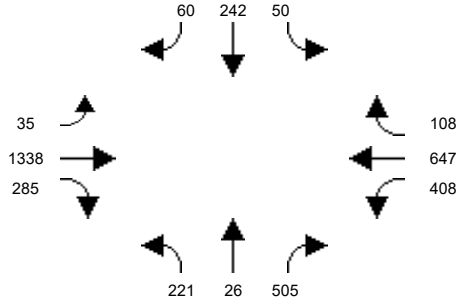
Intersection #68: SR-55 SB Ramps and MacArthur Blvd



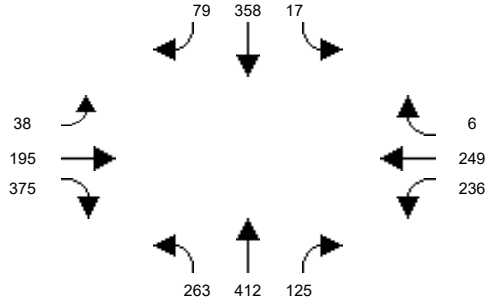
Intersection #69: SR-55 NB Ramps and MacArthur Blvd



Intersection #70: SR-55 SB Ramps and Dyer Rd



Intersection #71: Glassell St and La Veta Ave



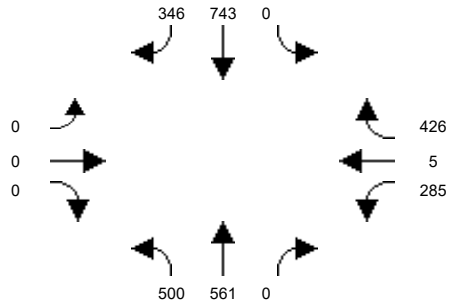
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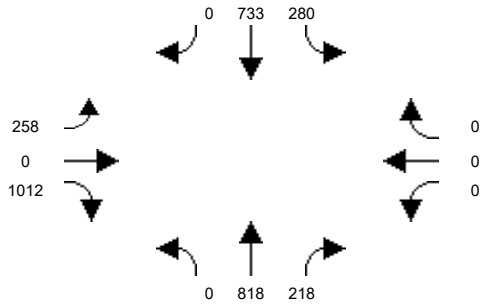
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

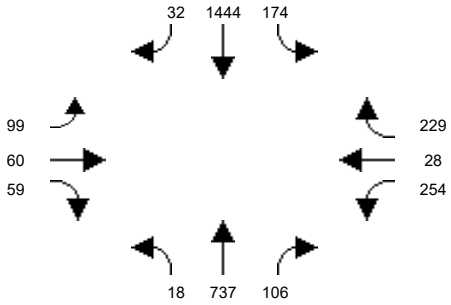
Intersection #72: Glassell St and SR-22 WB Ramps



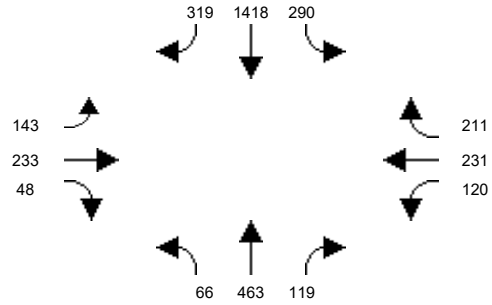
Intersection #73: Grand Ave / Glassell St and SR-22 EB Ramps



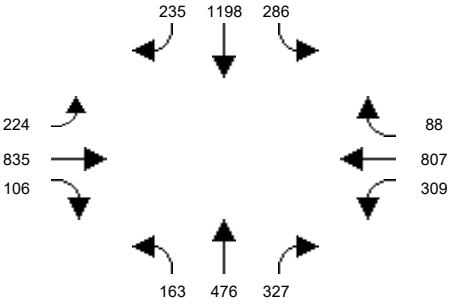
Intersection #74: Grand Ave and Fairhaven Ave



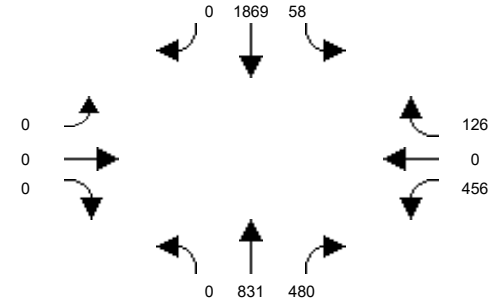
Intersection #75: Grand Ave and Santa Clara Ave



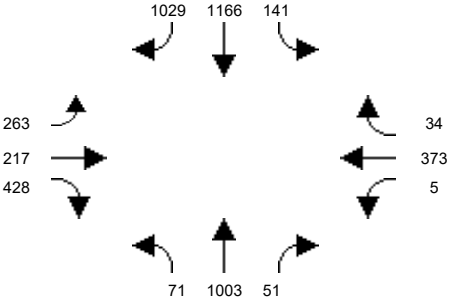
Intersection #76: Grand Ave and 17th St



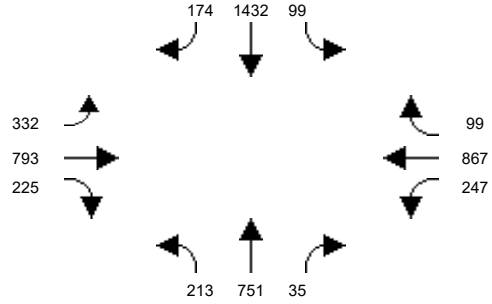
Intersection #77: Grand Ave and I-5 NB Ramps



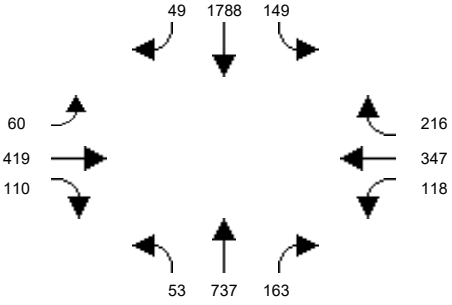
Intersection #78: Grand Ave and Santa Ana Blvd



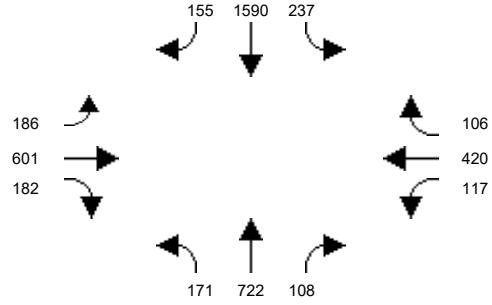
Intersection #79: Grand Ave and 1st St



Intersection #80: Grand Ave and Chestnut Ave



Intersection #81: Grand Ave and McFadden Ave



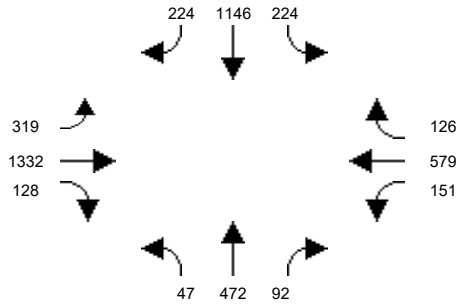
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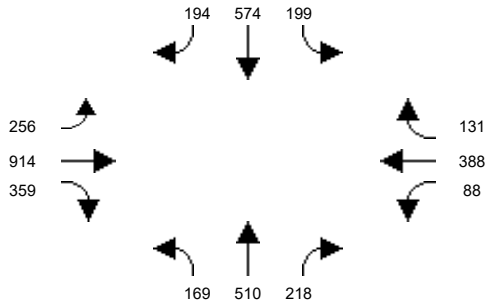
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

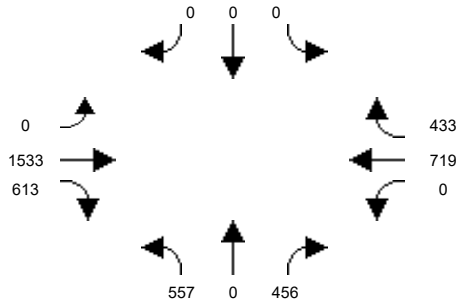
Intersection #82: Grand Ave and Edinger Ave



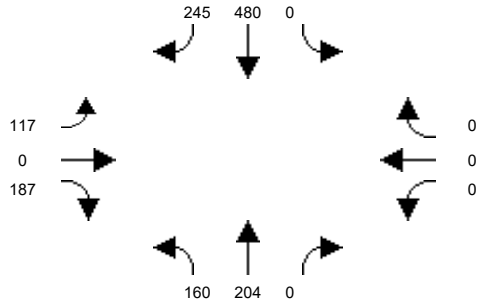
Intersection #83: Grand Ave and Warner Ave



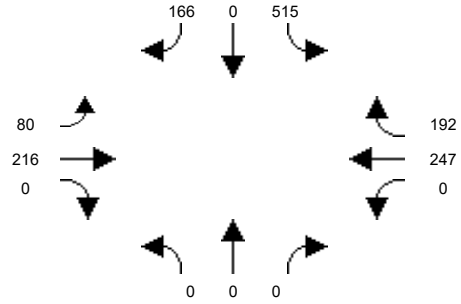
Intersection #84: SR-55 NB Ramps and Dyer Rd



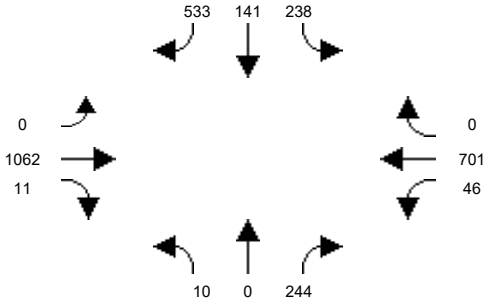
Intersection #85: Cambridge St and La Veta Ave



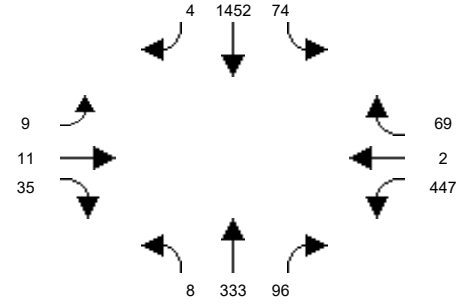
Intersection #86: Cambridge St and Fairhaven Ave



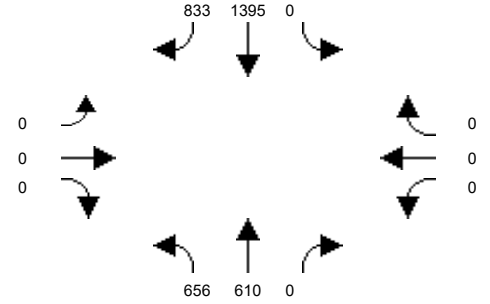
Intersection #87: Mabury St and 1st Street



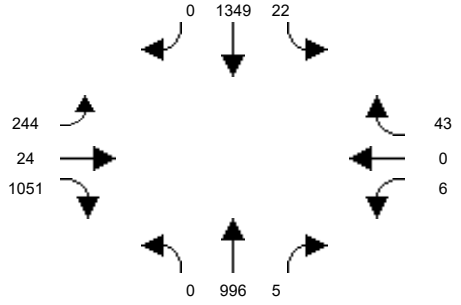
Intersection #88: Tustin St and La Veta Ave



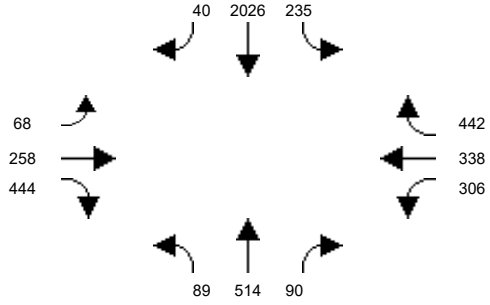
Intersection #89: Tustin St and SR-22 WB On-Ramp



Intersection #90: Tustin St and SR-22 EB Off-Ramp / Seba Ave



Intersection #91: Tustin Ave and Fairhaven Ave



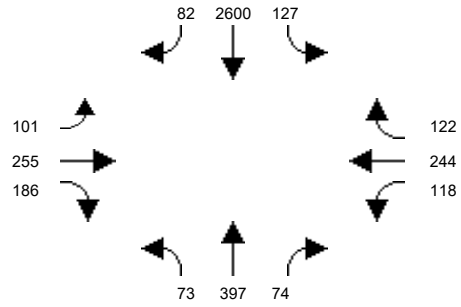
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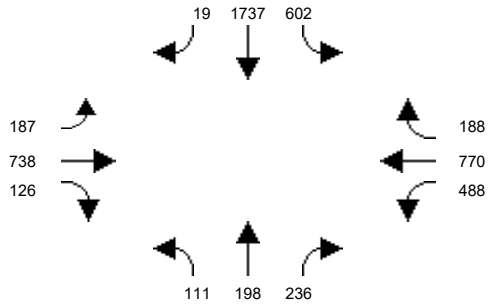
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

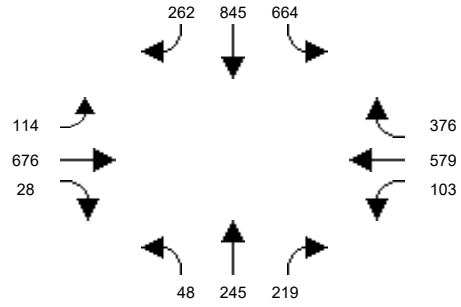
Intersection #92: Tustin Ave and Santa Clara Ave



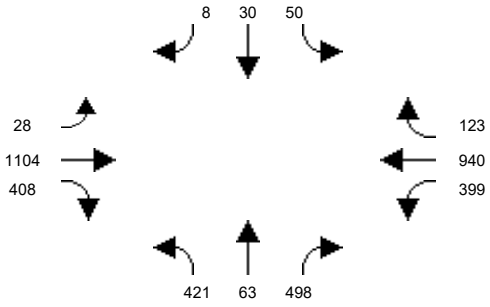
Intersection #93: Tustin Ave and 17th St



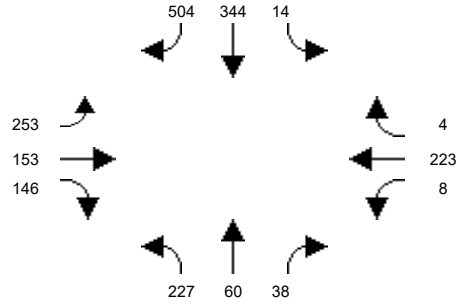
Intersection #94: Tustin Ave and 4th St



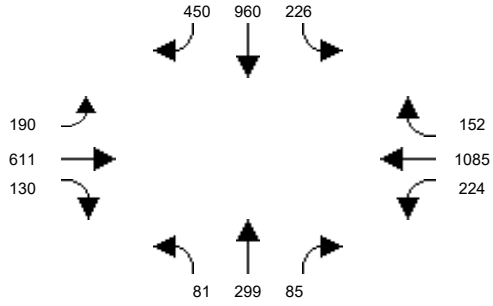
Intersection #95: SR-55 SB Ramps / Auto Mall Dr and Edinger Ave



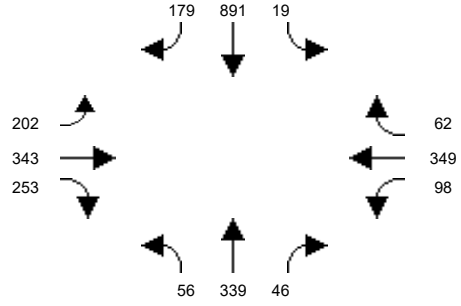
Intersection #96: SR-55 NB Ramps / Del Amo Ave and Newport



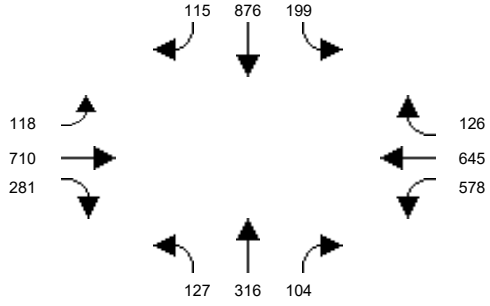
Intersection #97: Red Hill Ave and Edinger Ave



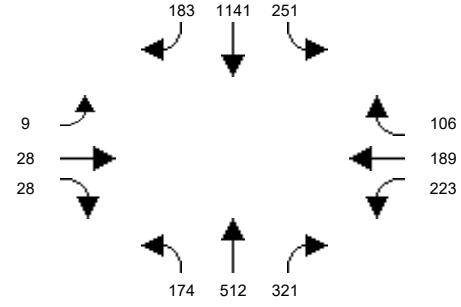
Intersection #98: Red Hill Ave and Warner Ave



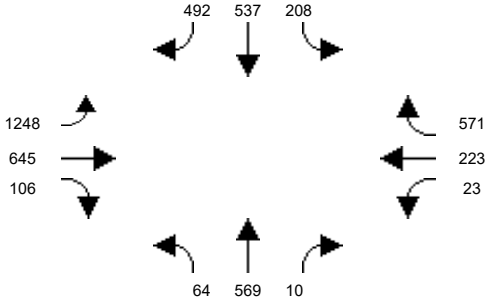
Intersection #99: Red Hill Ave and Dyer Rd / barranca Pkwy



Intersection #100: Red Hill Ave and Alton Pkwy



Intersection #101: Red Hill Ave and MacArthur Blvd



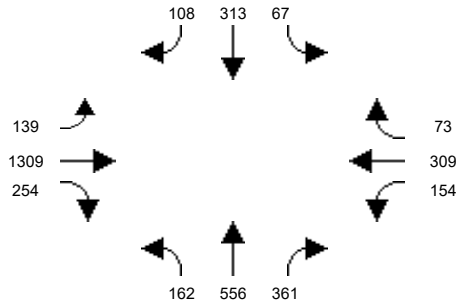
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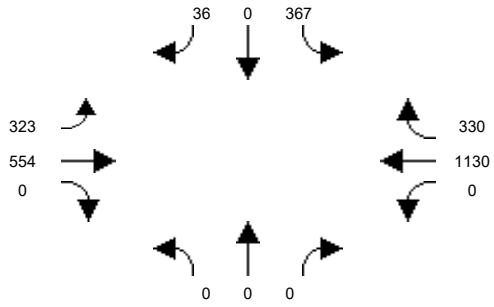
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

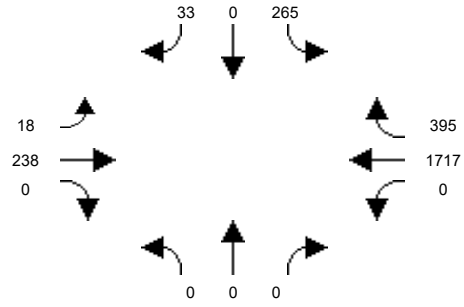
Intersection #102: Red Hill Ave and Main St



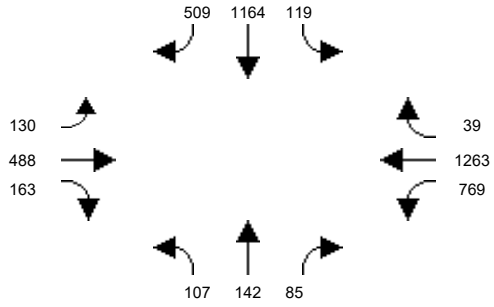
Intersection #103: I-5 SB Ramps and Santa Ana Blvd



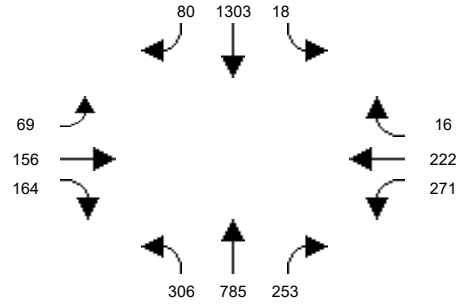
Intersection #104: Tustin Ranch Rd and Warner Ave



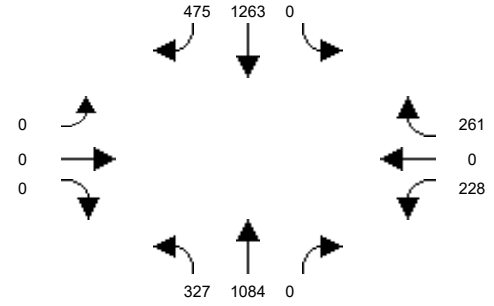
Intersection #105: Von Karman Ave and Barranca Pkwy



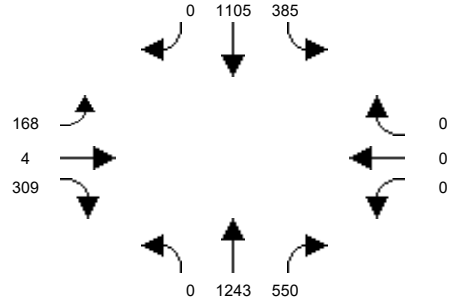
Intersection #106: Red Hill Avenue and El Camino Real



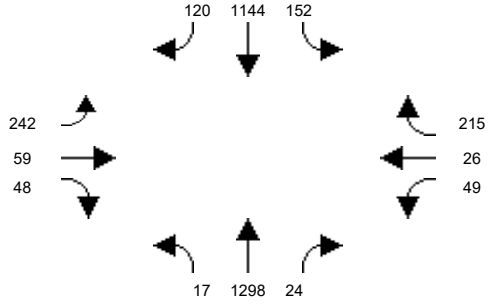
Intersection #107: Red Hill Avenue and I-5 NB Ramps



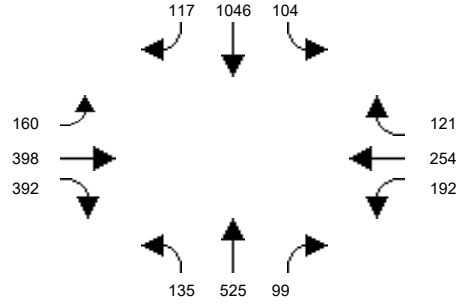
Intersection #108: Red Hill Avenue and I-5 SB Ramps



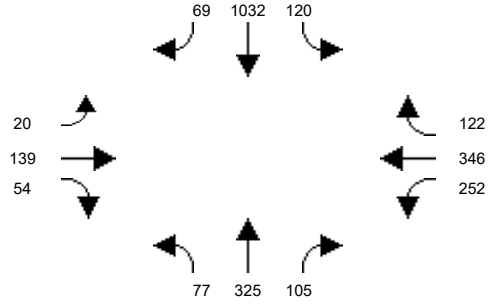
Intersection #109: Red Hill Avenue and Nisson Road



Intersection #110: Red Hill Avenue and Walnut Avenue



Intersection #111: Red Hill Avenue and Valencia Avenue



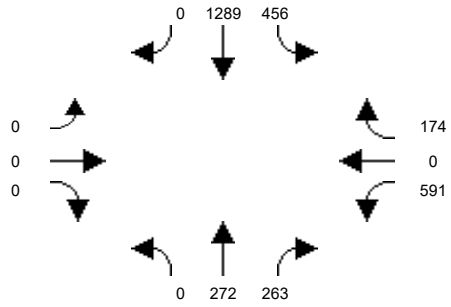
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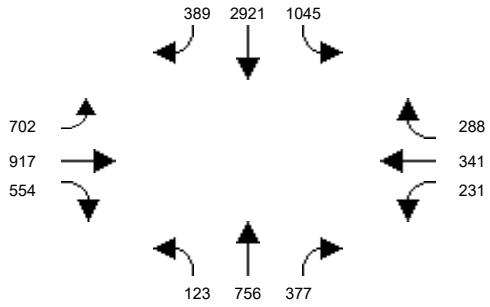
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP AM Peak Hour

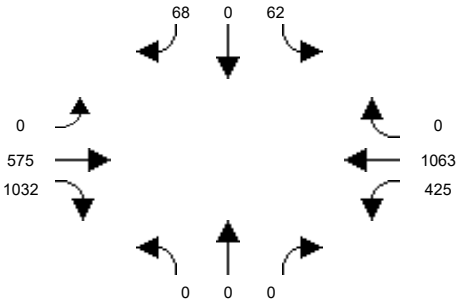
Intersection #112: Tustin Ranch Road and Warner Avenue North



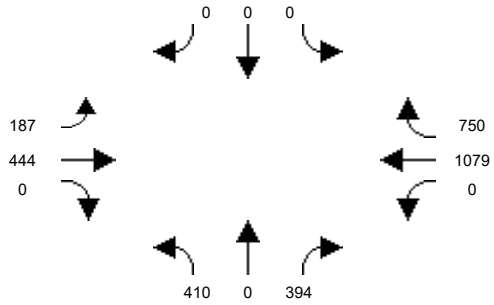
Intersection #113: Tustin Ranch Road and Walnut Avenue



Intersection #114: SR-55 SB Ramps and Irvine Boulevard



Intersection #115: SR-55 NB Ramps and Irvine Boulevard



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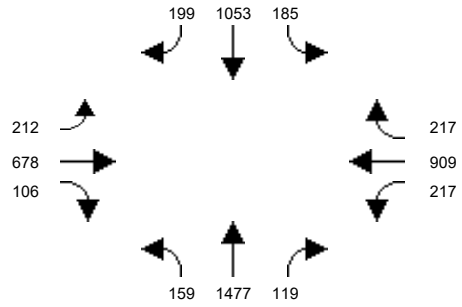
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APPENDIX B.2

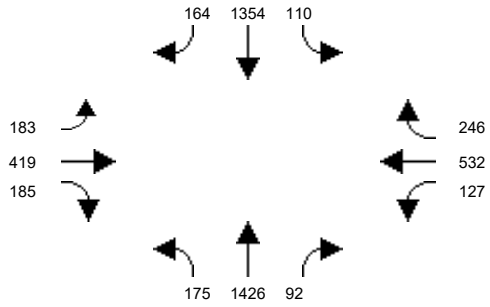
INTERSECTION VOLUMES –
2020 NP (PM PEAK HOUR)

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

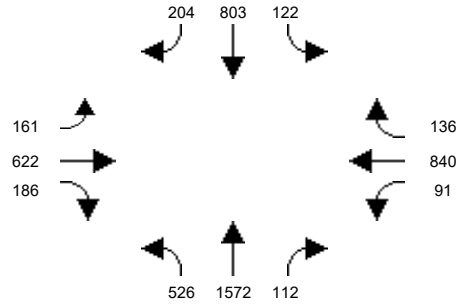
Intersection #1: Euclid St and 1st St



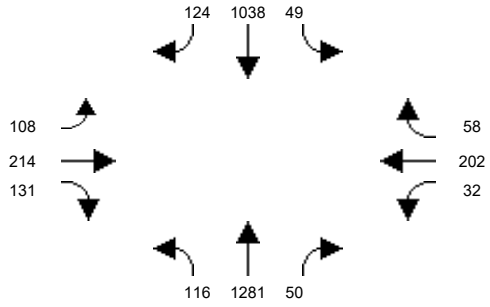
Intersection #2: Euclid St and McFadden Ave



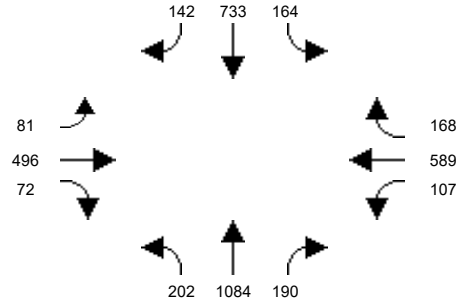
Intersection #3: Euclid St and Edinger Ave



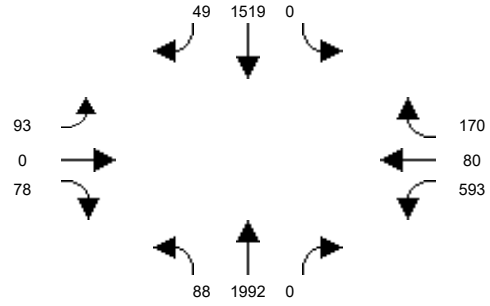
Intersection #4: Newhope St and Hazard Ave



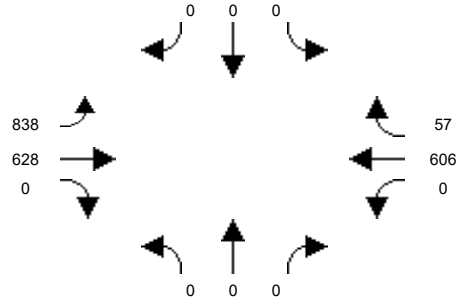
Intersection #5: Newhope St and McFadden Ave



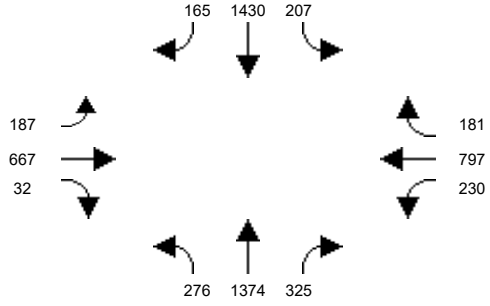
Intersection #6: Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr



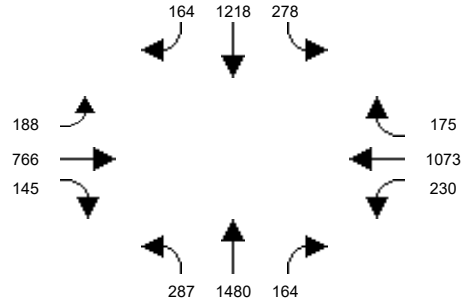
Intersection #7: Trask Avenue and SR-22 EB On-Ramp



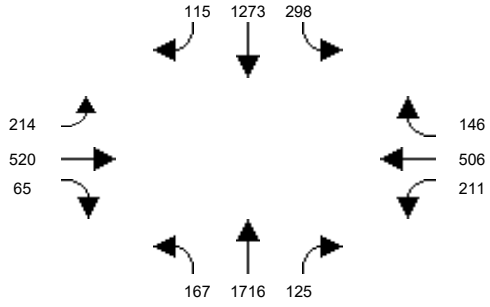
Intersection #8: Harbor Blvd and Westminster Ave



Intersection #9: Harbor Blvd and 1st St



Intersection #10: Harbor Blvd and McFadden Ave



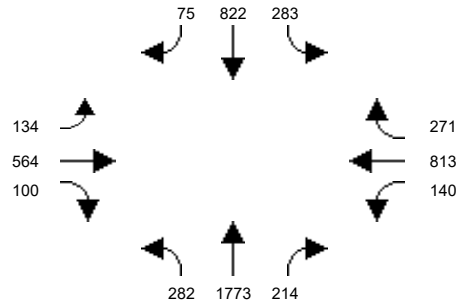
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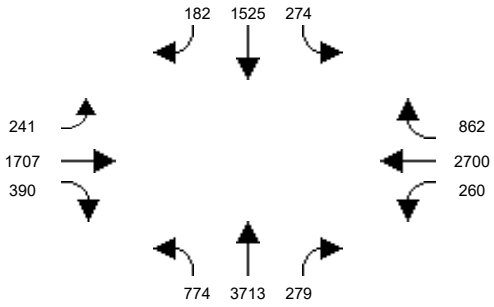
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

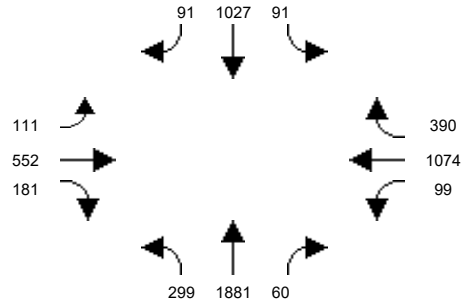
Intersection #11: Harbor Blvd and Edinger Ave



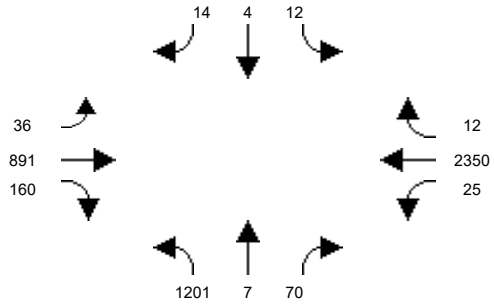
Intersection #12: Harbor Blvd and Warner Ave



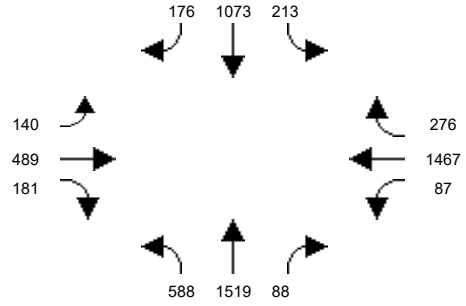
Intersection #13: Harbor Blvd and Segerstrom Ave



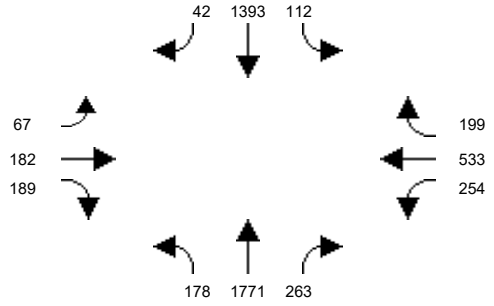
Intersection #14: MacArthur Blvd and Hyland Ave



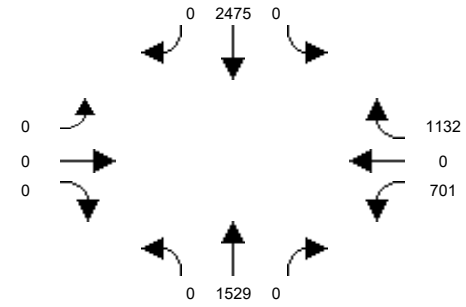
Intersection #15: MacArthur Blvd and Harbor Blvd



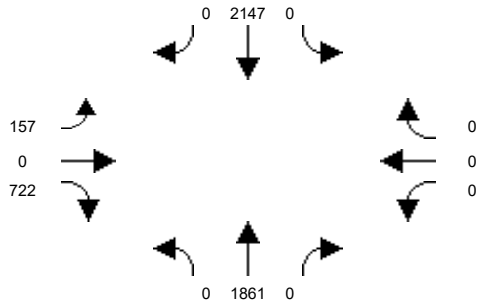
Intersection #16: Harbor Blvd and Sunflower Ave



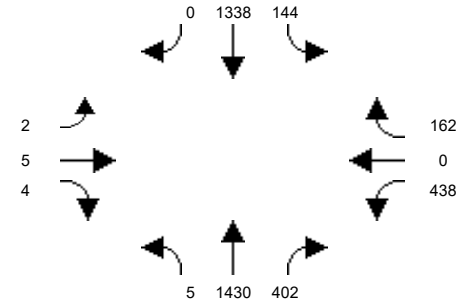
Intersection #17: Harbor Blvd and I-405 WB Off-Ramp



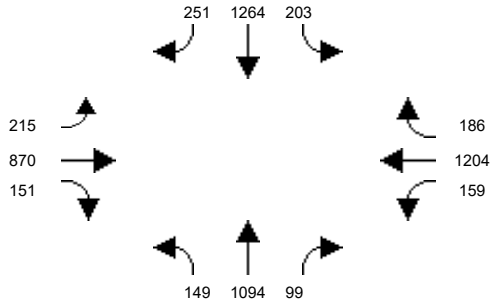
Intersection #18: Harbor Blvd and I-405 EB Off-Ramp



Intersection #19: Fairview St and Civic Center Dr



Intersection #20: Fairview St and 1st St



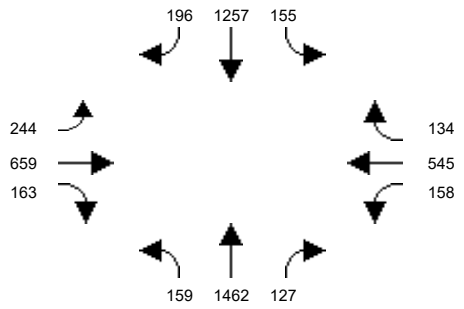
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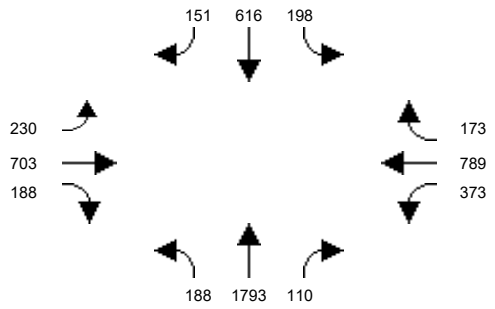
Santa Ana Circulation Element

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Entered Volume (Base Alternative)
2020 NP PM Peak Hour

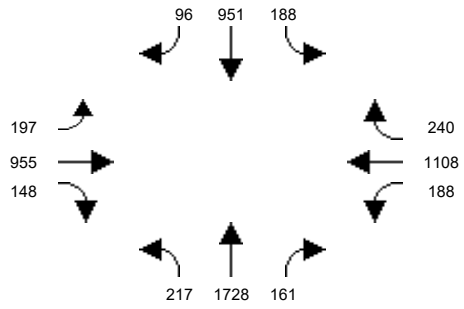
Intersection #21: Fairview St and McFadden Ave



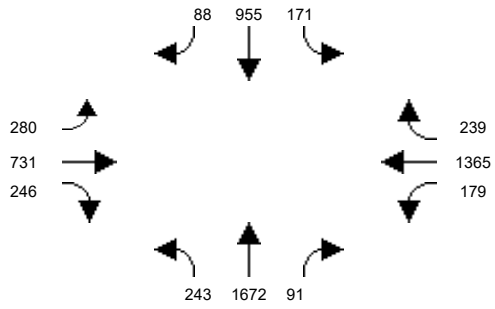
Intersection #22: Fairview St and Edinger Ave



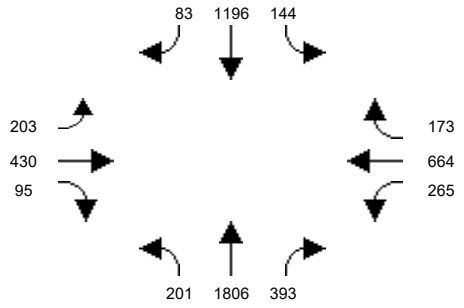
Intersection #23: Fairview St and Warner Ave



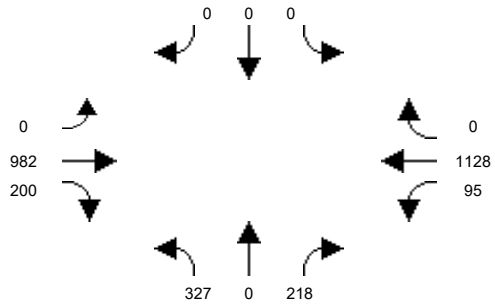
Intersection #24: Fairview St and MacArthur Blvd



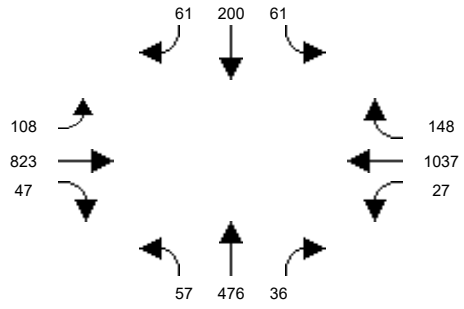
Intersection #25: Fairview Rd and Sunflower Ave



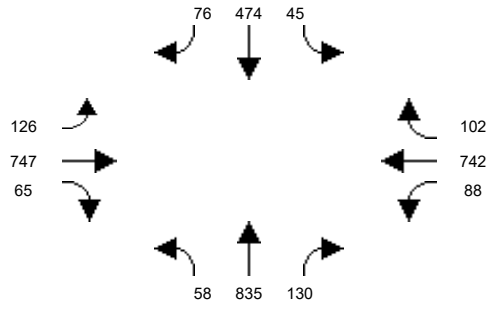
Intersection #26: Greenville St and Edinger Ave



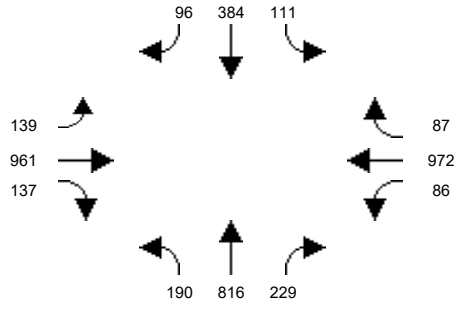
Intersection #27: Greenville St and Segerstrom Ave



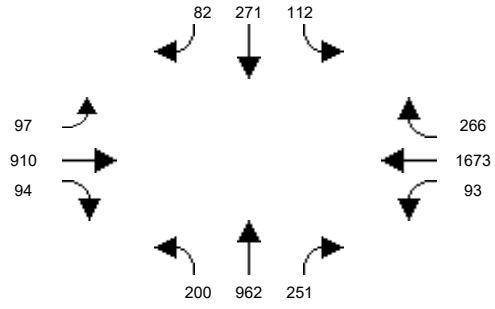
Intersection #28: Raitt St and McFadden Ave



Intersection #29: Raitt St and Edinger Ave



Intersection #30: Bear St and MacArthur Blvd



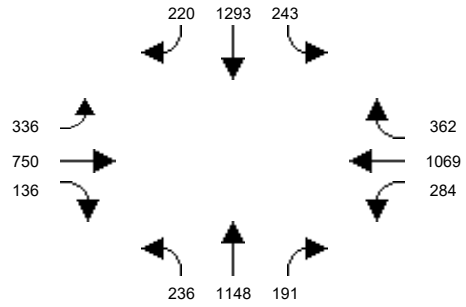
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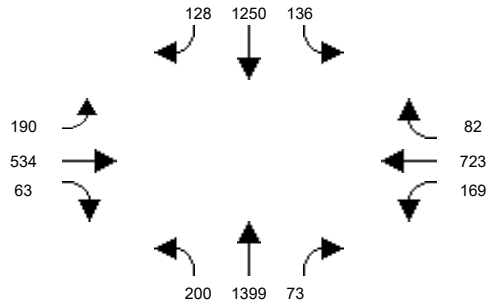
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

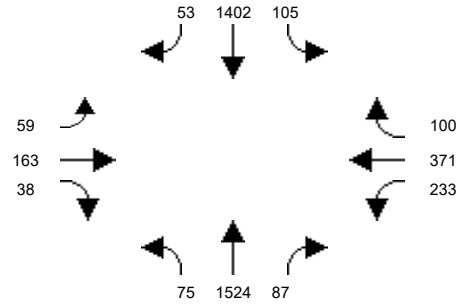
Intersection #31: Bristol St and 17th St



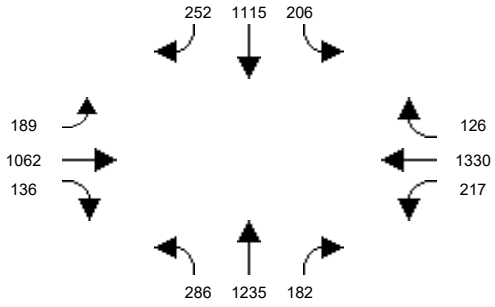
Intersection #32: Bristol St and Civic Center Dr



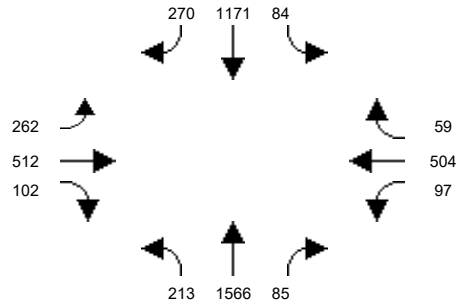
Intersection #33: Bristol St and Santa Ana Blvd



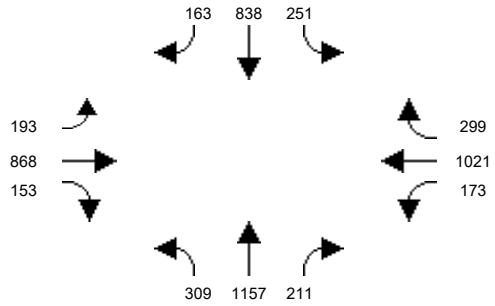
Intersection #34: Bristol St and 1st St



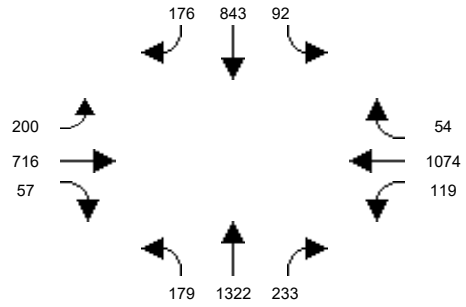
Intersection #35: Bristol St and McFadden Ave



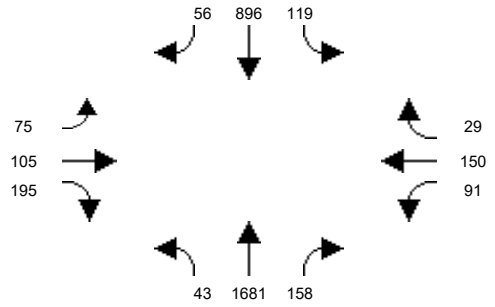
Intersection #36: Bristol St and Warner Ave



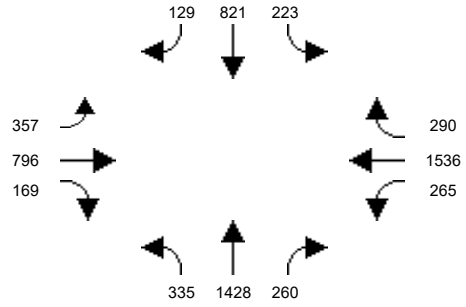
Intersection #37: Bristol St and Segerstrom Ave



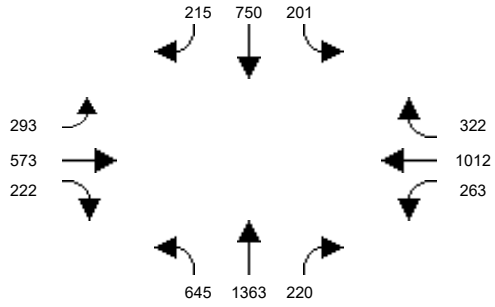
Intersection #38: Bristol St and Alton Ave



Intersection #39: Bristol St and MacArthur Blvd



Intersection #40: Bristol St and Sunflower Ave



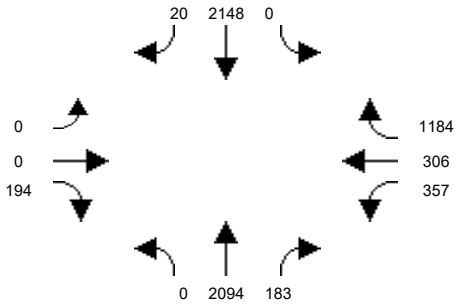
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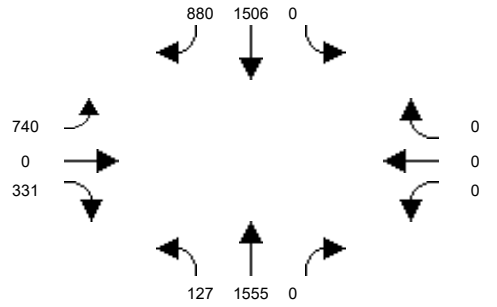
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

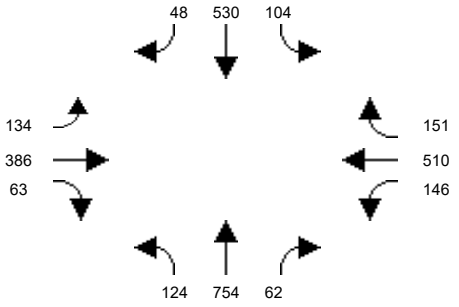
Intersection #41: Bristol St and I-405 WB Ramps



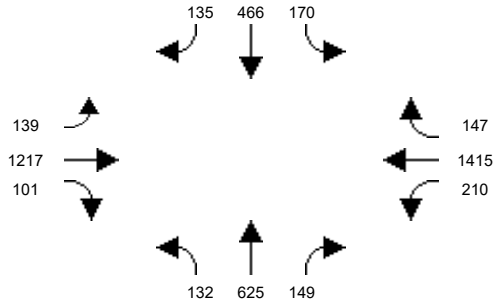
Intersection #42: Bristol St and I-405 EB Ramps



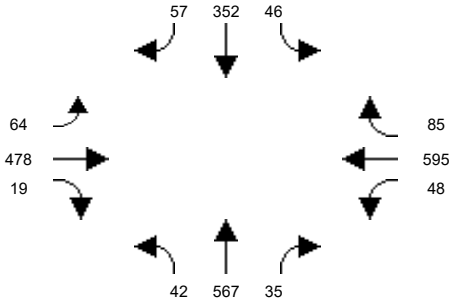
Intersection #43: Flower St and Santa Ana Blvd



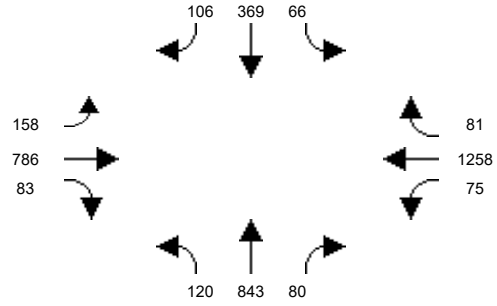
Intersection #44: Flower St and 1st St



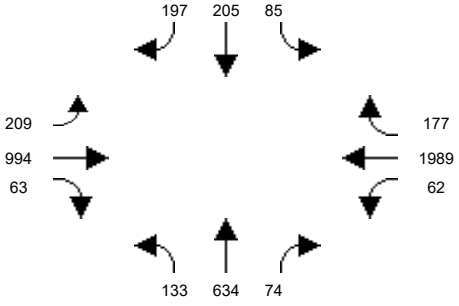
Intersection #45: Flower St and McFadden Ave



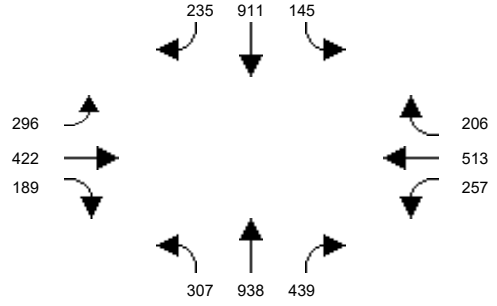
Intersection #46: Flower St and Segerstrom Ave



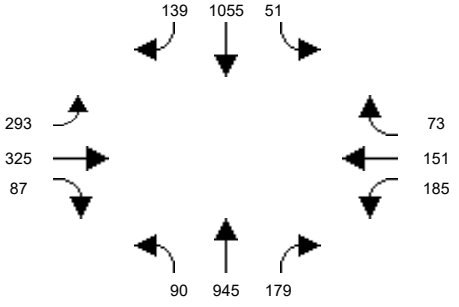
Intersection #47: Flower St and MacArthur Blvd



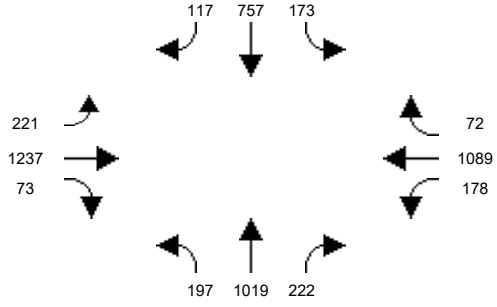
Intersection #48: Main St and La Veta Ave



Intersection #49: Main St and Mainplace Dr / Memory Ln



Intersection #50: Main St and 17th St



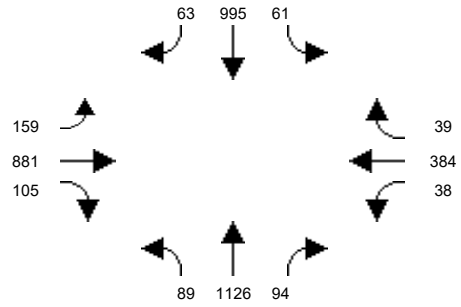
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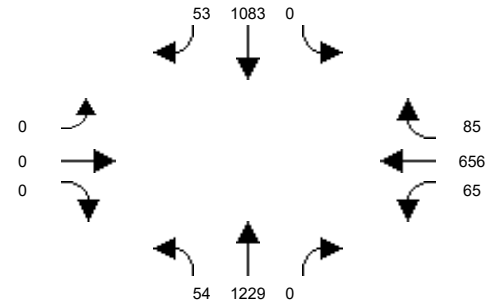
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

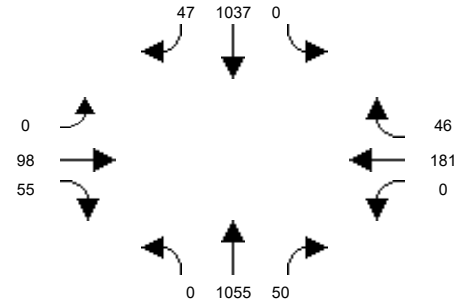
Intersection #51: Main St and Civic Center Dr



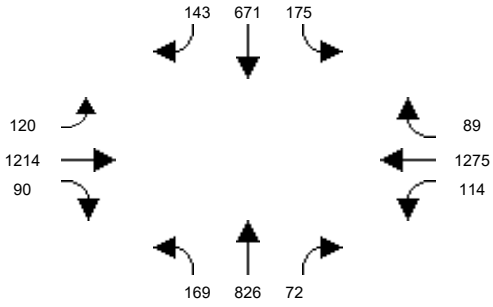
Intersection #52: Main St and Santa Ana Blvd



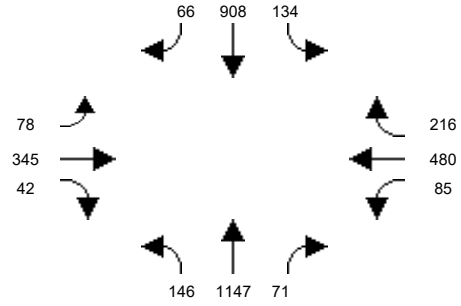
Intersection #53: Main St and 4th St



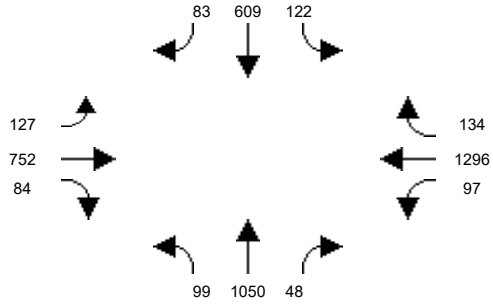
Intersection #54: Main St and 1st St



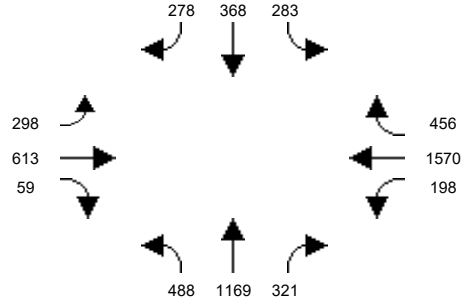
Intersection #55: Main St and McFadden Ave



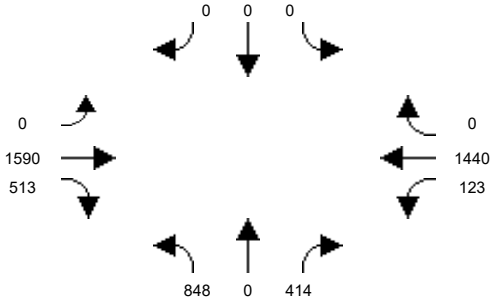
Intersection #56: Main St and Edinger Ave



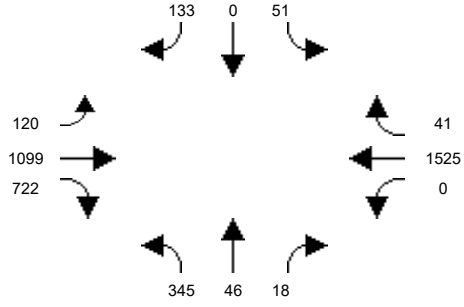
Intersection #57: Main St and MacArthur Blvd



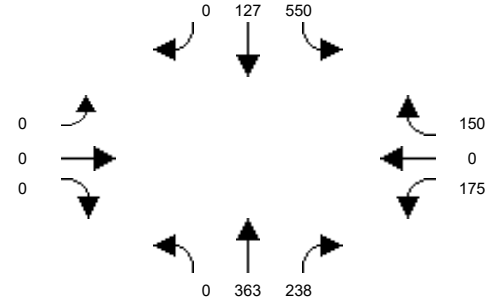
Intersection #58: Penn Wy and 17th St



Intersection #59: I-5 NB Off Ramps/17th Street



Intersection #60: Penn Wy and I-5 SB Ramps



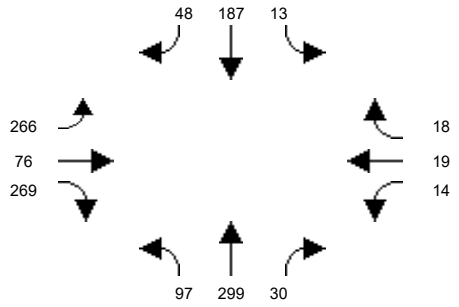
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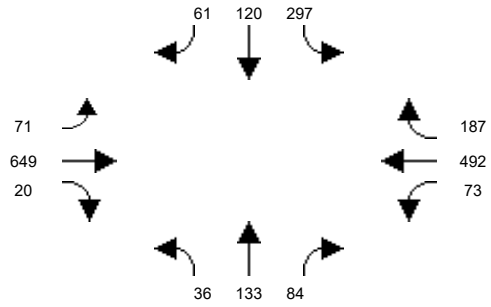
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

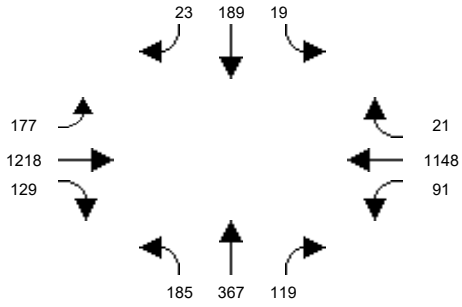
Intersection #61: Santiago St and Civic Center Dr



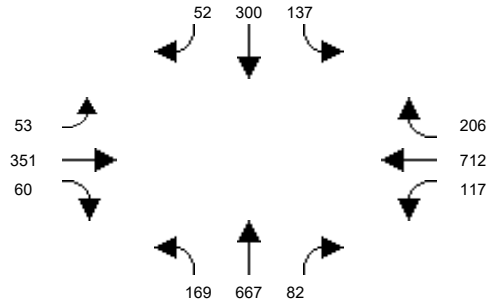
Intersection #62: Santiago St and Santa Ana Blvd



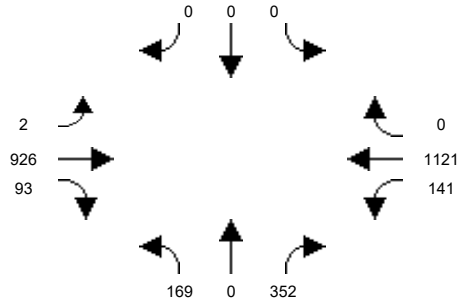
Intersection #64: Standard Ave and 1st St



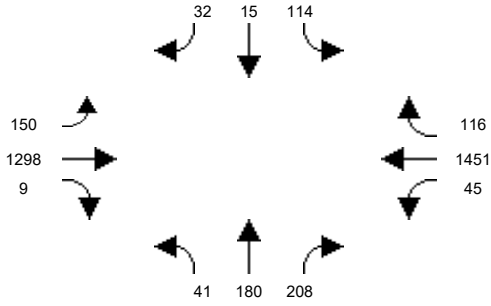
Intersection #65: Standard Ave and Mcfadden Ave



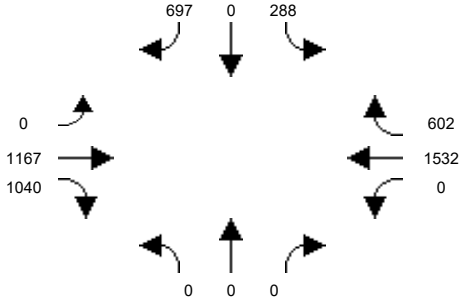
Intersection #66: Halladay St and Warner Ave



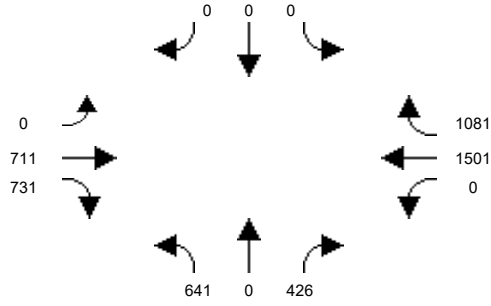
Intersection #67: Halladay St and Dyer Rd



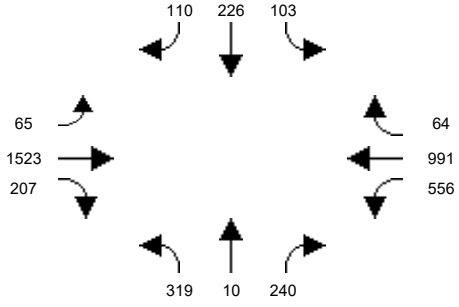
Intersection #68: SR-55 SB Ramps and MacArthur Blvd



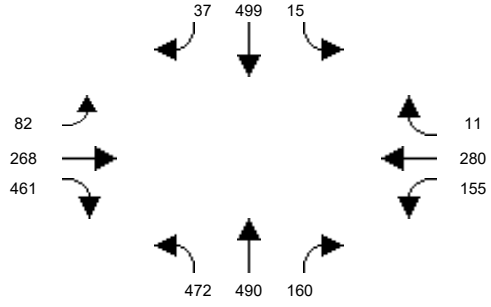
Intersection #69: SR-55 NB Ramps and MacArthur Blvd



Intersection #70: SR-55 SB Ramps and Dyer Rd



Intersection #71: Glassell St and La Veta Ave



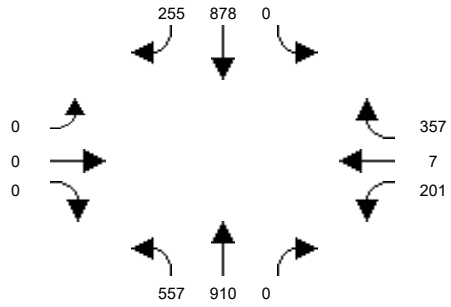
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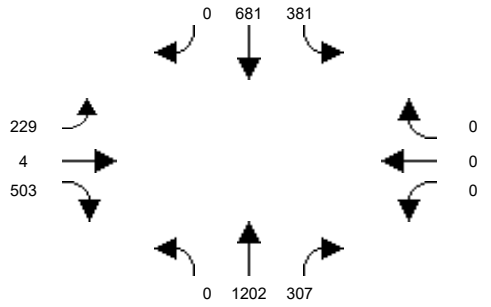
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

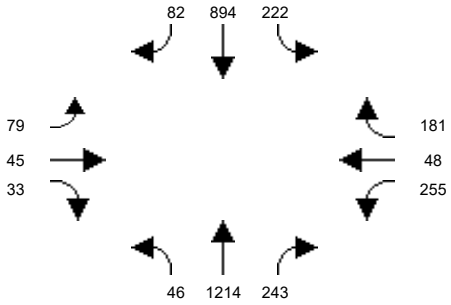
Intersection #72: Glassell St and SR-22 WB Ramps



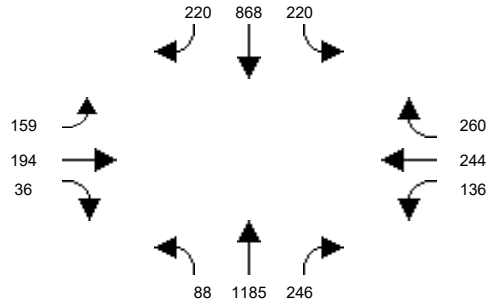
Intersection #73: Grand Ave / Glassell St and SR-22 EB Ramps



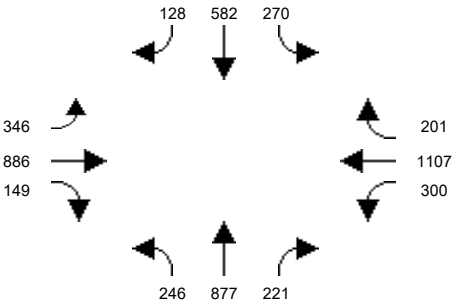
Intersection #74: Grand Ave and Fairhaven Ave



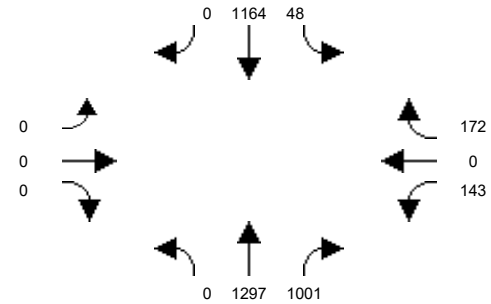
Intersection #75: Grand Ave and Santa Clara Ave



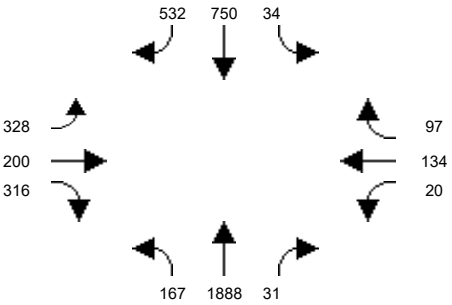
Intersection #76: Grand Ave and 17th St



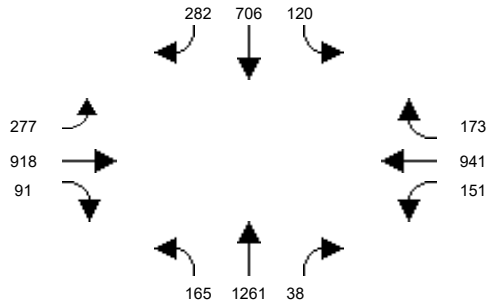
Intersection #77: Grand Ave and I-5 NB Ramps



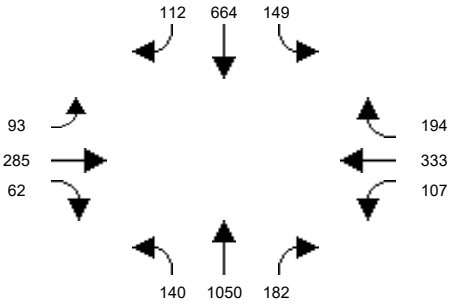
Intersection #78: Grand Ave and Santa Ana Blvd



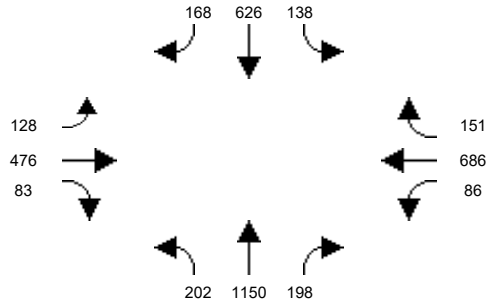
Intersection #79: Grand Ave and 1st St



Intersection #80: Grand Ave and Chestnut Ave



Intersection #81: Grand Ave and McFadden Ave



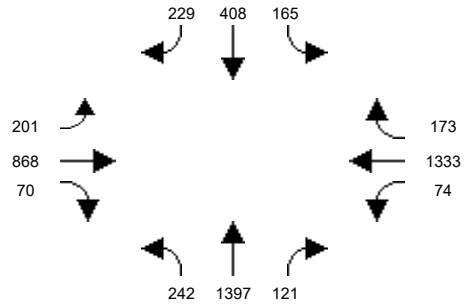
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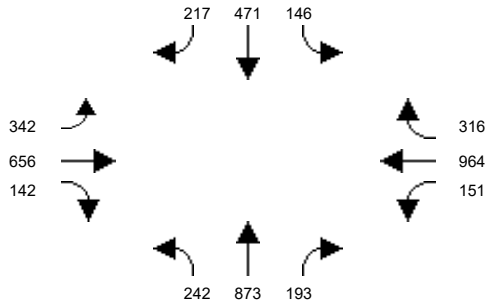
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

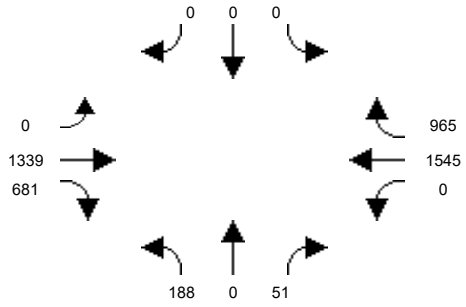
Intersection #82: Grand Ave and Edinger Ave



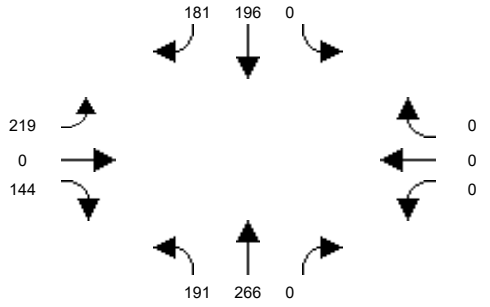
Intersection #83: Grand Ave and Warner Ave



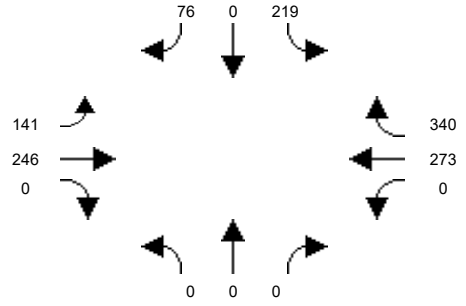
Intersection #84: SR-55 NB Ramps and Dyer Rd



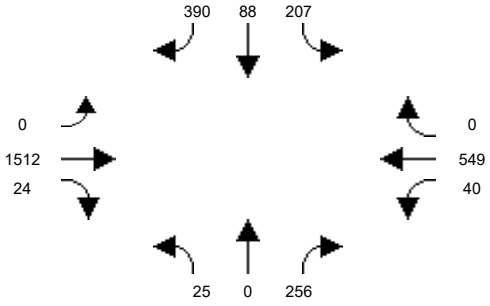
Intersection #85: Cambridge St and La Veta Ave



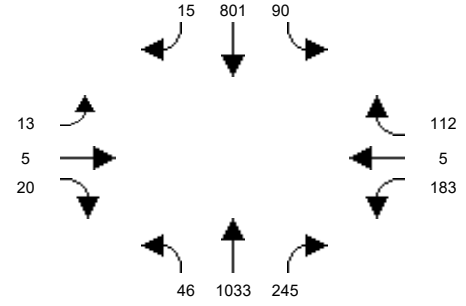
Intersection #86: Cambridge St and Fairhaven Ave



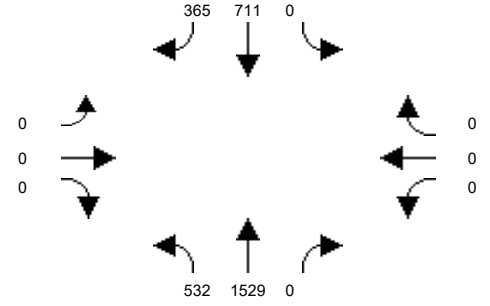
Intersection #87: Mabury St and 1st Street



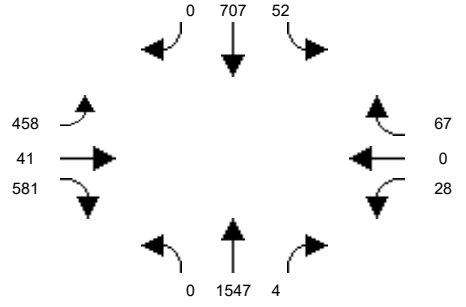
Intersection #88: Tustin St and La Veta Ave



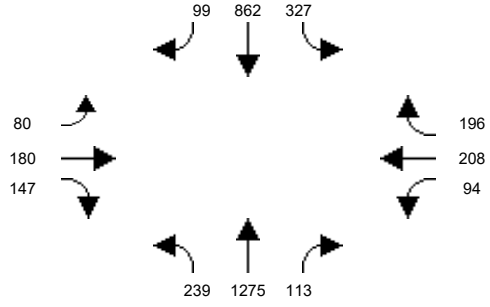
Intersection #89: Tustin St and SR-22 WB On-Ramp



Intersection #90: Tustin St and SR-22 EB Off-Ramp / Seba Ave



Intersection #91: Tustin Ave and Fairhaven Ave



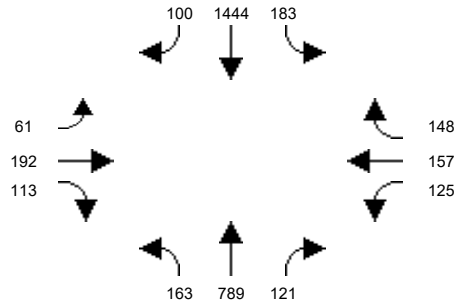
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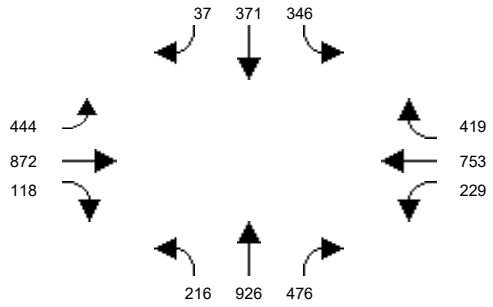
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

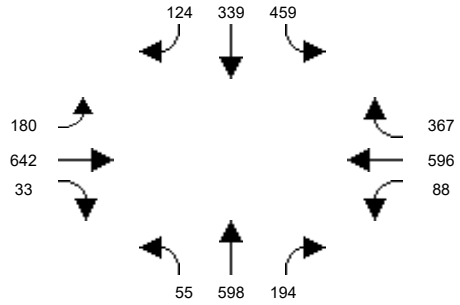
Intersection #92: Tustin Ave and Santa Clara Ave



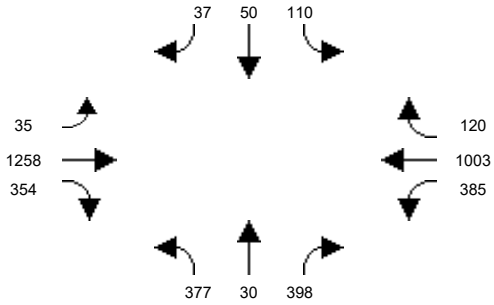
Intersection #93: Tustin Ave and 17th St



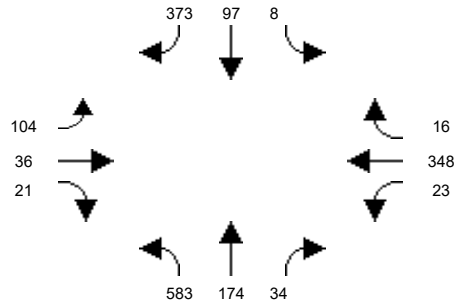
Intersection #94: Tustin Ave and 4th St



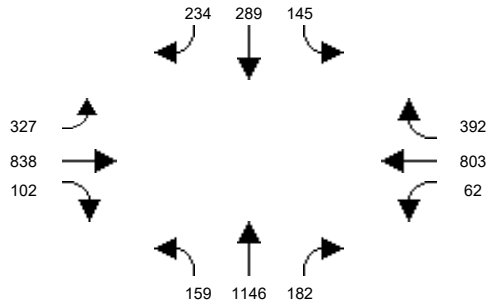
Intersection #95: SR-55 SB Ramps / Auto Mall Dr and Edinger Ave



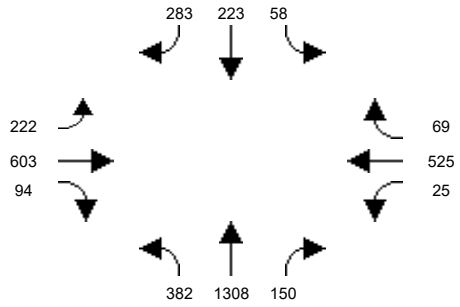
Intersection #96: SR-55 NB Ramps / Del Amo Ave and Newport



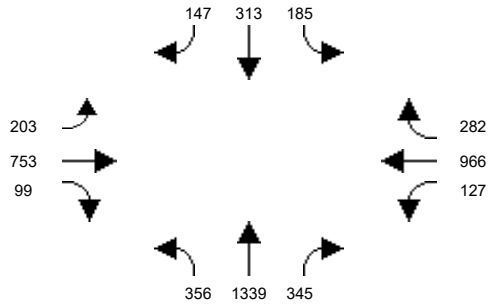
Intersection #97: Red Hill Ave and Edinger Ave



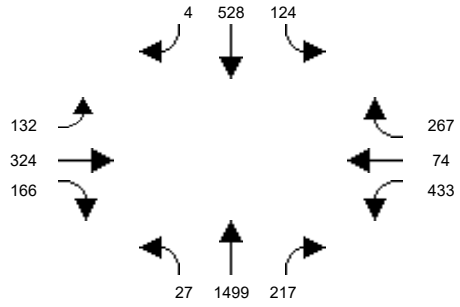
Intersection #98: Red Hill Ave and Warner Ave



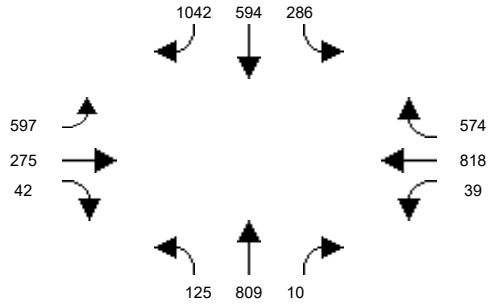
Intersection #99: Red Hill Ave and Dyer Rd / barranca Pkwy



Intersection #100: Red Hill Ave and Alton Pkwy



Intersection #101: Red Hill Ave and MacArthur Blvd



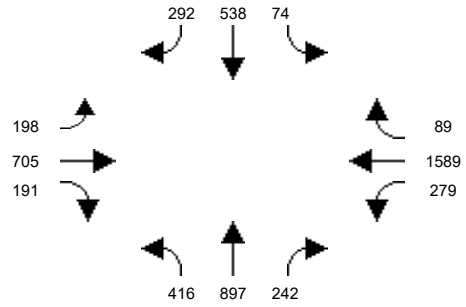
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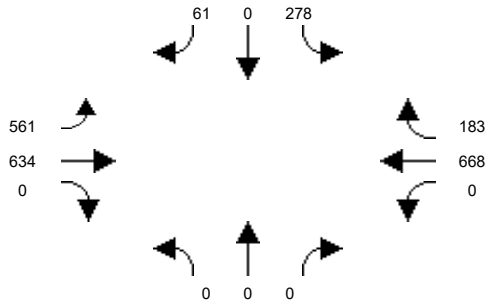
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

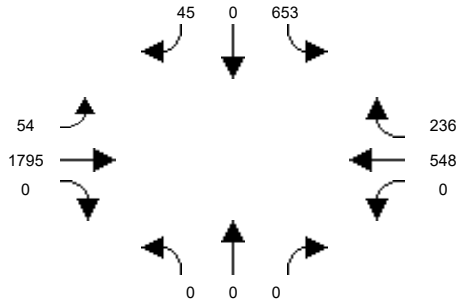
Intersection #102: Red Hill Ave and Main St



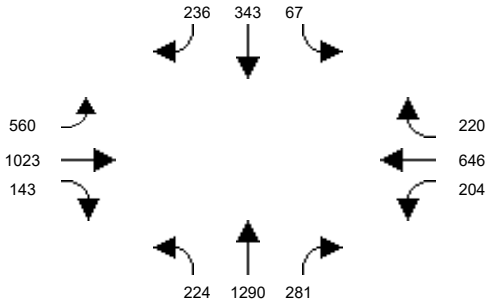
Intersection #103: I-5 SB Ramps and Santa Ana Blvd



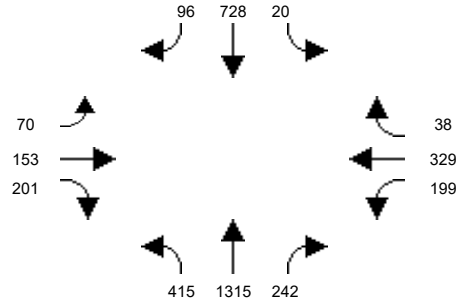
Intersection #104: Tustin Ranch Rd and Warner Ave



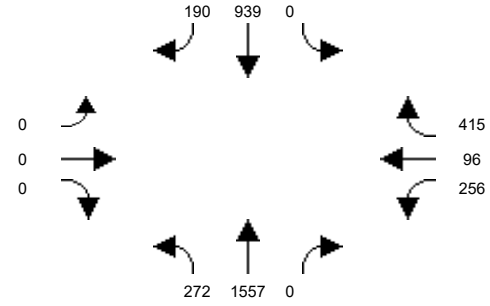
Intersection #105: Von Karman Ave and Barranca Pkwy



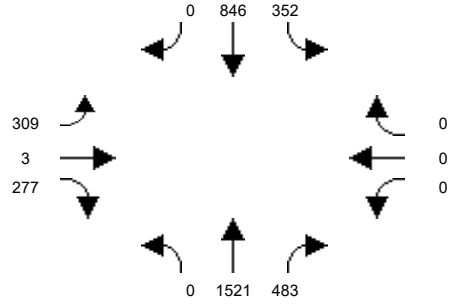
Intersection #106: Red Hill Avenue and El Camino Real



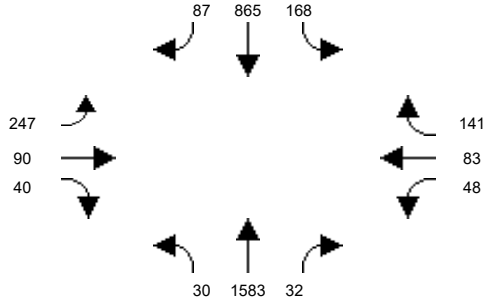
Intersection #107: Red Hill Avenue and I-5 NB Ramps



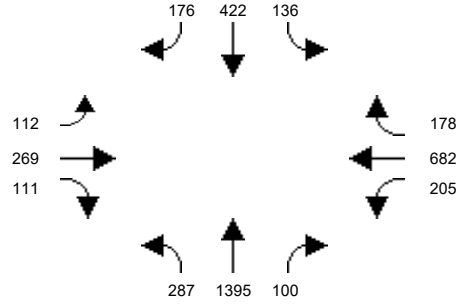
Intersection #108: Red Hill Avenue and I-5 SB Ramps



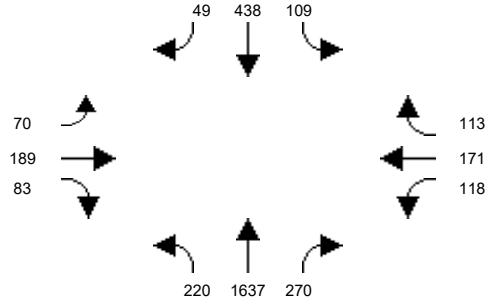
Intersection #109: Red Hill Avenue and Nisson Road



Intersection #110: Red Hill Avenue and Walnut Avenue



Intersection #111: Red Hill Avenue and Valencia Avenue



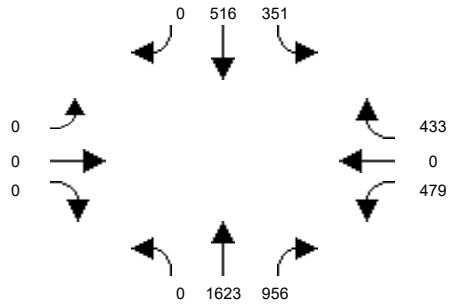
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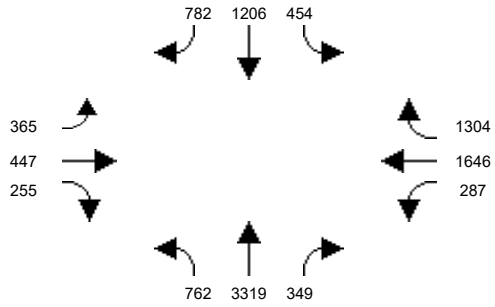
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2020 NP PM Peak Hour

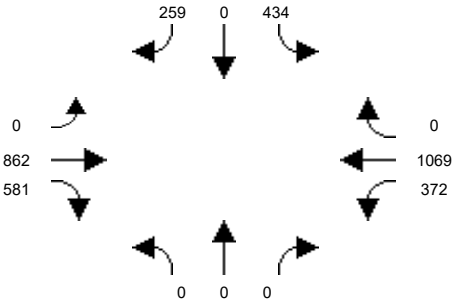
Intersection #112: Tustin Ranch Road and Warner Avenue North



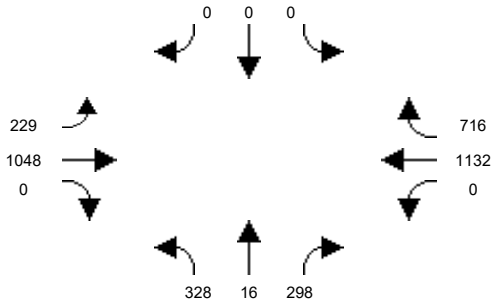
Intersection #113: Tustin Ranch Road and Walnut Avenue



Intersection #114: SR-55 SB Ramps and Irvine Boulevard



Intersection #115: SR-55 NB Ramps and Irvine Boulevard



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1200

APPENDIX B.3

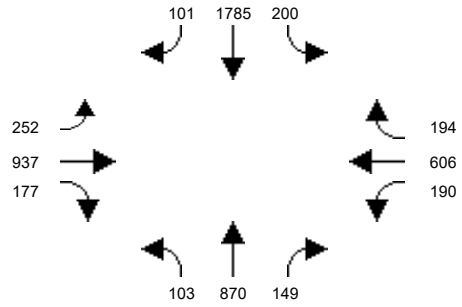
INTERSECTION VOLUMES –
2045 NP (AM PEAK HOUR)

Attachment 8

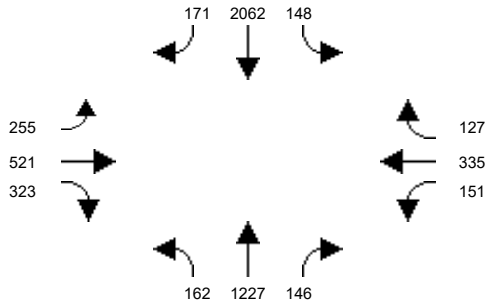
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

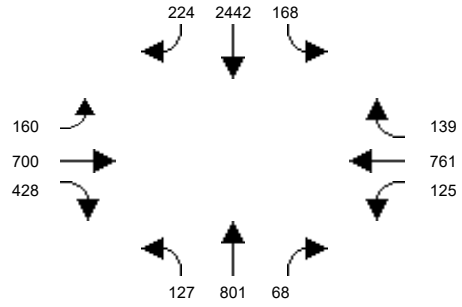
Intersection #1: Euclid St and 1st St



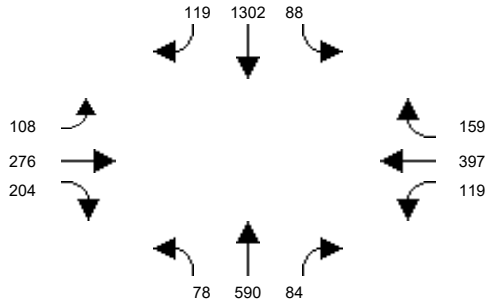
Intersection #2: Euclid St and McFadden Ave



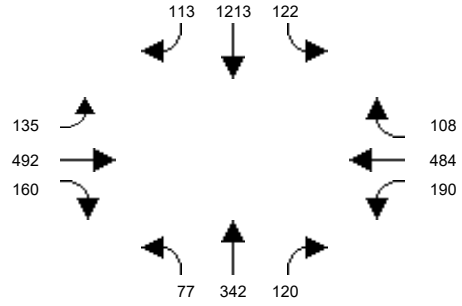
Intersection #3: Euclid St and Edinger Ave



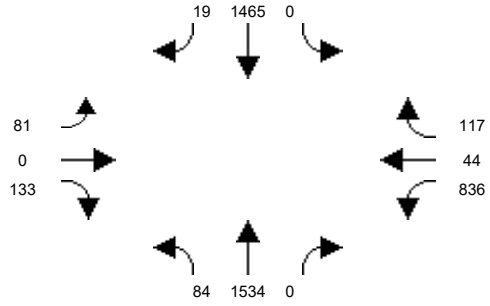
Intersection #4: Newhope St and Hazard Ave



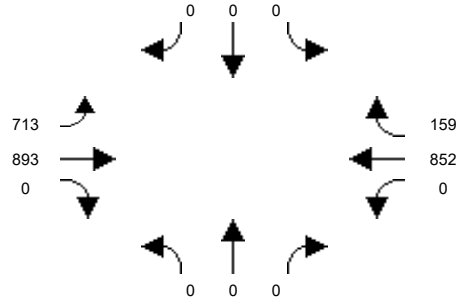
Intersection #5: Newhope St and McFadden Ave



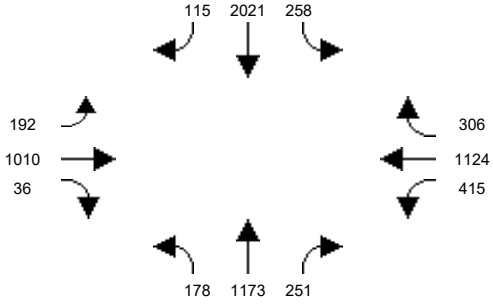
Intersection #6: Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr



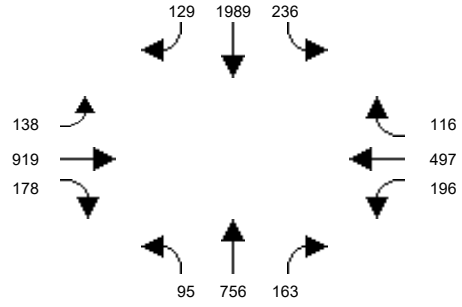
Intersection #7: Trask Avenue and SR-22 EB On-Ramp



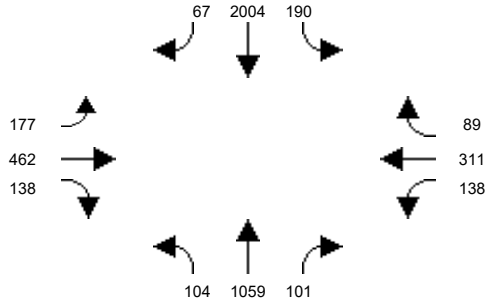
Intersection #8: Harbor Blvd and Westminster Ave



Intersection #9: Harbor Blvd and 1st St



Intersection #10: Harbor Blvd and McFadden Ave



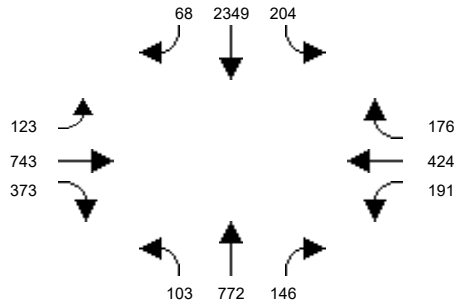
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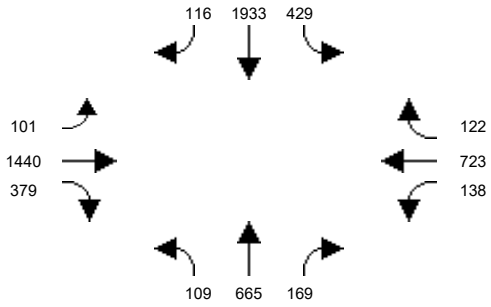
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

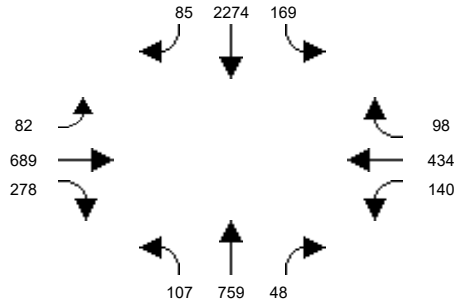
Intersection #11: Harbor Blvd and Edinger Ave



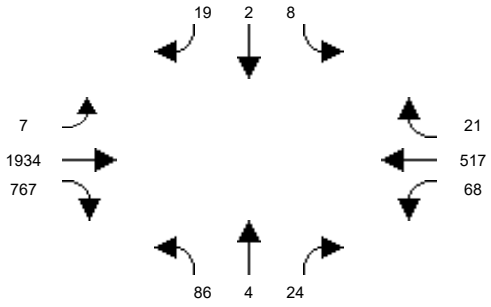
Intersection #12: Harbor Blvd and Warner Ave



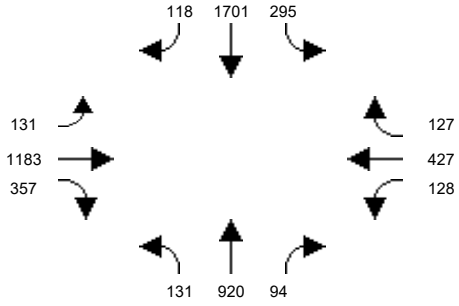
Intersection #13: Harbor Blvd and Segerstrom Ave



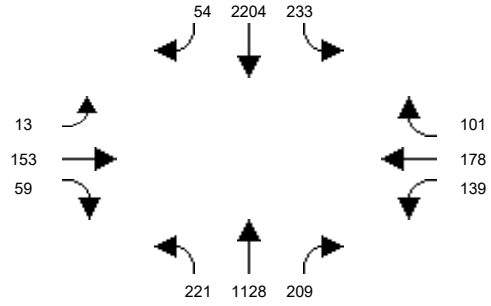
Intersection #14: MacArthur Blvd and Hyland Ave



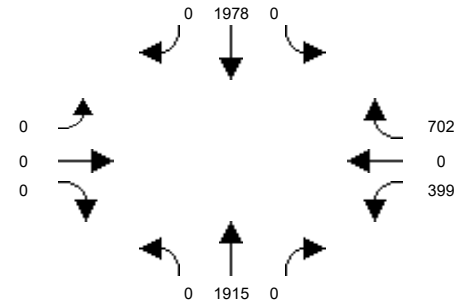
Intersection #15: MacArthur Blvd and Harbor Blvd



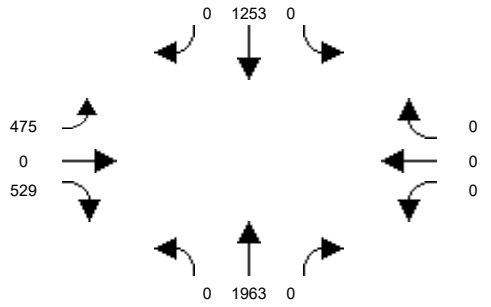
Intersection #16: Harbor Blvd and Sunflower Ave



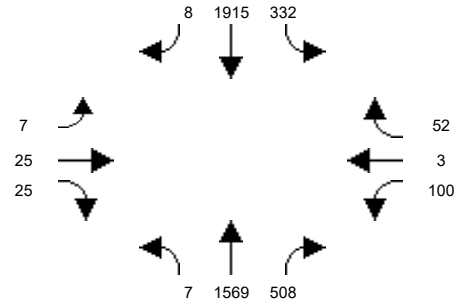
Intersection #17: Harbor Blvd and I-405 NB Off-Ramp



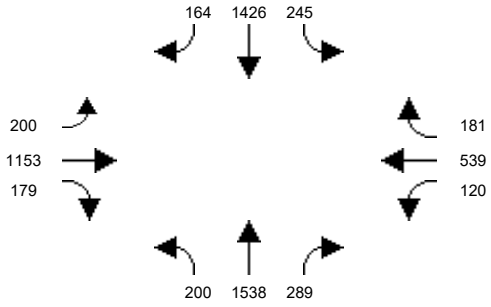
Intersection #18: Harbor Blvd and I-405 SB Off-Ramp



Intersection #19: Fairview St and Civic Center Dr



Intersection #20: Fairview St and 1st St



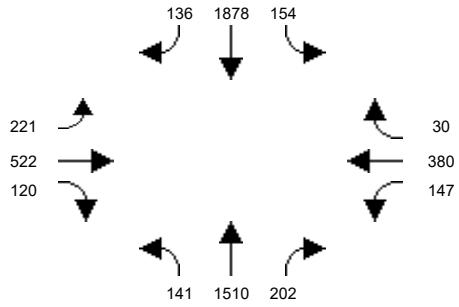
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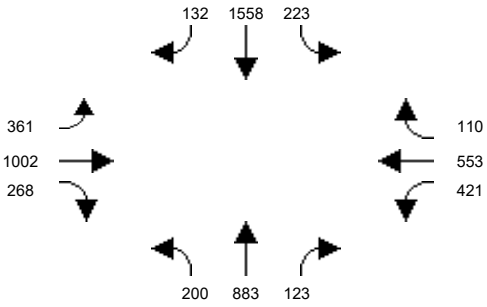
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

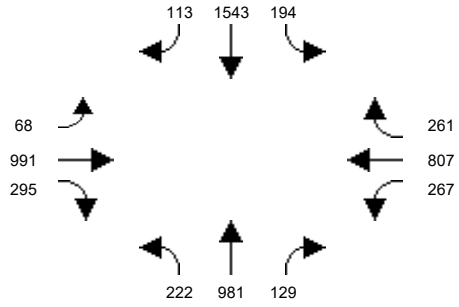
Intersection #21: Fairview St and McFadden Ave



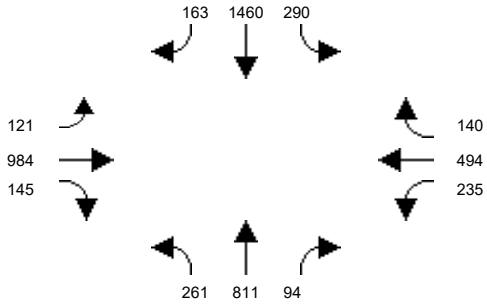
Intersection #22: Fairview St and Edinger Ave



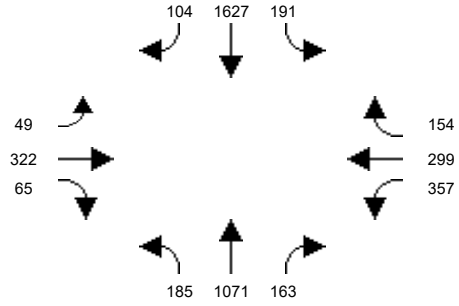
Intersection #23: Fairview St and Warner Ave



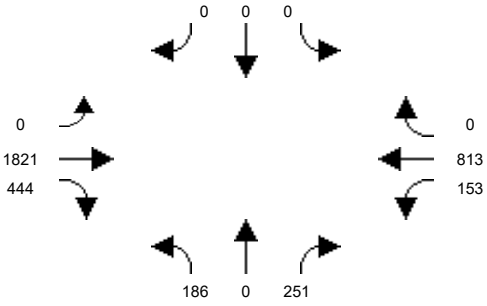
Intersection #24: Fairview St and MacArthur Blvd



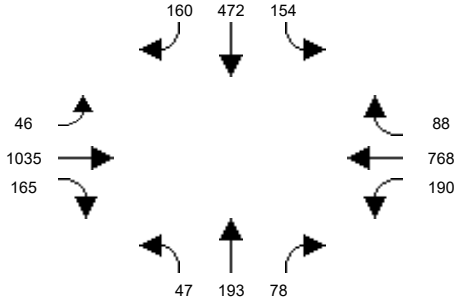
Intersection #25: Fairview Rd and Sunflower Ave



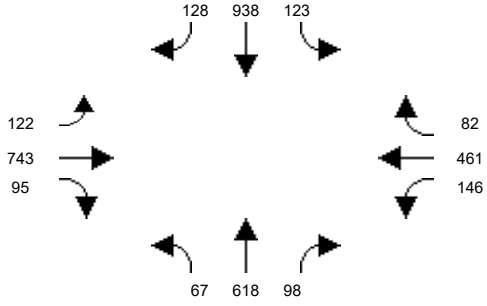
Intersection #26: Greenville St and Edinger Ave



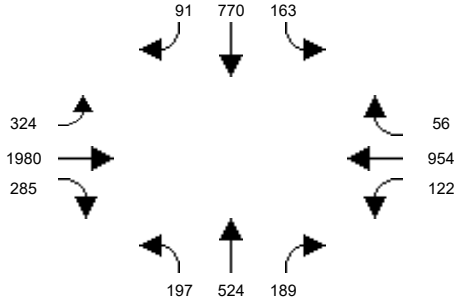
Intersection #27: Greenville St and Segerstrom Ave



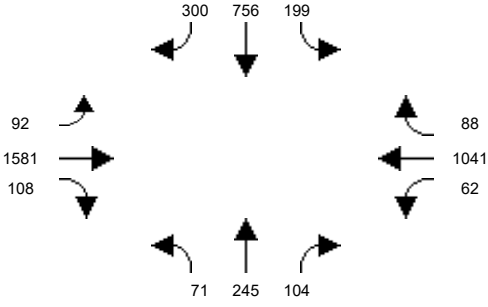
Intersection #28: Raitt St and McFadden Ave



Intersection #29: Raitt St and Edinger Ave



Intersection #30: Bear St and MacArthur Blvd



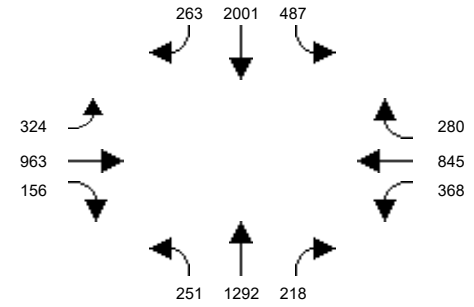
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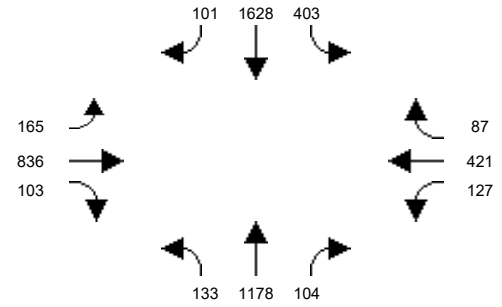
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

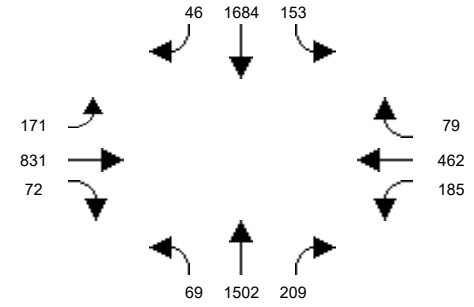
Intersection #31: Bristol St and 17th St



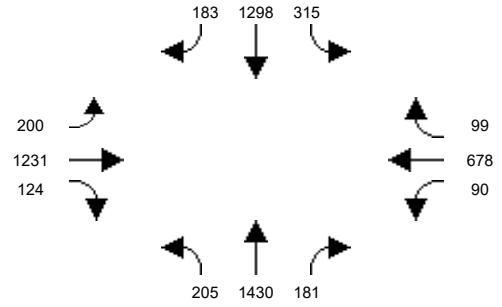
Intersection #32: Bristol St and Civic Center Dr



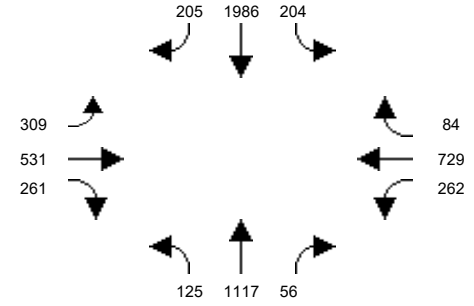
Intersection #33: Bristol St and Santa Ana Blvd



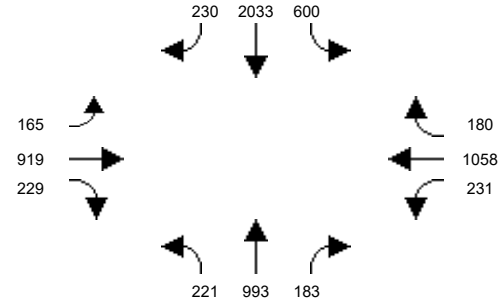
Intersection #34: Bristol St and 1st St



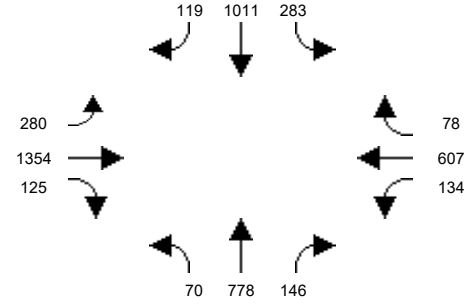
Intersection #35: Bristol St and McFadden Ave



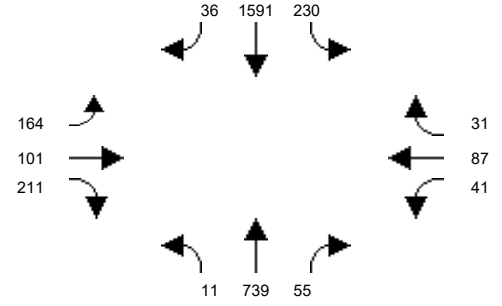
Intersection #36: Bristol St and Warner Ave



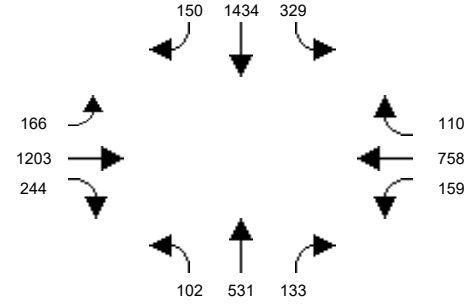
Intersection #37: Bristol St and Segerstrom Ave



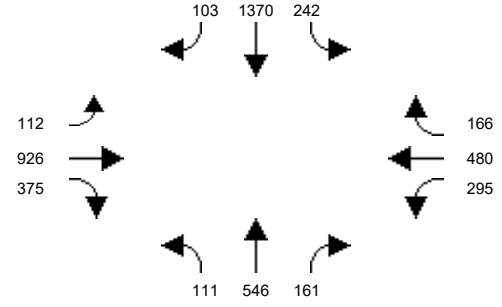
Intersection #38: Bristol St and Alton Ave



Intersection #39: Bristol St and MacArthur Blvd



Intersection #40: Bristol St and Sunflower Ave



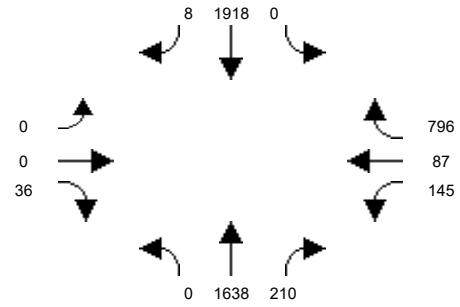
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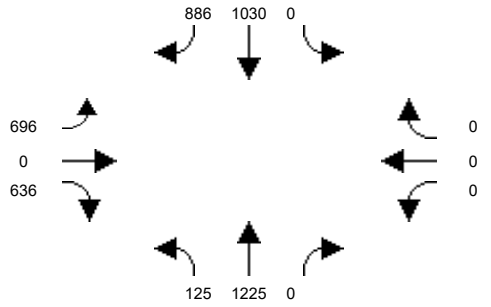
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

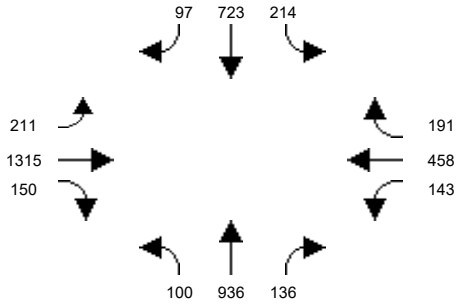
Intersection #41: Bristol St and I-405 NB Ramps



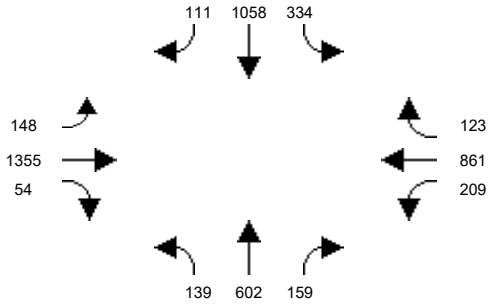
Intersection #42: Bristol St and I-405 SB Ramps



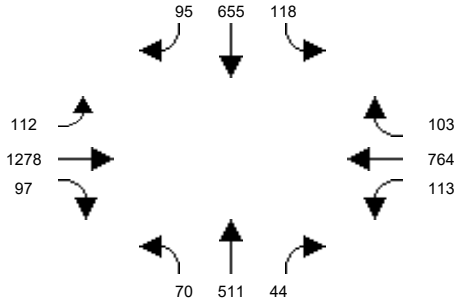
Intersection #43: Flower St and Santa Ana Blvd



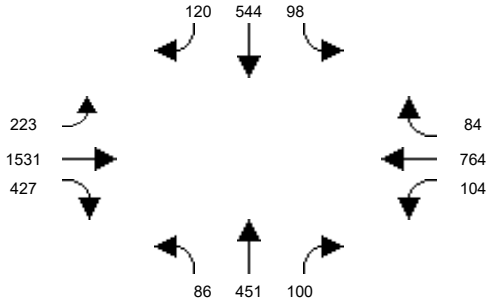
Intersection #44: Flower St and 1st St



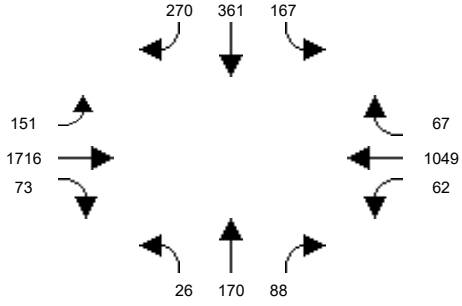
Intersection #45: Flower St and McFadden Ave



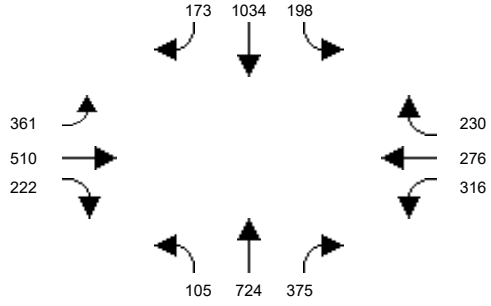
Intersection #46: Flower St and Segerstrom Ave



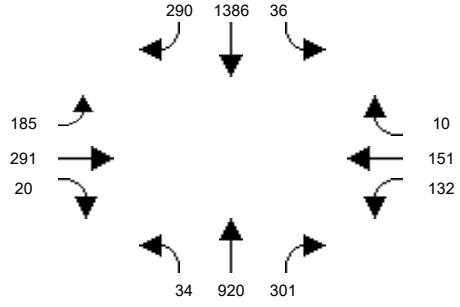
Intersection #47: Flower St and MacArthur Blvd



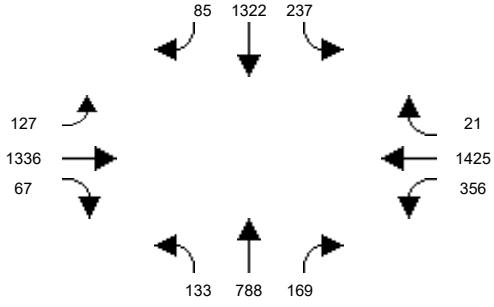
Intersection #48: Main St and La Veta Ave



Intersection #49: Main St and Mainplace Dr / Memory Ln



Intersection #50: Main St and 17th St



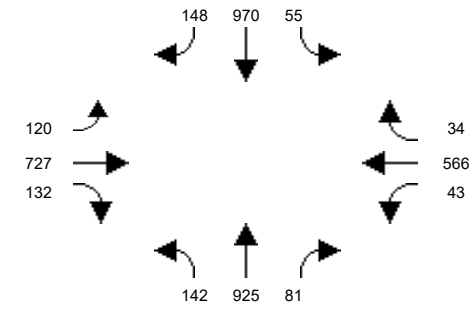
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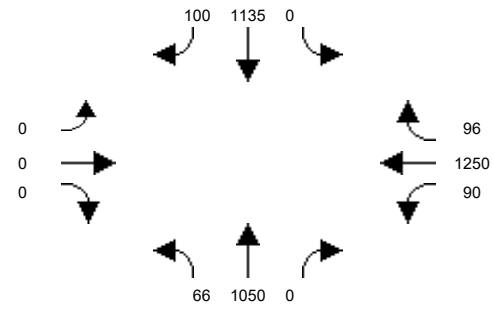
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

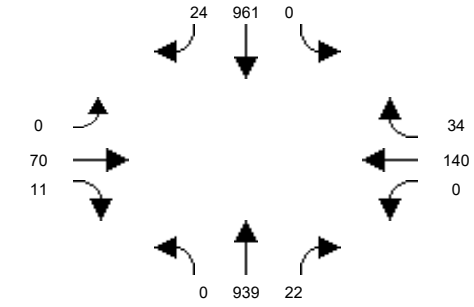
Intersection #51: Main St and Civic Center Dr



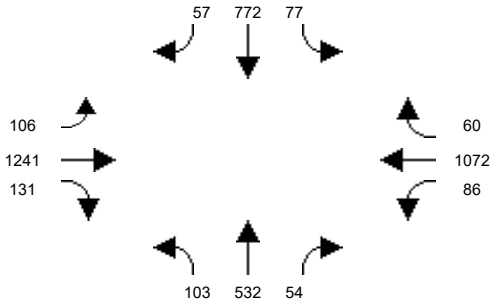
Intersection #52: Main St and Santa Ana Blvd



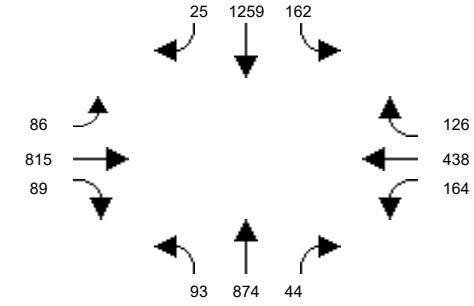
Intersection #53: Main St and 4th St



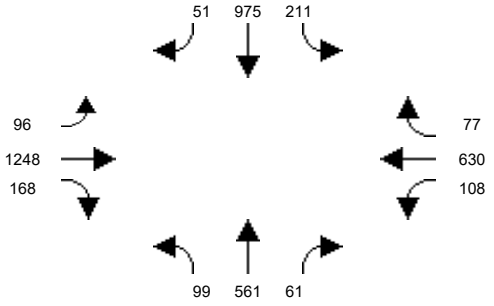
Intersection #54: Main St and 1st St



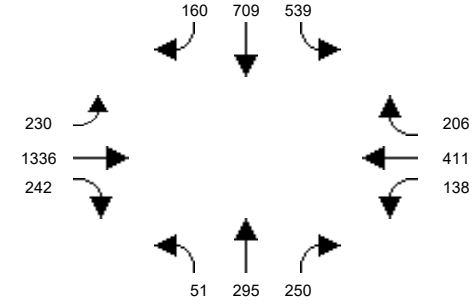
Intersection #55: Main St and McFadden Ave



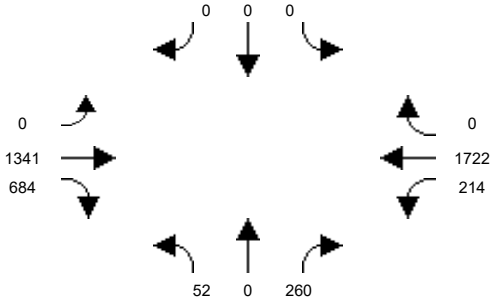
Intersection #56: Main St and Edinger Ave



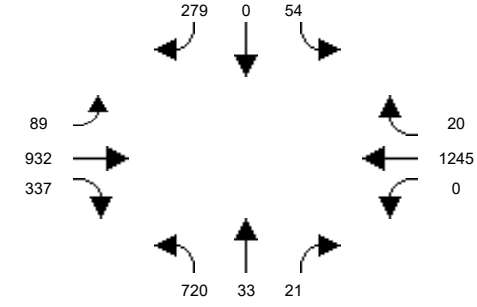
Intersection #57: Main St and MacArthur Blvd



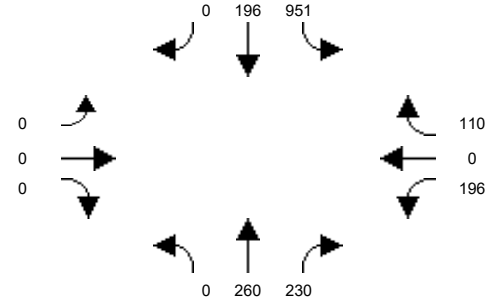
Intersection #58: Penn Wy and 17th St



Intersection #59: I-5 NB Off Ramps/17th Street



Intersection #60: Penn Wy and I-5 SB Ramps



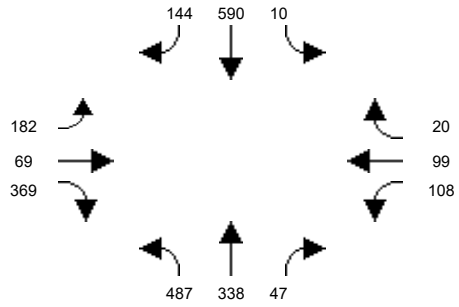
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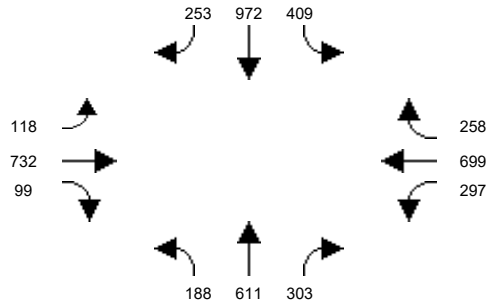
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

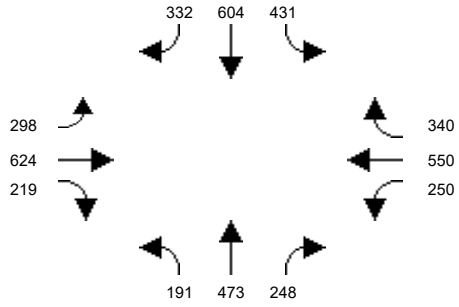
Intersection #61: Santiago St and Civic Center Dr



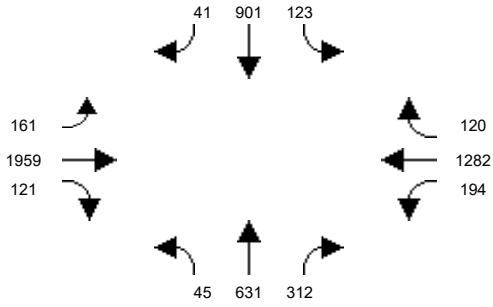
Intersection #62: Santiago St and Santa Ana Blvd



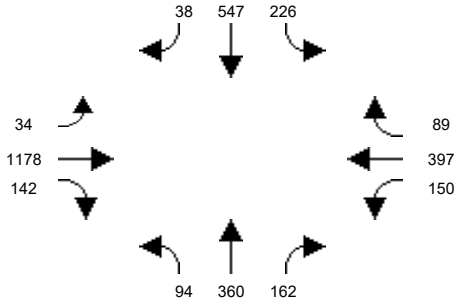
Intersection #63: Standard Ave and 4th St



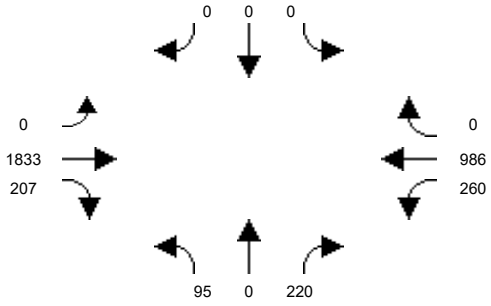
Intersection #64: Standard Ave and 1st St



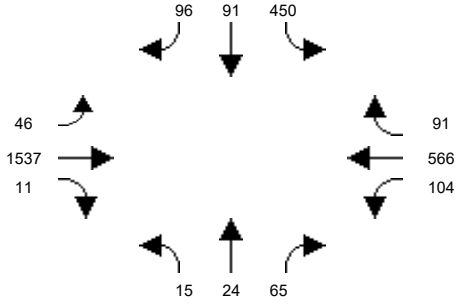
Intersection #65: Standard Ave and Mcfadden Ave



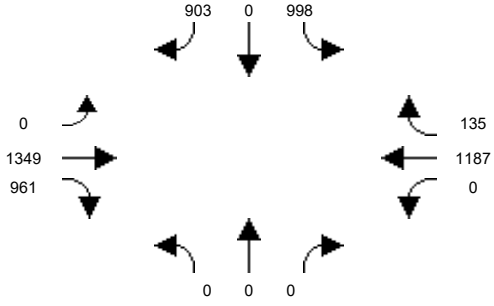
Intersection #66: Halladay St and Warner Ave



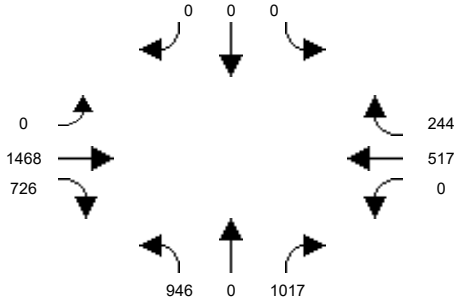
Intersection #67: Halladay St and Dyer Rd



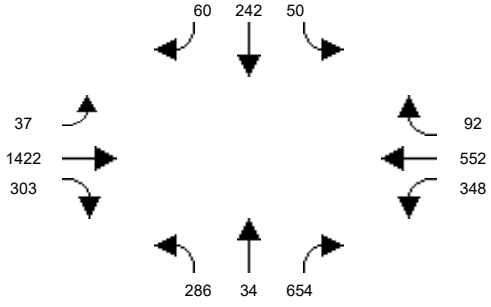
Intersection #68: SR-55 SB Ramps and MacArthur Blvd



Intersection #69: SR-55 NB Ramps and MacArthur Blvd



Intersection #70: SR-55 SB Ramps and Dyer Rd



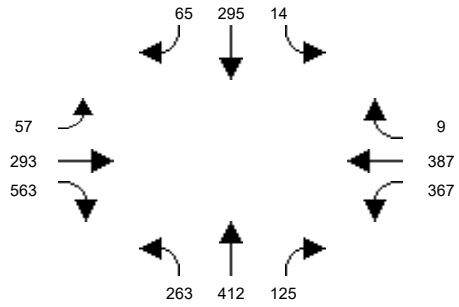
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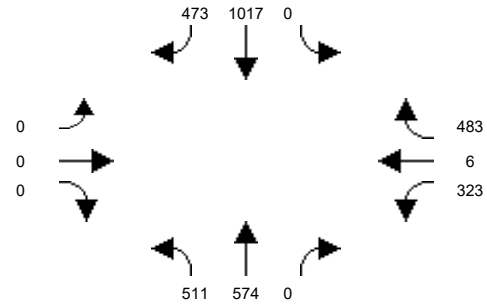
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

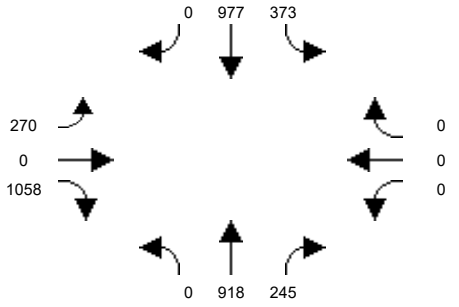
Intersection #71: Glassell St and La Veta Ave



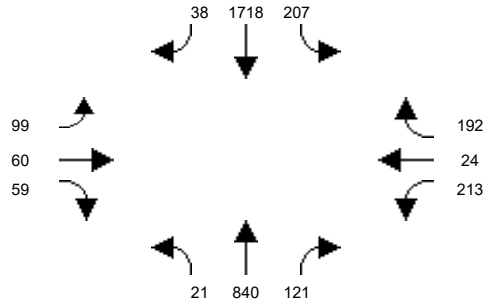
Intersection #72: Glassell St and SR-22 WB Ramps



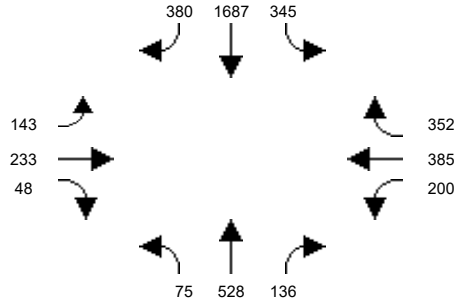
Intersection #73: Grand Ave / Glassell St and SR-22 EB Ramps



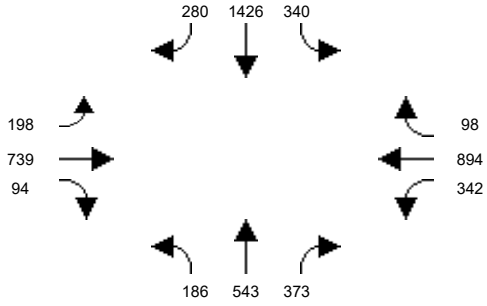
Intersection #74: Grand Ave and Fairhaven Ave



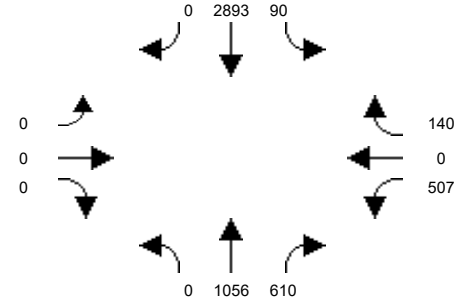
Intersection #75: Grand Ave and Santa Clara Ave



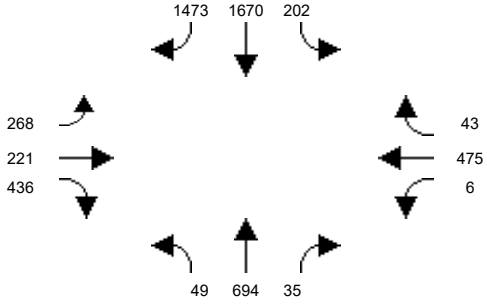
Intersection #76: Grand Ave and 17th St



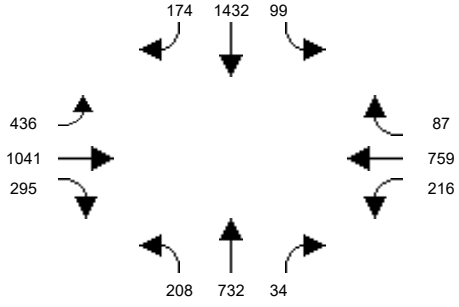
Intersection #77: Grand Ave and I-5 NB Ramps



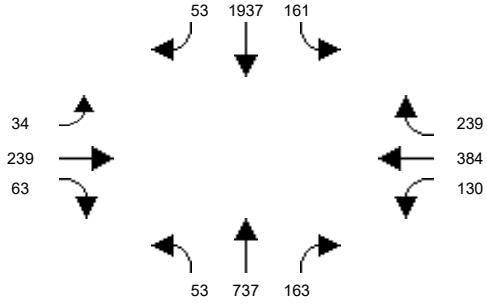
Intersection #78: Grand Ave and Santa Ana Blvd



Intersection #79: Grand Ave and 1st St



Intersection #80: Grand Ave and Chestnut Ave



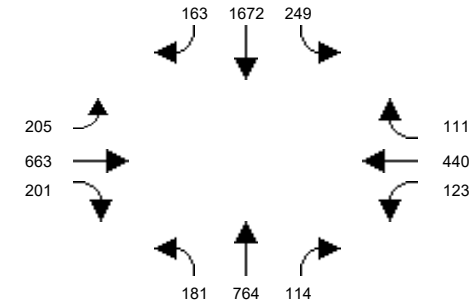
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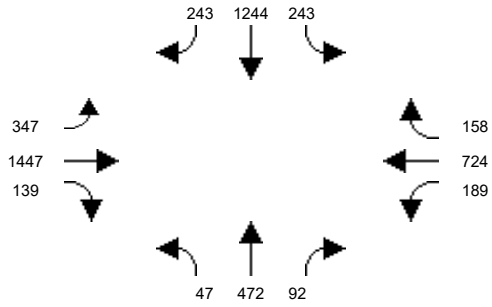
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

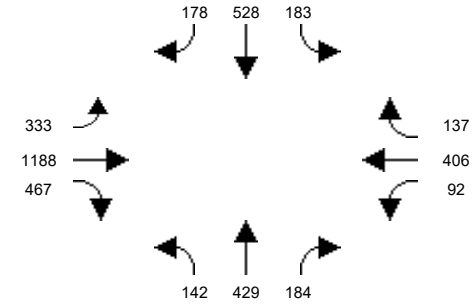
Intersection #81: Grand Ave and McFadden Ave



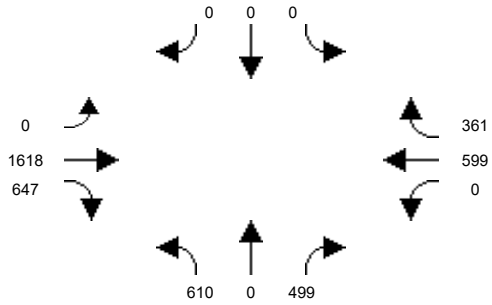
Intersection #82: Grand Ave and Edinger Ave



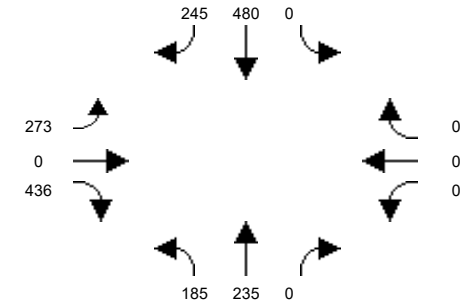
Intersection #83: Grand Ave and Warner Ave



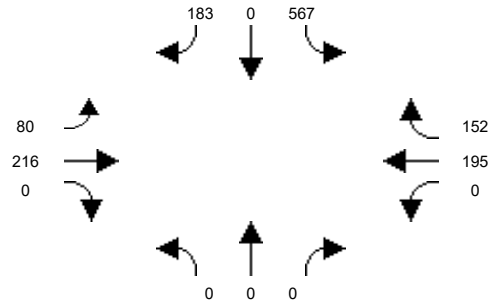
Intersection #84: SR-55 NB Ramps and Dyer Rd



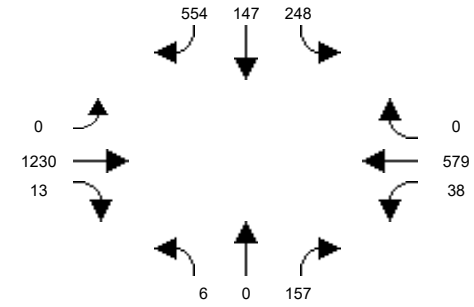
Intersection #85: Cambridge St and La Veta Ave



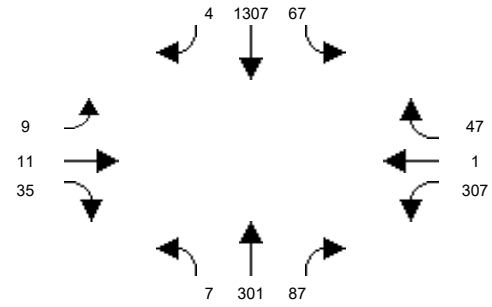
Intersection #86: Cambridge St and Fairhaven Ave



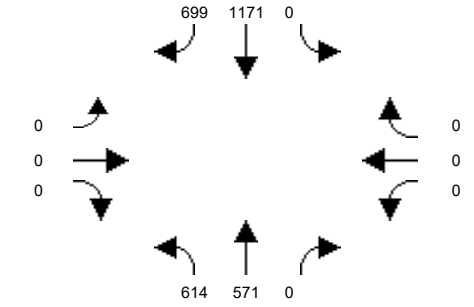
Intersection #87: Mabury St and 1st Street



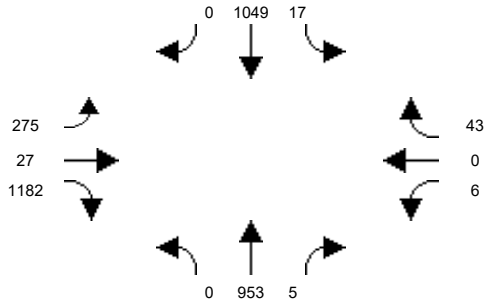
Intersection #88: Tustin St and La Veta Ave



Intersection #89: Tustin St and SR-22 WB On-Ramp



Intersection #90: Tustin St and SR-22 EB Off-Ramp / Seba Ave



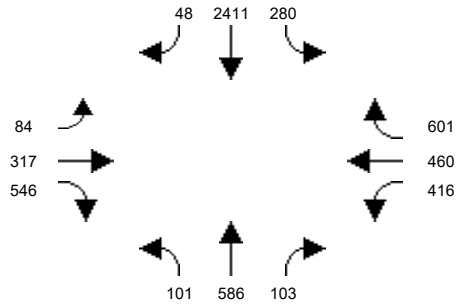
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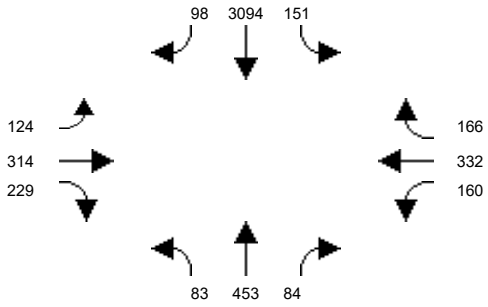
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

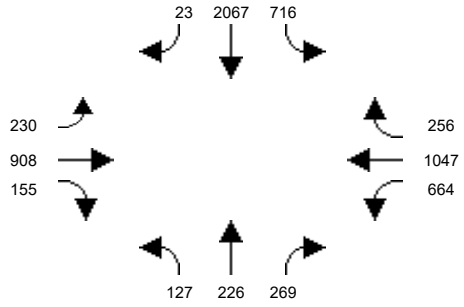
Intersection #91: Tustin Ave and Fairhaven Ave



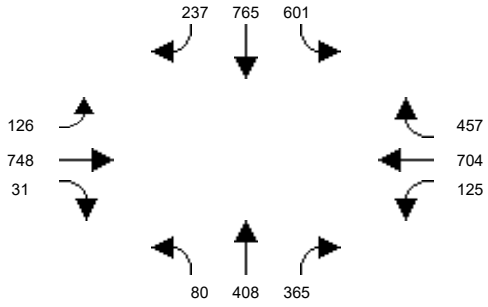
Intersection #92: Tustin Ave and Santa Clara Ave



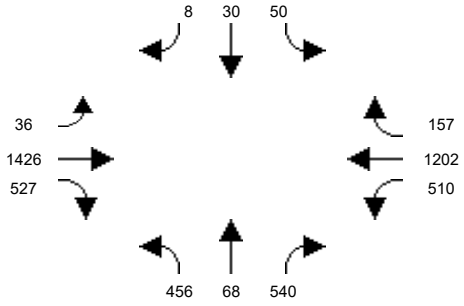
Intersection #93: Tustin Ave and 17th St



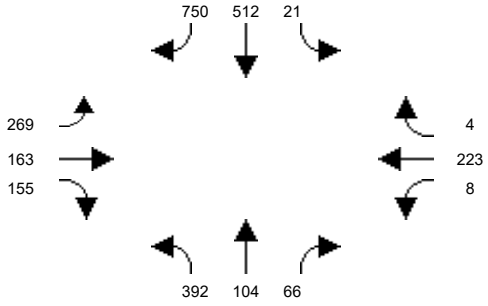
Intersection #94: Tustin Ave and 4th St



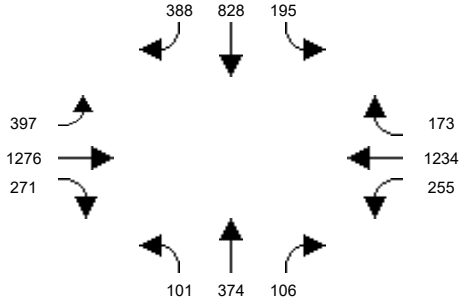
Intersection #95: SR-55 SB Ramps / Auto Mall Dr and Edinger Ave



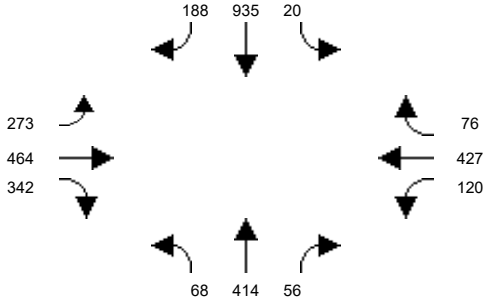
Intersection #96: SR-55 NB Ramps / Del Amo Ave and Newport Avenue



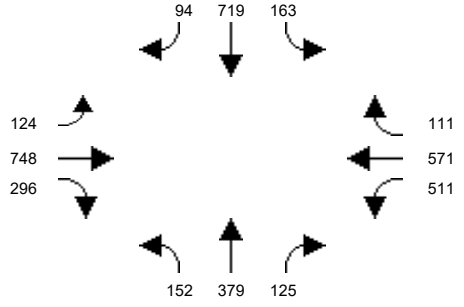
Intersection #97: Red Hill Ave and Edinger Ave



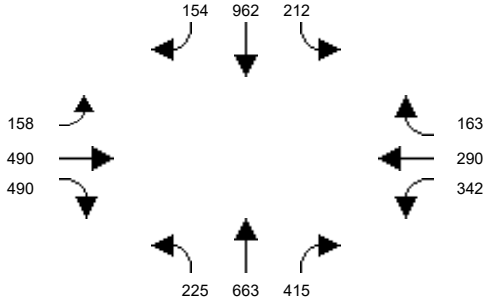
Intersection #98: Red Hill Ave and Warner Ave



Intersection #99: Red Hill Ave and Dyer Rd / barranca Pkwy



Intersection #100: Red Hill Ave and Alton Pkwy



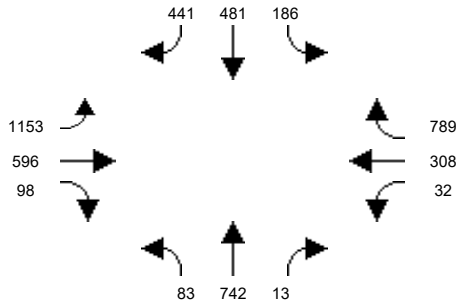
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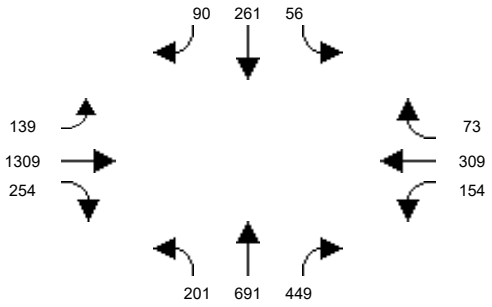
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

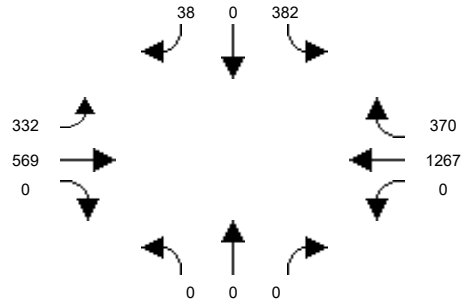
Intersection #101: Red Hill Ave and MacArthur Blvd



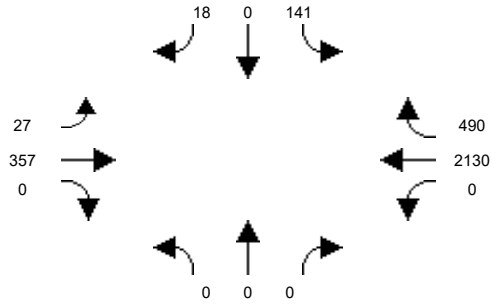
Intersection #102: Red Hill Ave and Main St



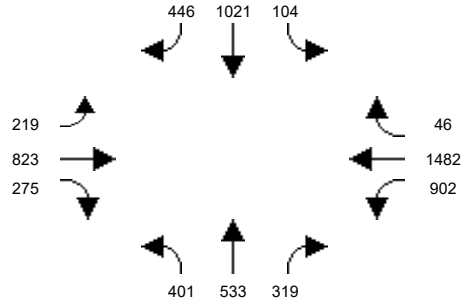
Intersection #103: I-5 SB Ramps and Santa Ana Blvd



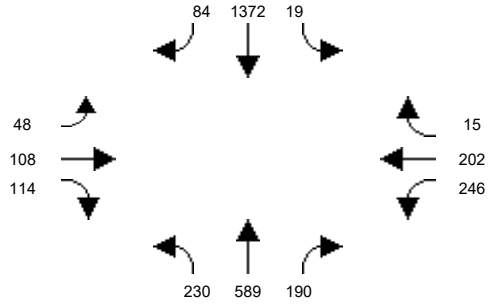
Intersection #104: Tustin Ranch Rd and Warner Ave



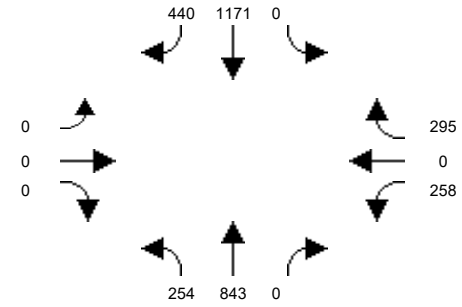
Intersection #105: Von Karman Ave and Barranca Pkwy



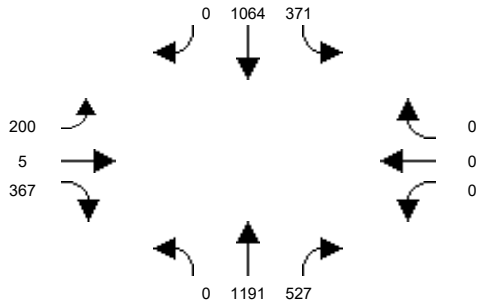
Intersection #106: Red Hill Avenue and El Camino Real



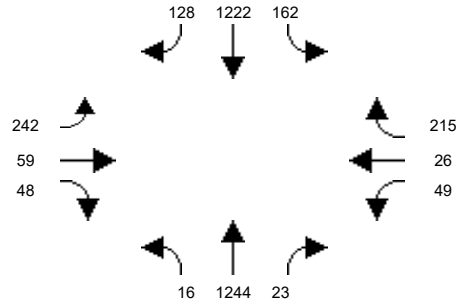
Intersection #107: Red Hill Avenue and I-5 NB Ramps



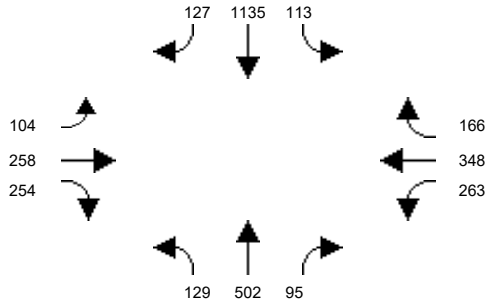
Intersection #108: Red Hill Avenue and I-5 SB Ramps



Intersection #109: Red Hill Avenue and Nisson Road



Intersection #110: Red Hill Avenue and Walnut Avenue



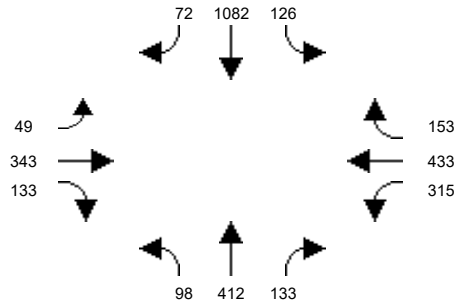
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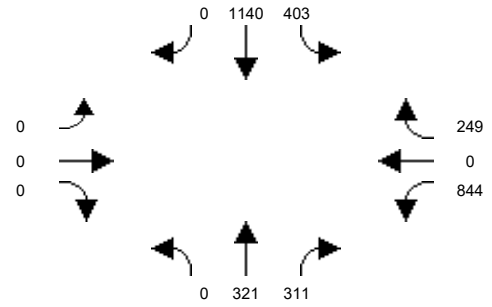
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP AM Peak Hour

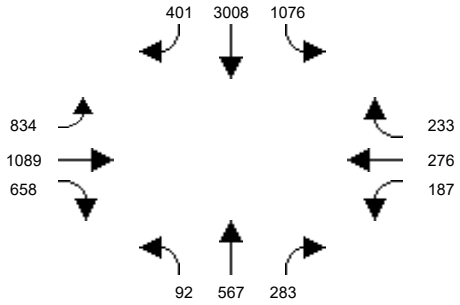
Intersection #111: Red Hill Avenue and Valencia Avenue



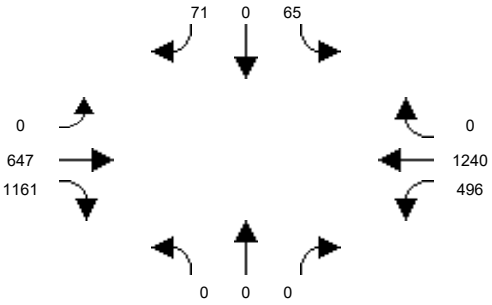
Intersection #112: Tustin Ranch Road and Warner Avenue North



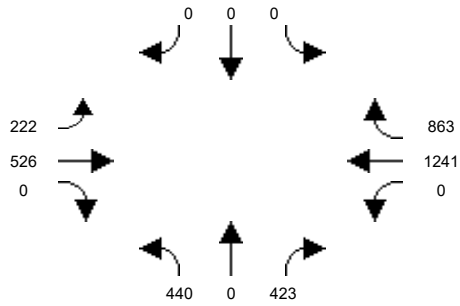
Intersection #113: Tustin Ranch Road and Walnut Avenue



Intersection #114: SR-55 SB Ramps and Irvine Boulevard



Intersection #115: SR-55 NB Ramps and Irvine Boulevard



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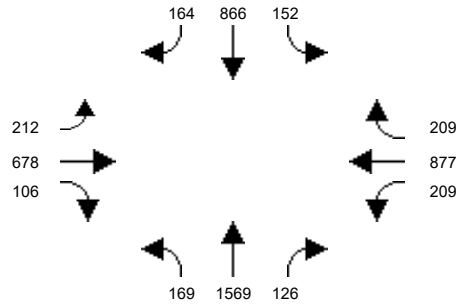
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APPENDIX B.4

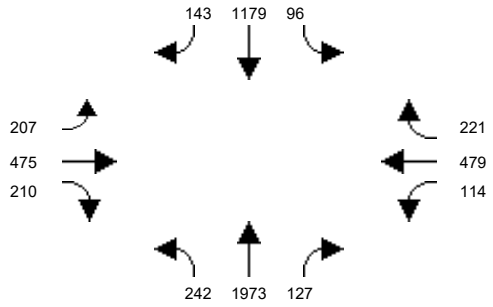
INTERSECTION VOLUMES –
2045 NP (PM PEAK HOUR)

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

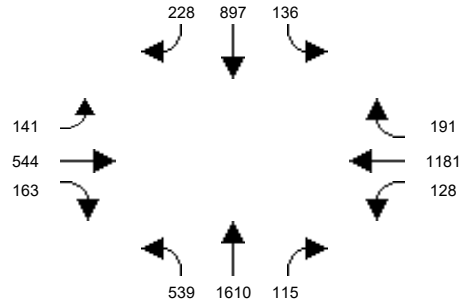
Intersection #1: Euclid St and 1st St



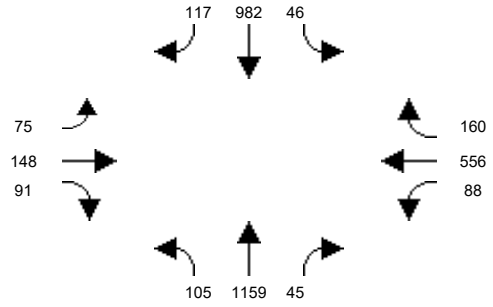
Intersection #2: Euclid St and McFadden Ave



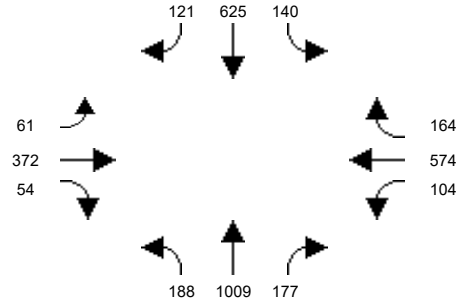
Intersection #3: Euclid St and Edinger Ave



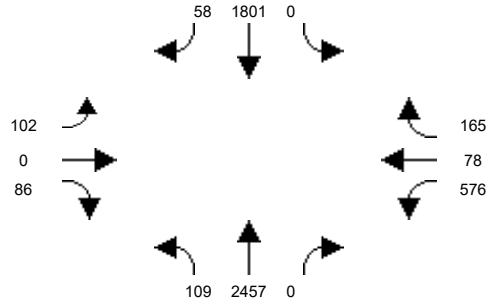
Intersection #4: Newhope St and Hazard Ave



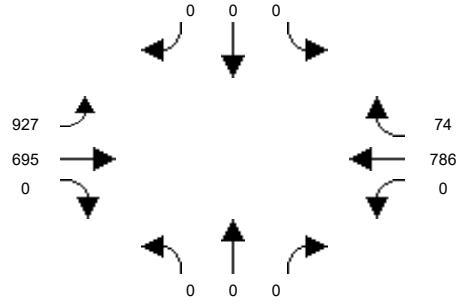
Intersection #5: Newhope St and McFadden Ave



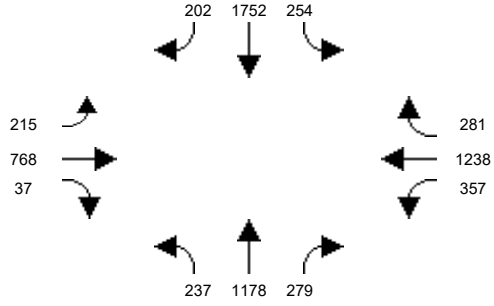
Intersection #6: Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr



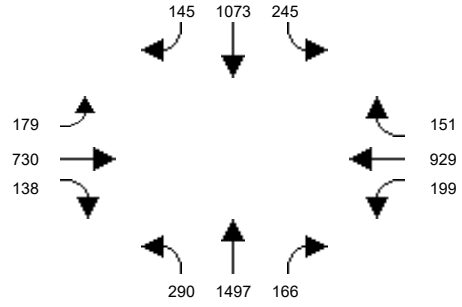
Intersection #7: Trask Avenue and SR-22 EB On-Ramp



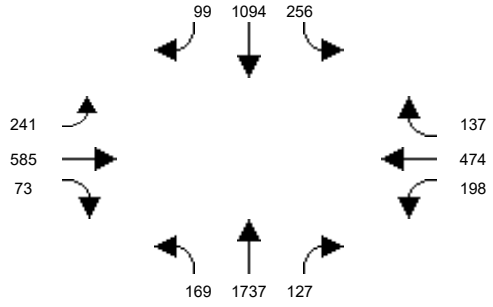
Intersection #8: Harbor Blvd and Westminster Ave



Intersection #9: Harbor Blvd and 1st St



Intersection #10: Harbor Blvd and McFadden Ave



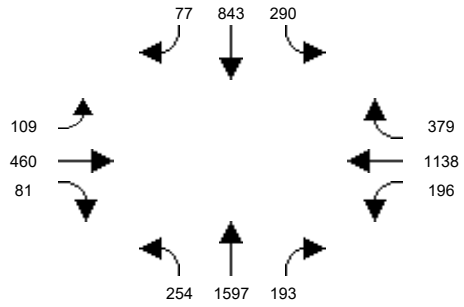
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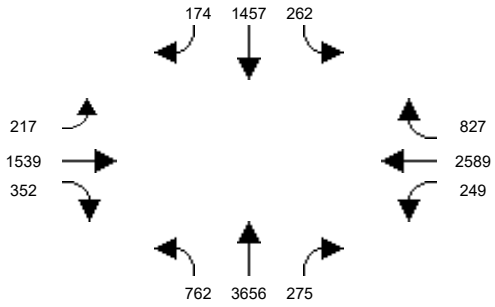
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

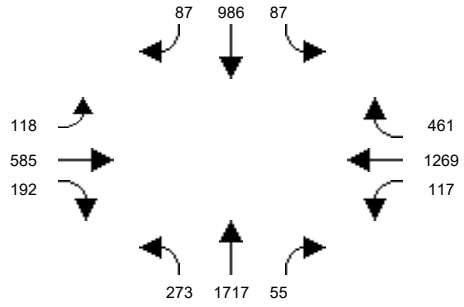
Intersection #11: Harbor Blvd and Edinger Ave



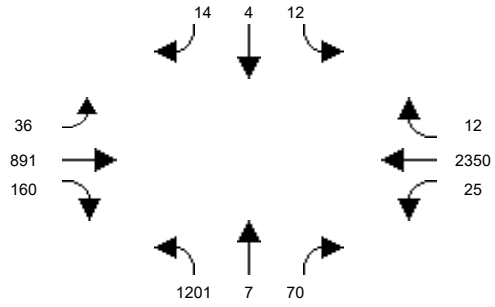
Intersection #12: Harbor Blvd and Warner Ave



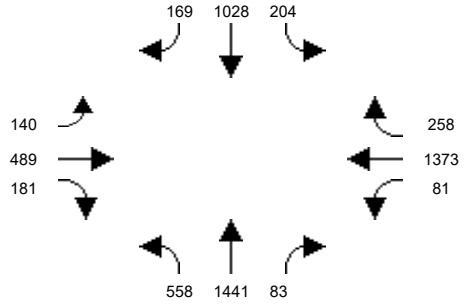
Intersection #13: Harbor Blvd and Segerstrom Ave



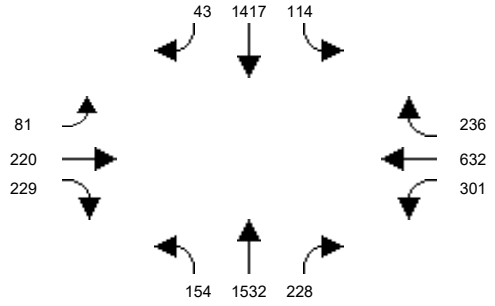
Intersection #14: MacArthur Blvd and Hyland Ave



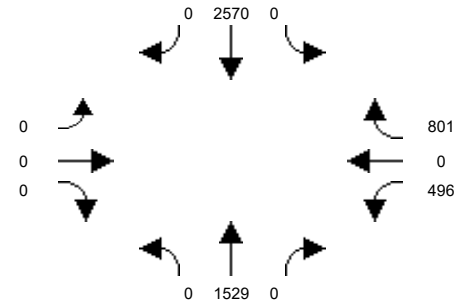
Intersection #15: MacArthur Blvd and Harbor Blvd



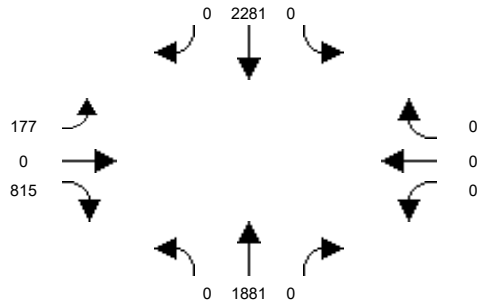
Intersection #16: Harbor Blvd and Sunflower Ave



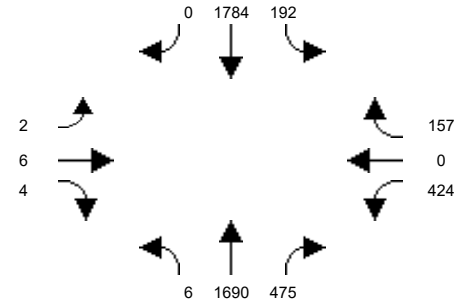
Intersection #17: Harbor Blvd and I-405 NB Off-Ramp



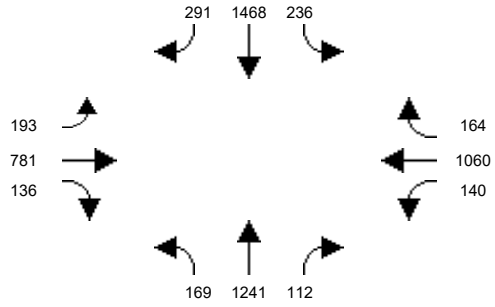
Intersection #18: Harbor Blvd and I-405 SB Off-Ramp



Intersection #19: Fairview St and Civic Center Dr



Intersection #20: Fairview St and 1st St



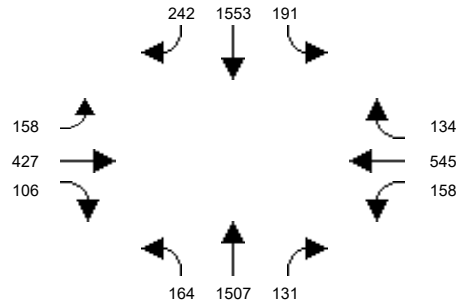
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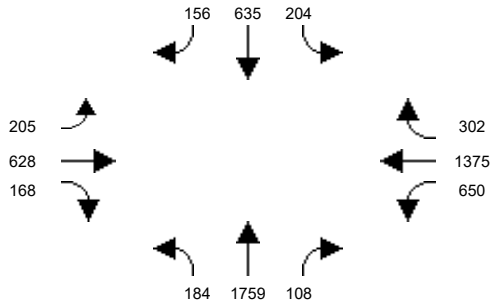
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

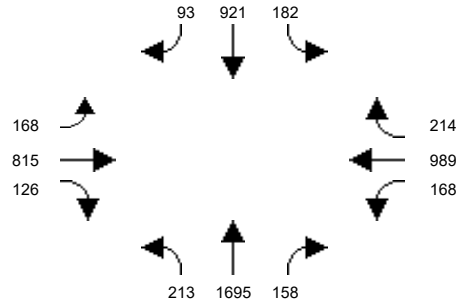
Intersection #21: Fairview St and McFadden Ave



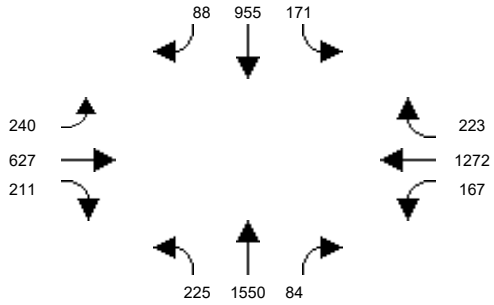
Intersection #22: Fairview St and Edinger Ave



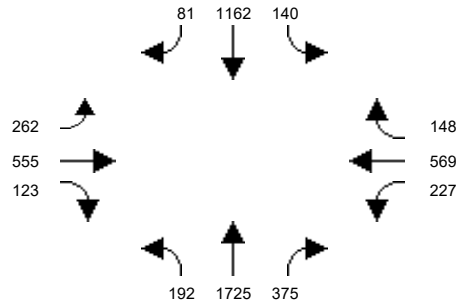
Intersection #23: Fairview St and Warner Ave



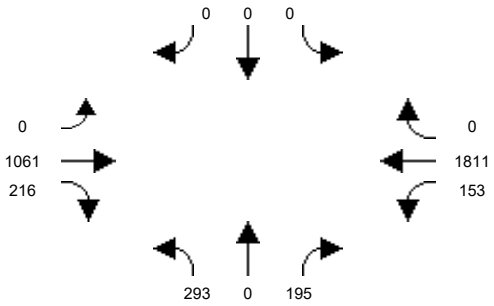
Intersection #24: Fairview St and MacArthur Blvd



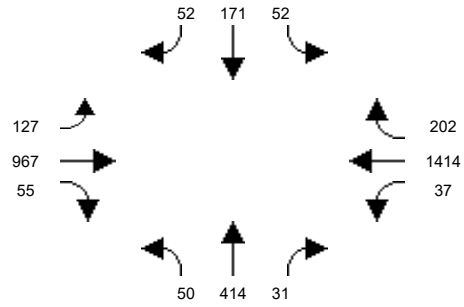
Intersection #25: Fairview Rd and Sunflower Ave



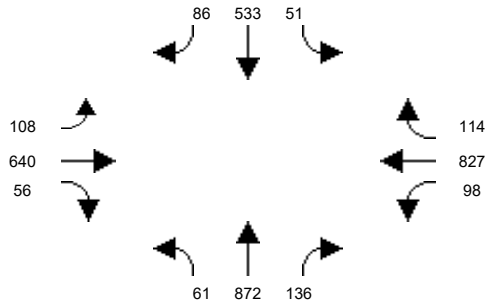
Intersection #26: Greenville St and Edinger Ave



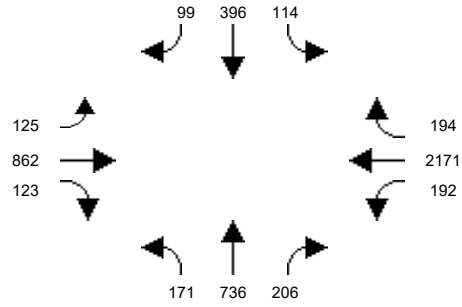
Intersection #27: Greenville St and Segerstrom Ave



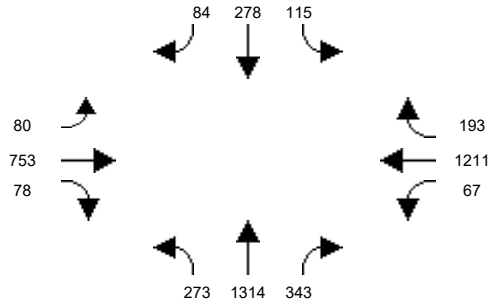
Intersection #28: Raitt St and McFadden Ave



Intersection #29: Raitt St and Edinger Ave



Intersection #30: Bear St and MacArthur Blvd



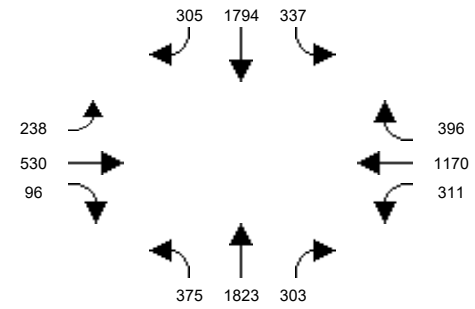
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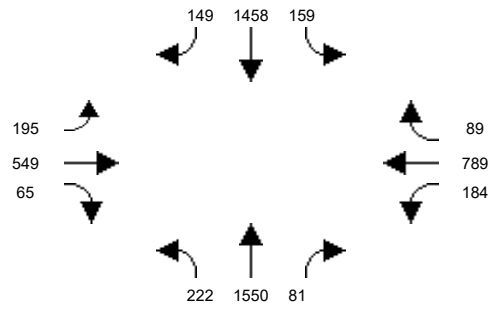
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

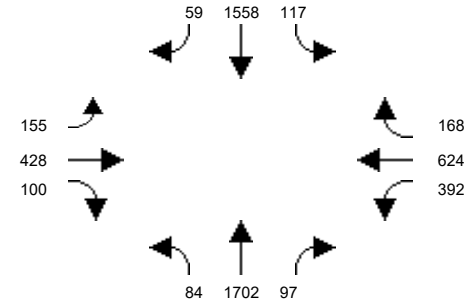
Intersection #31: Bristol St and 17th St



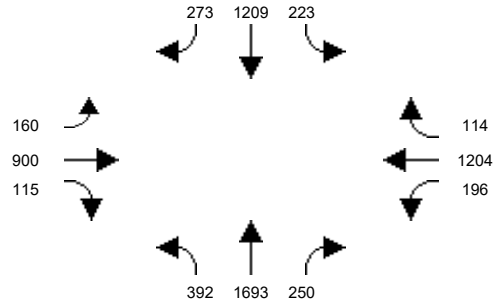
Intersection #32: Bristol St and Civic Center Dr



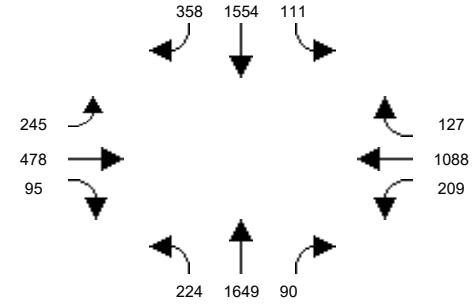
Intersection #33: Bristol St and Santa Ana Blvd



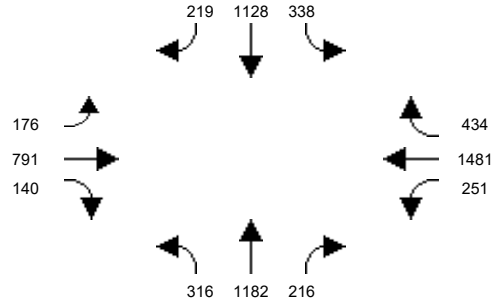
Intersection #34: Bristol St and 1st St



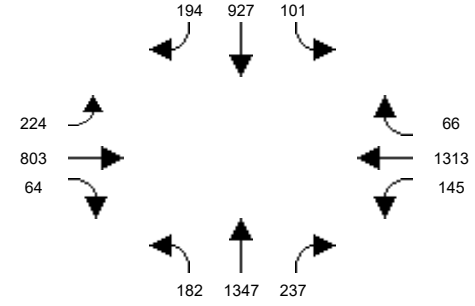
Intersection #35: Bristol St and McFadden Ave



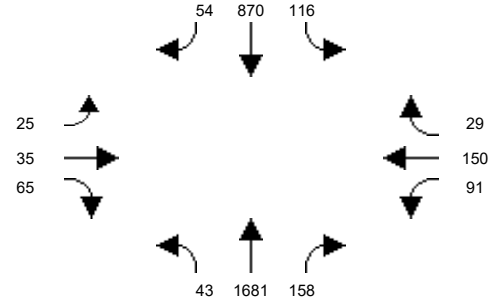
Intersection #36: Bristol St and Warner Ave



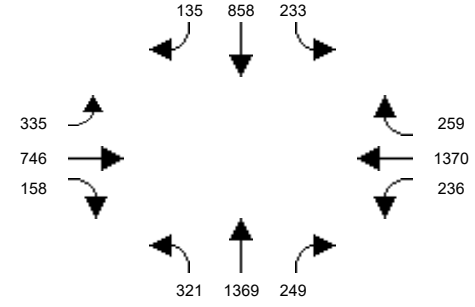
Intersection #37: Bristol St and Segerstrom Ave



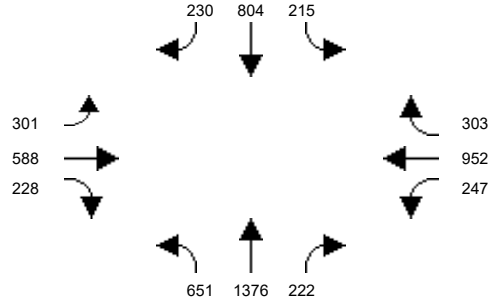
Intersection #38: Bristol St and Alton Ave



Intersection #39: Bristol St and MacArthur Blvd



Intersection #40: Bristol St and Sunflower Ave



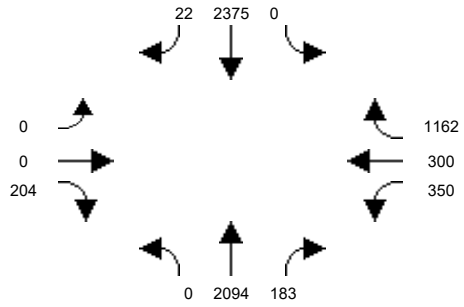
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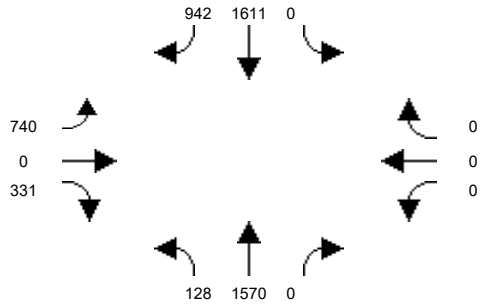
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

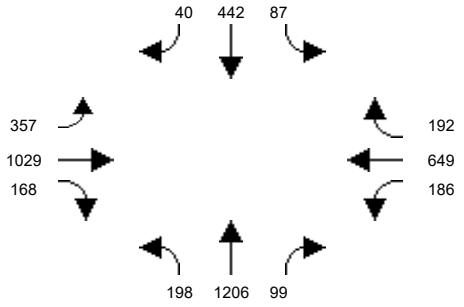
Intersection #41: Bristol St and I-405 NB Ramps



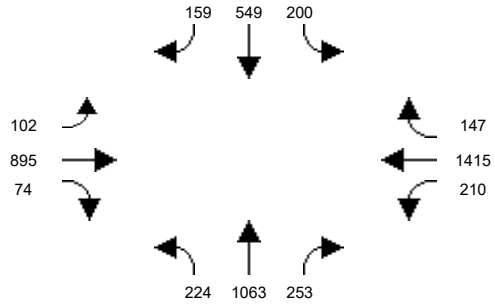
Intersection #42: Bristol St and I-405 SB Ramps



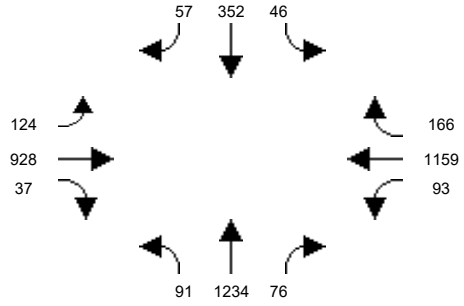
Intersection #43: Flower St and Santa Ana Blvd



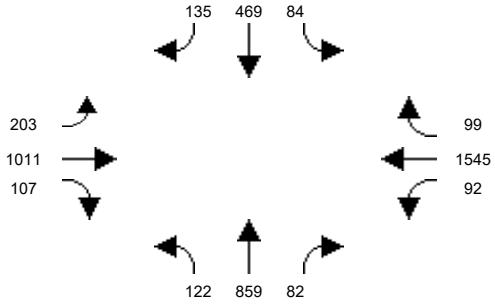
Intersection #44: Flower St and 1st St



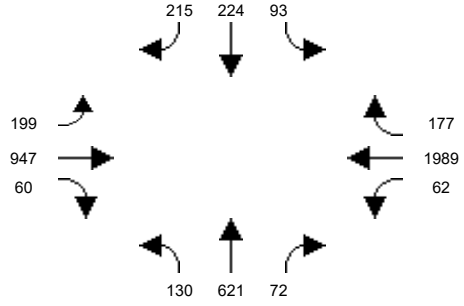
Intersection #45: Flower St and McFadden Ave



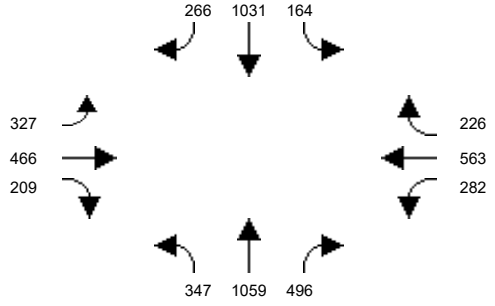
Intersection #46: Flower St and Segerstrom Ave



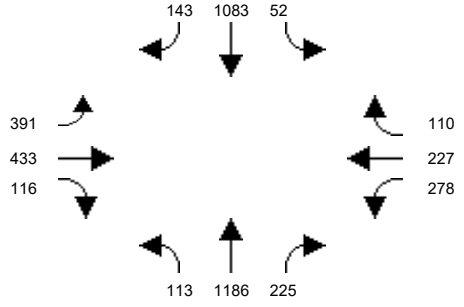
Intersection #47: Flower St and MacArthur Blvd



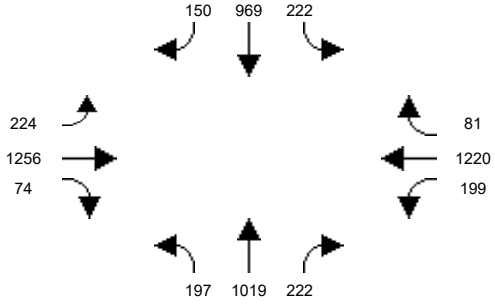
Intersection #48: Main St and La Veta Ave



Intersection #49: Main St and Mainplace Dr / Memory Ln



Intersection #50: Main St and 17th St



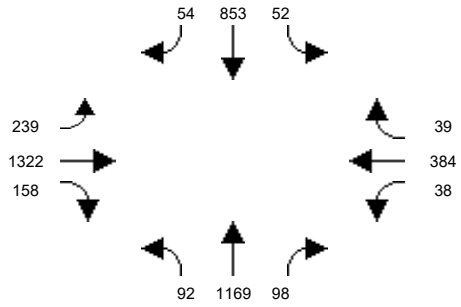
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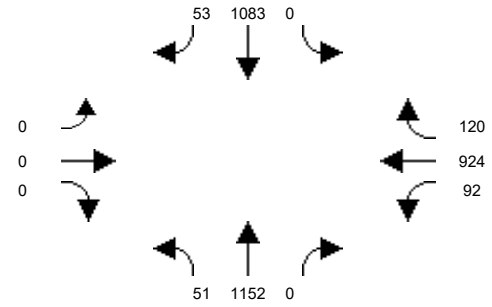
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

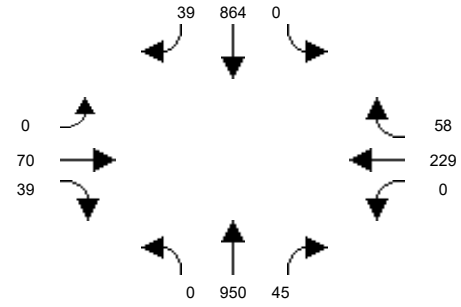
Intersection #51: Main St and Civic Center Dr



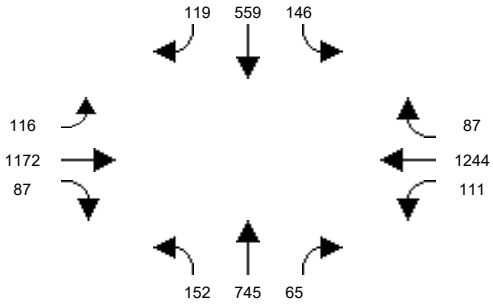
Intersection #52: Main St and Santa Ana Blvd



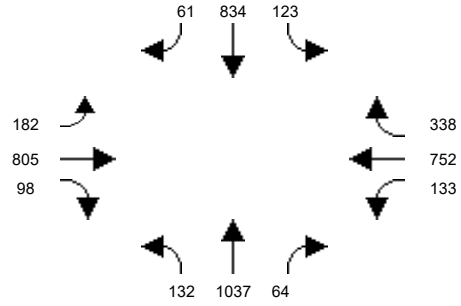
Intersection #53: Main St and 4th St



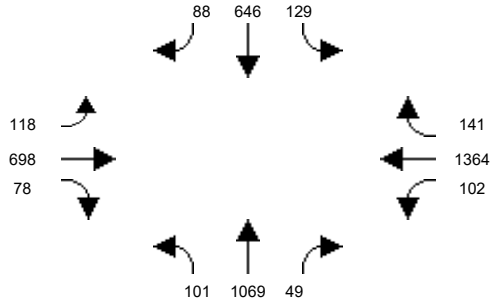
Intersection #54: Main St and 1st St



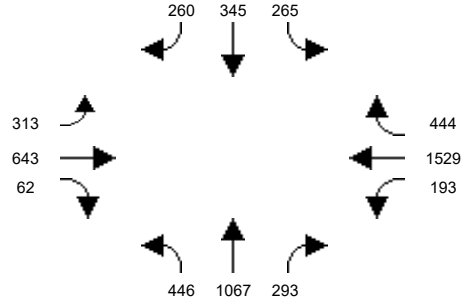
Intersection #55: Main St and McFadden Ave



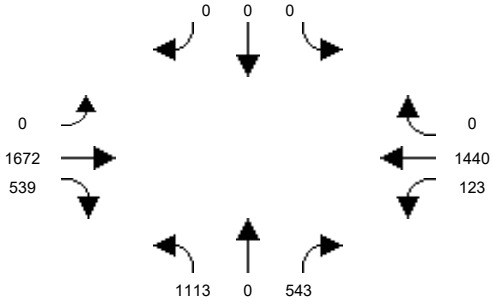
Intersection #56: Main St and Edinger Ave



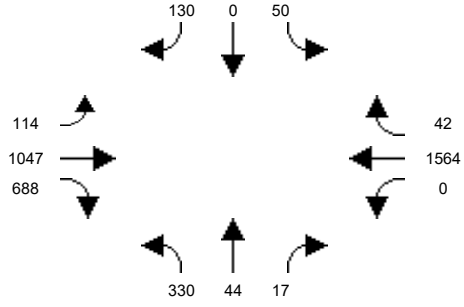
Intersection #57: Main St and MacArthur Blvd



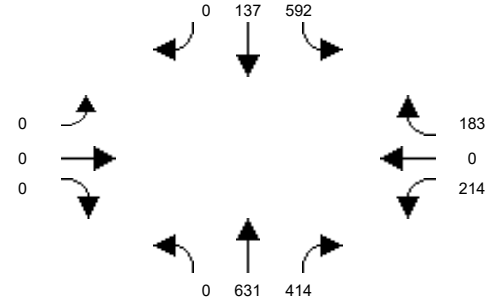
Intersection #58: Penn Wy and 17th St



Intersection #59: I-5 NB Off Ramps/17th Street



Intersection #60: Penn Wy and I-5 SB Ramps



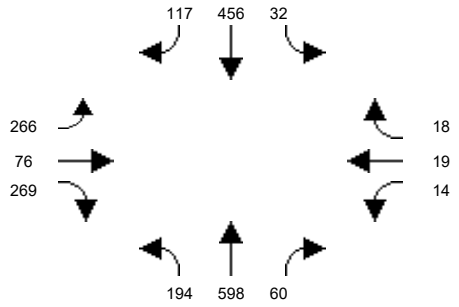
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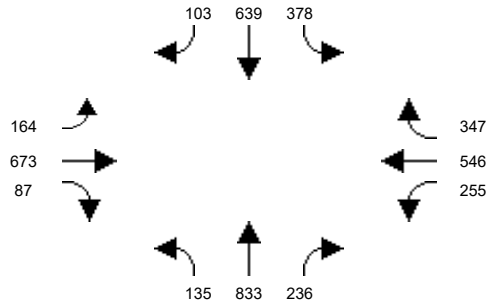
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

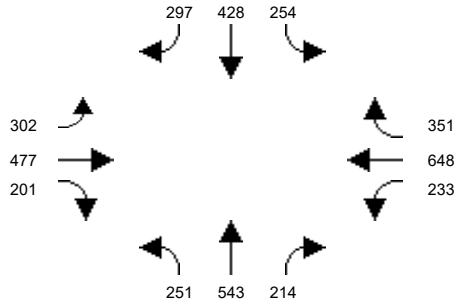
Intersection #61: Santiago St and Civic Center Dr



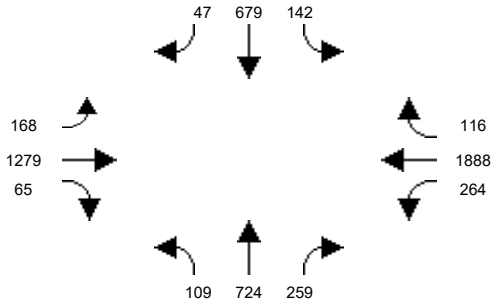
Intersection #62: Santiago St and Santa Ana Blvd



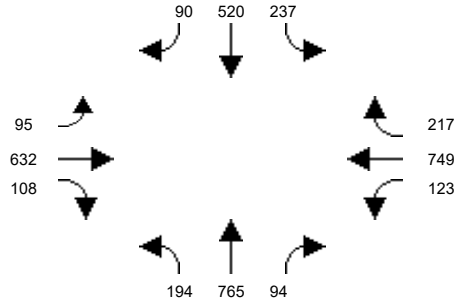
Intersection #63: Standard Ave and 4th St



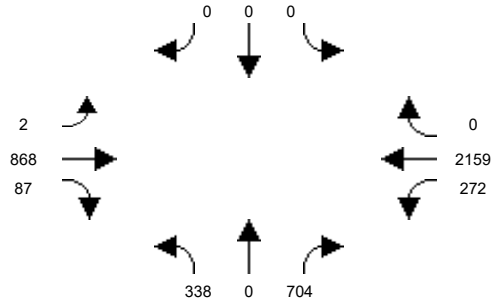
Intersection #64: Standard Ave and 1st St



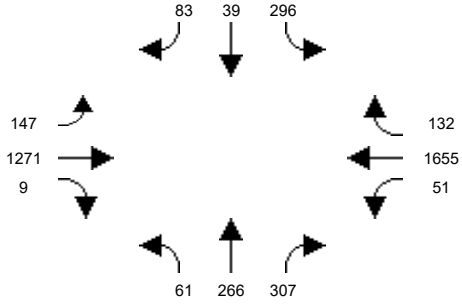
Intersection #65: Standard Ave and Mcfadden Ave



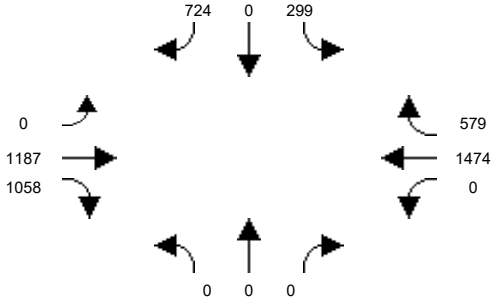
Intersection #66: Halladay St and Warner Ave



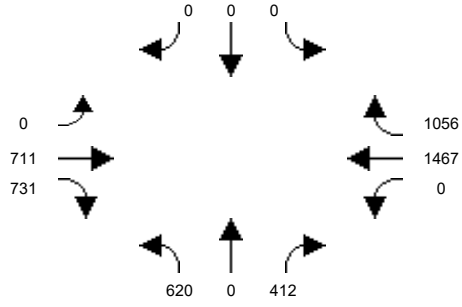
Intersection #67: Halladay St and Dyer Rd



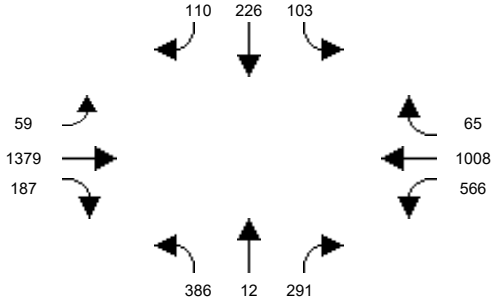
Intersection #68: SR-55 SB Ramps and MacArthur Blvd



Intersection #69: SR-55 NB Ramps and MacArthur Blvd



Intersection #70: SR-55 SB Ramps and Dyer Rd



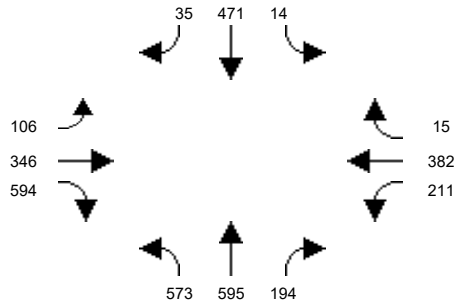
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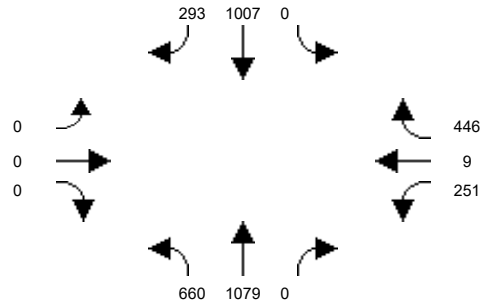
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

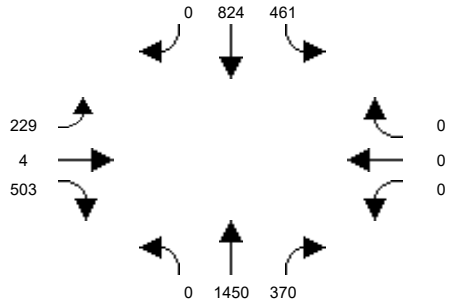
Intersection #71: Glassell St and La Veta Ave



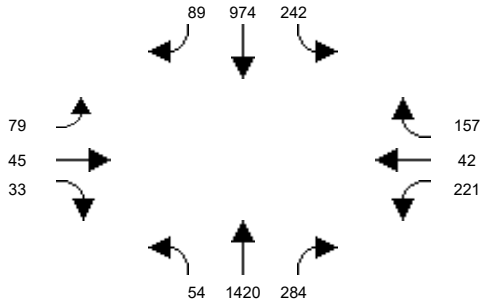
Intersection #72: Glassell St and SR-22 WB Ramps



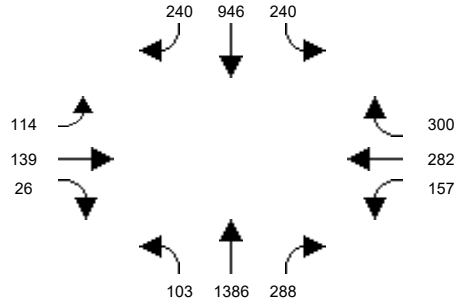
Intersection #73: Grand Ave / Glassell St and SR-22 EB Ramps



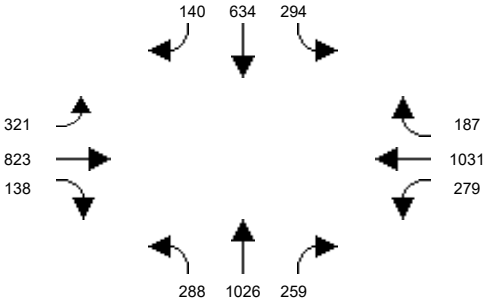
Intersection #74: Grand Ave and Fairhaven Ave



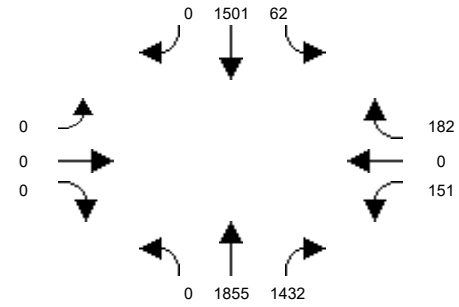
Intersection #75: Grand Ave and Santa Clara Ave



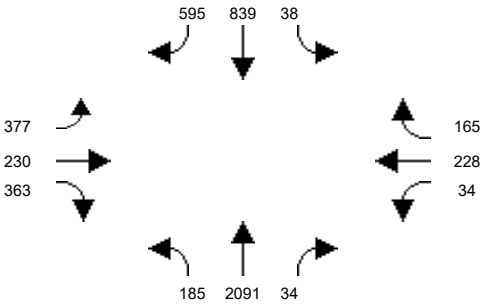
Intersection #76: Grand Ave and 17th St



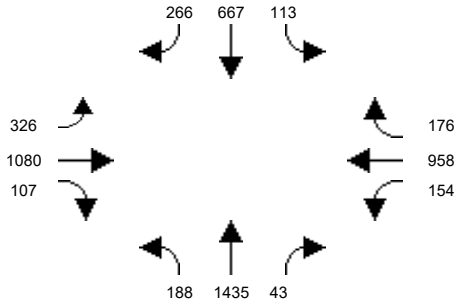
Intersection #77: Grand Ave and I-5 NB Ramps



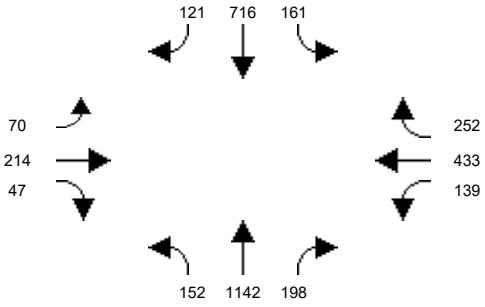
Intersection #78: Grand Ave and Santa Ana Blvd



Intersection #79: Grand Ave and 1st St



Intersection #80: Grand Ave and Chestnut Ave



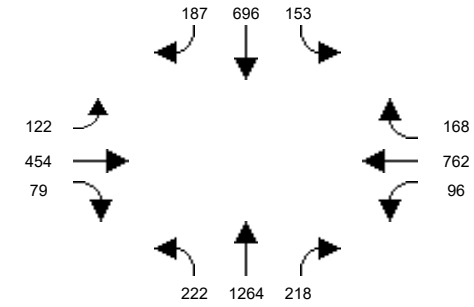
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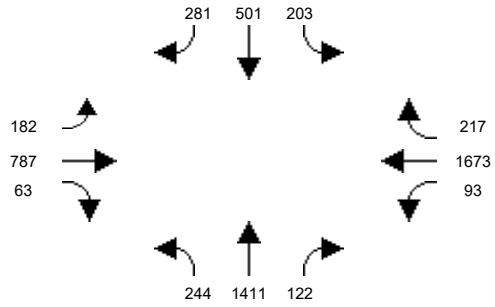
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

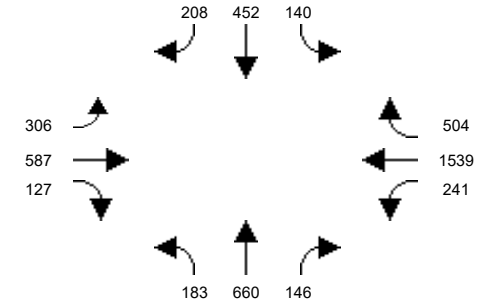
Intersection #81: Grand Ave and McFadden Ave



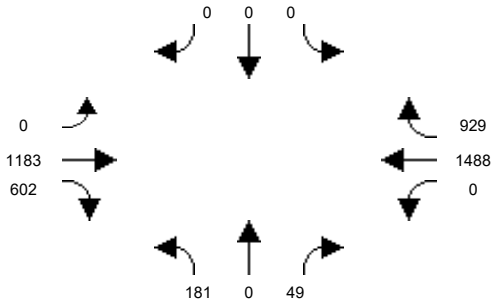
Intersection #82: Grand Ave and Edinger Ave



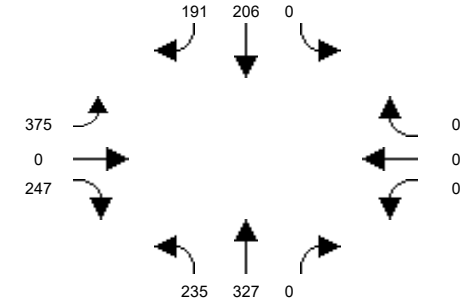
Intersection #83: Grand Ave and Warner Ave



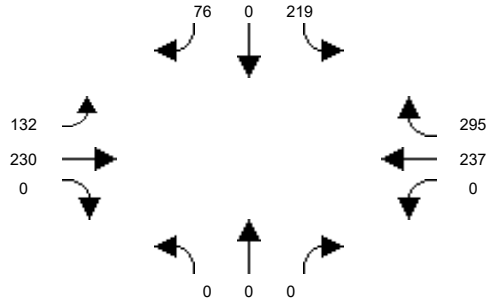
Intersection #84: SR-55 NB Ramps and Dyer Rd



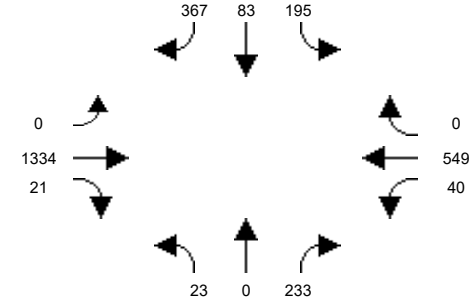
Intersection #85: Cambridge St and La Veta Ave



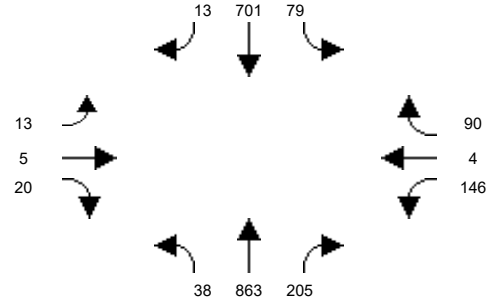
Intersection #86: Cambridge St and Fairhaven Ave



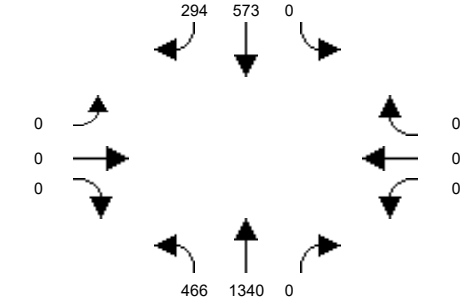
Intersection #87: Mabury St and 1st Street



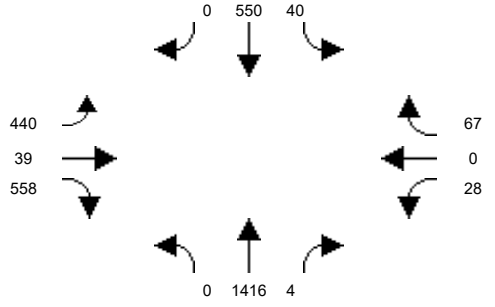
Intersection #88: Tustin St and La Veta Ave



Intersection #89: Tustin St and SR-22 WB On-Ramp



Intersection #90: Tustin St and SR-22 EB Off-Ramp / Seba Ave



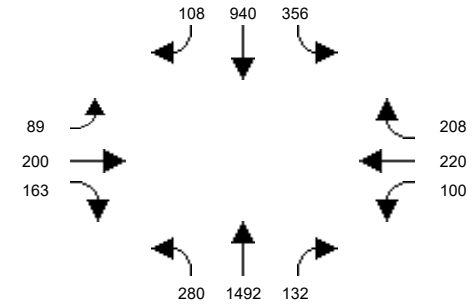
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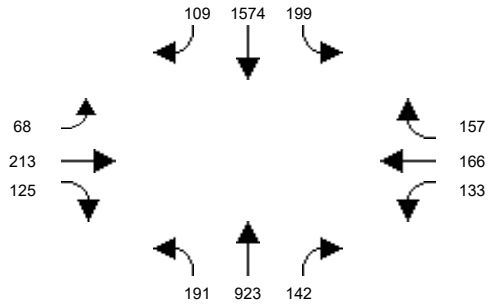
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

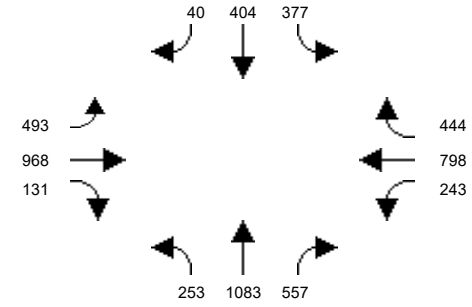
Intersection #91: Tustin Ave and Fairhaven Ave



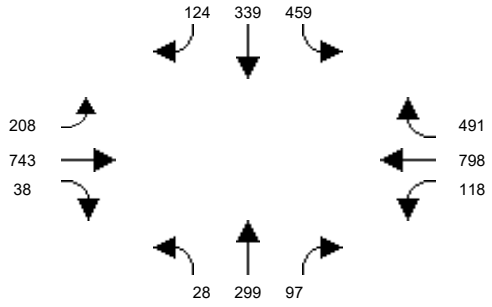
Intersection #92: Tustin Ave and Santa Clara Ave



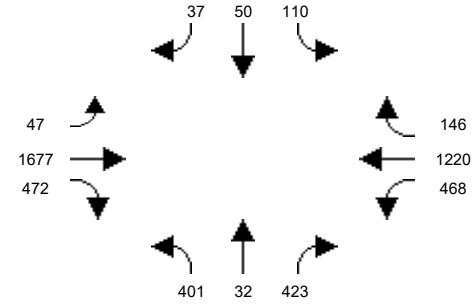
Intersection #93: Tustin Ave and 17th St



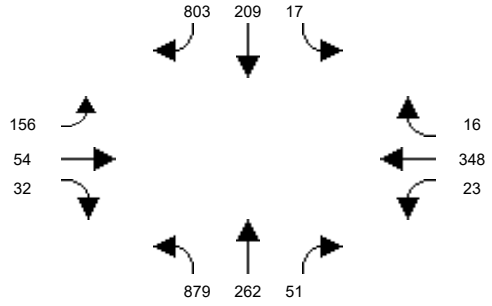
Intersection #94: Tustin Ave and 4th St



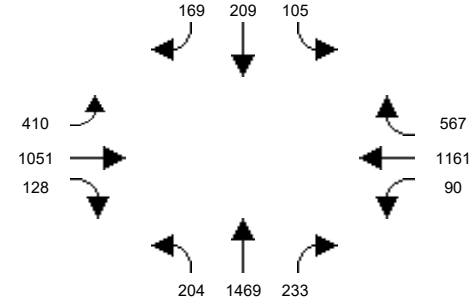
Intersection #95: SR-55 SB Ramps / Auto Mall Dr and Edinger Ave



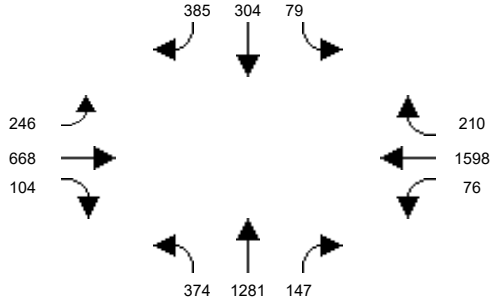
Intersection #96: SR-55 NB Ramps / Del Amo Ave and Newport Avenue



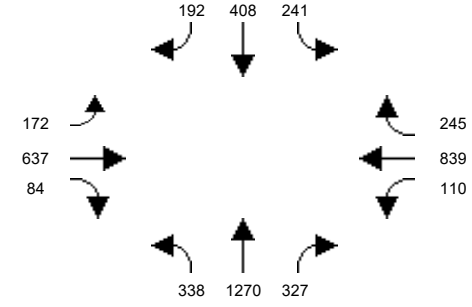
Intersection #97: Red Hill Ave and Edinger Ave



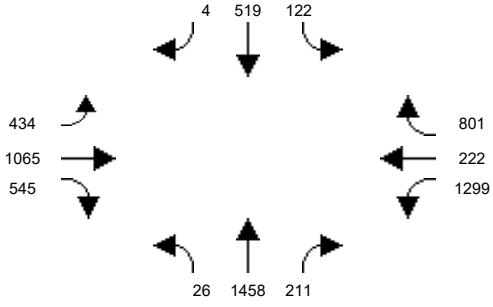
Intersection #98: Red Hill Ave and Warner Ave



Intersection #99: Red Hill Ave and Dyer Rd / barranca Pkwy



Intersection #100: Red Hill Ave and Alton Pkwy



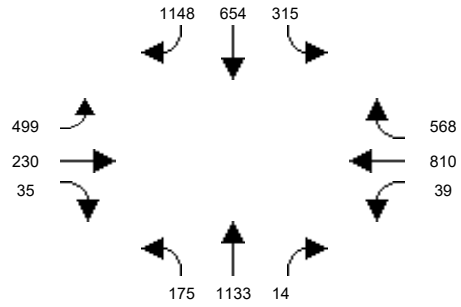
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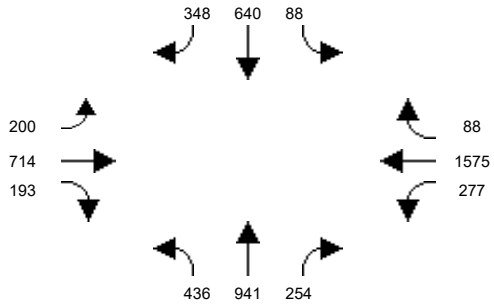
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

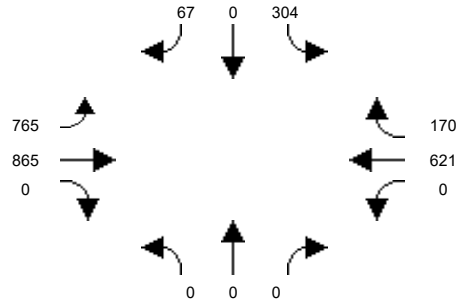
Intersection #101: Red Hill Ave and MacArthur Blvd



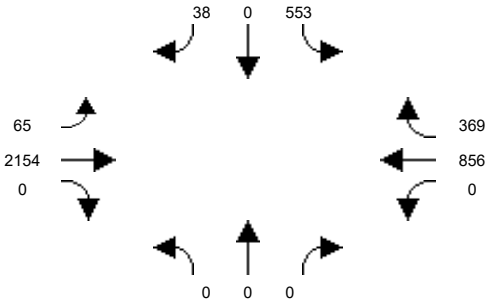
Intersection #102: Red Hill Ave and Main St



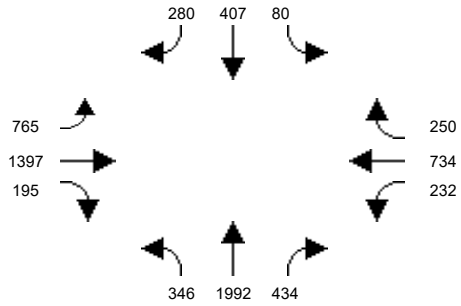
Intersection #103: I-5 SB Ramps and Santa Ana Blvd



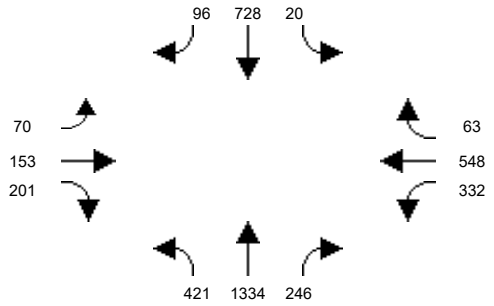
Intersection #104: Tustin Ranch Rd and Warner Ave



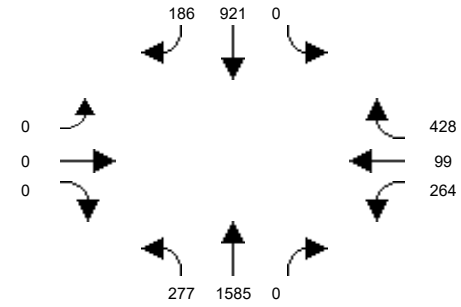
Intersection #105: Von Karman Ave and Barranca Pkwy



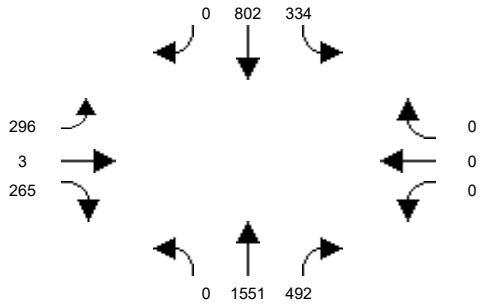
Intersection #106: Red Hill Avenue and El Camino Real



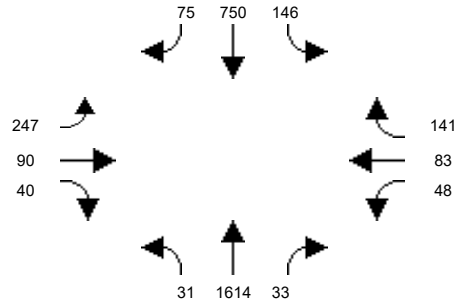
Intersection #107: Red Hill Avenue and I-5 NB Ramps



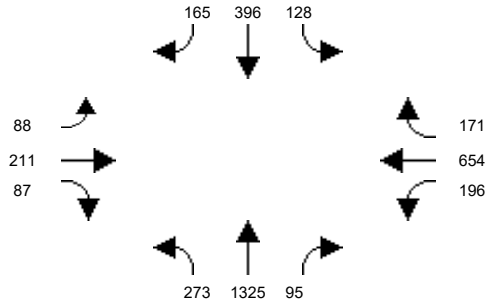
Intersection #108: Red Hill Avenue and I-5 SB Ramps



Intersection #109: Red Hill Avenue and Nisson Road



Intersection #110: Red Hill Avenue and Walnut Avenue



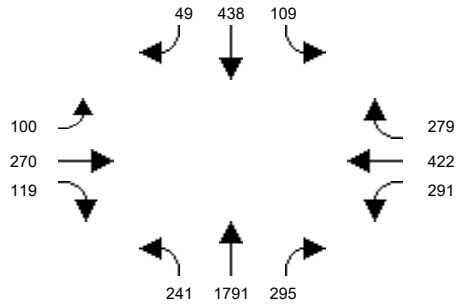
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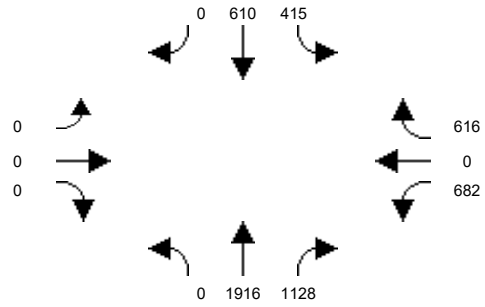
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 NP PM Peak Hour

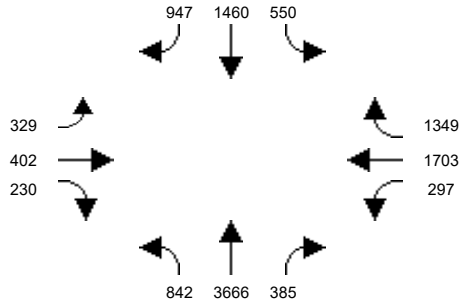
Intersection #111: Red Hill Avenue and Valencia Avenue



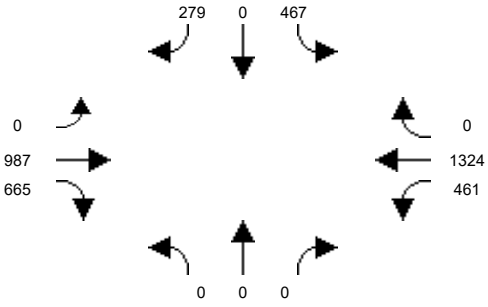
Intersection #112: Tustin Ranch Road and Warner Avenue North



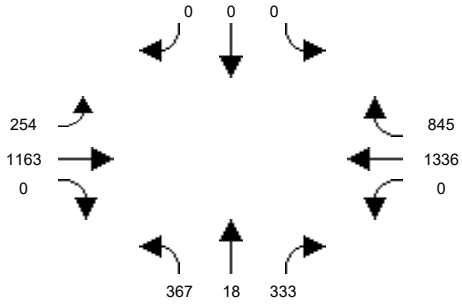
Intersection #113: Tustin Ranch Road and Walnut Avenue



Intersection #114: SR-55 SB Ramps and Irvine Boulevard



Intersection #115: SR-55 NB Ramps and Irvine Boulevard



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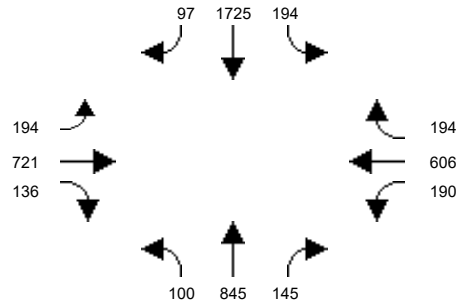
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APPENDIX B.5

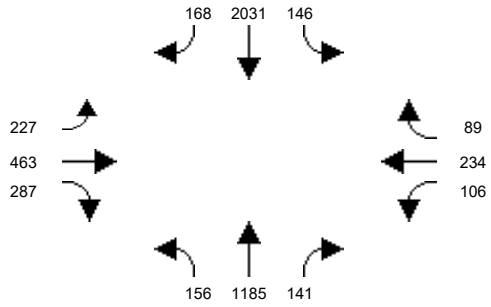
INTERSECTION VOLUMES –
2045 WP (AM PEAK HOUR)

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

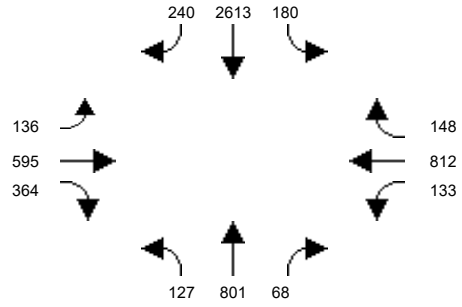
Intersection #1: Euclid St and 1st St



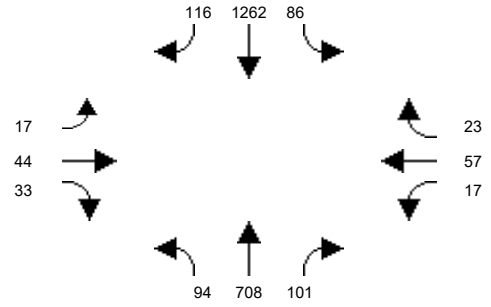
Intersection #2: Euclid St and McFadden Ave



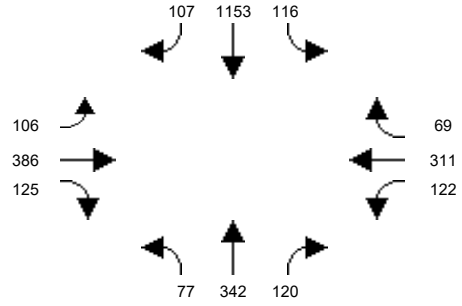
Intersection #3: Euclid St and Edinger Ave



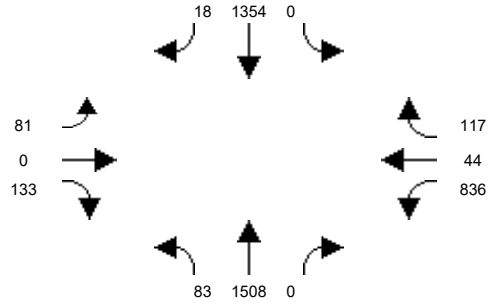
Intersection #4: Newhope St and Hazard Ave



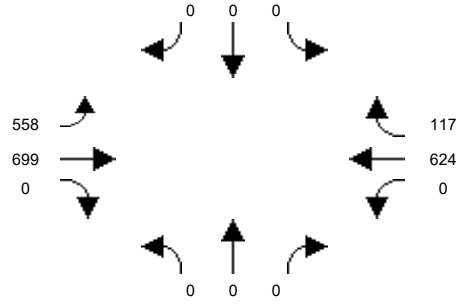
Intersection #5: Newhope St and McFadden Ave



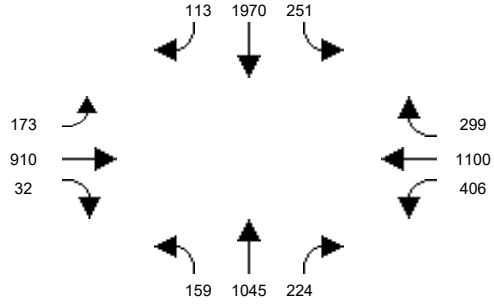
Intersection #6: Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr



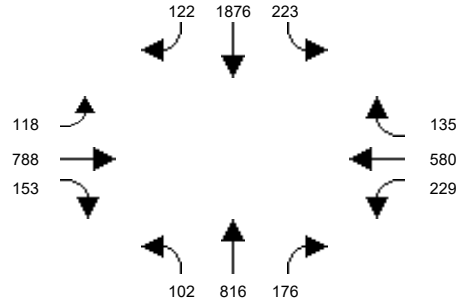
Intersection #7: Trask Avenue and SR-22 EB On-Ramp



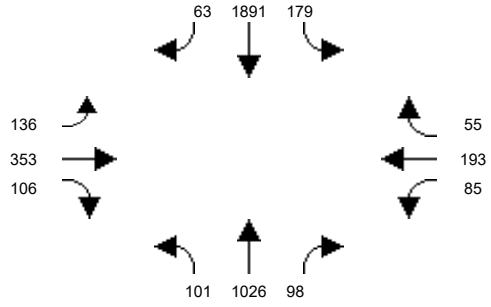
Intersection #8: Harbor Blvd and Westminster Ave



Intersection #9: Harbor Blvd and 1st St



Intersection #10: Harbor Blvd and McFadden Ave



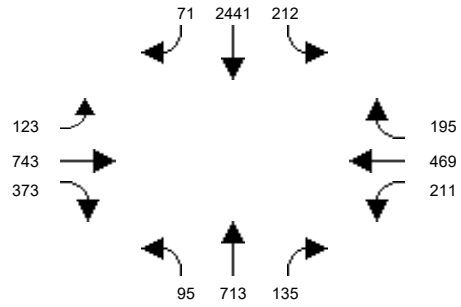
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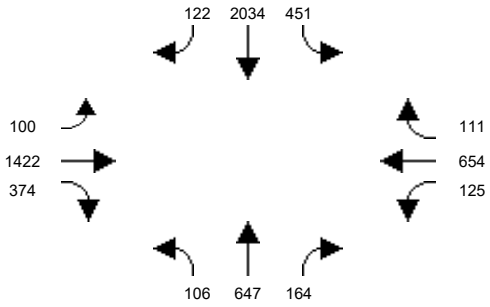
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

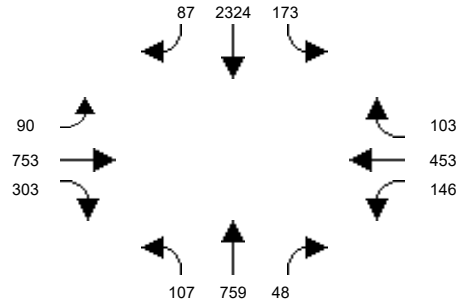
Intersection #11: Harbor Blvd and Edinger Ave



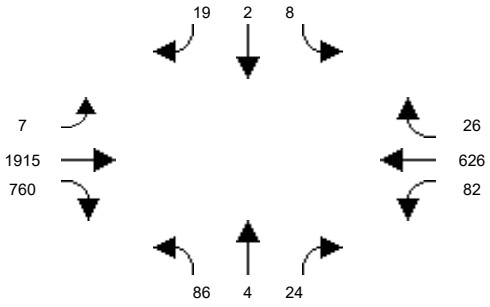
Intersection #12: Harbor Blvd and Warner Ave



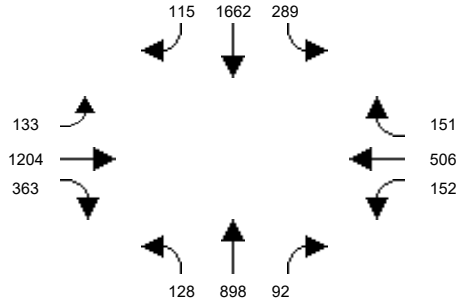
Intersection #13: Harbor Blvd and Segerstrom Ave



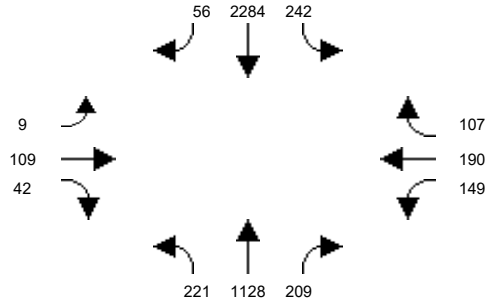
Intersection #14: MacArthur Blvd and Hyland Ave



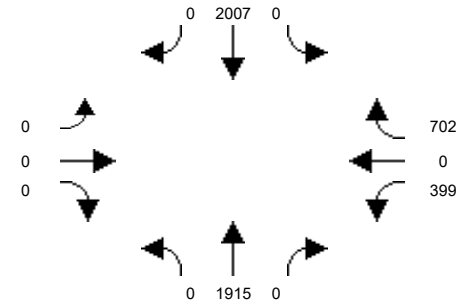
Intersection #15: MacArthur Blvd and Harbor Blvd



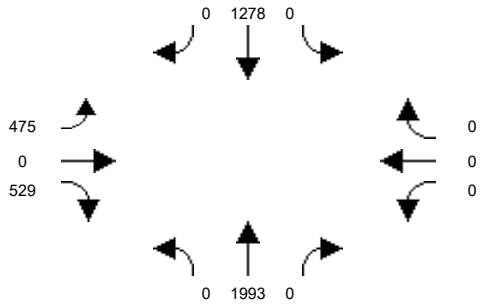
Intersection #16: Harbor Blvd and Sunflower Ave



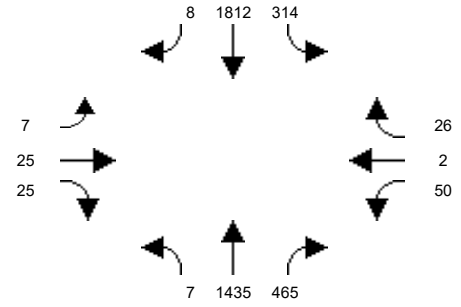
Intersection #17: Harbor Blvd and I-405 NB Off-Ramp



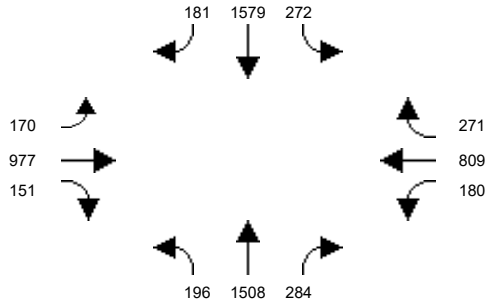
Intersection #18: Harbor Blvd and I-405 SB Off-Ramp



Intersection #19: Fairview St and Civic Center Dr



Intersection #20: Fairview St and 1st St



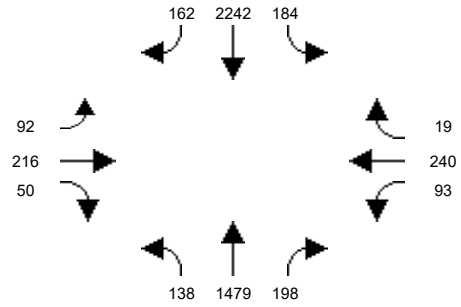
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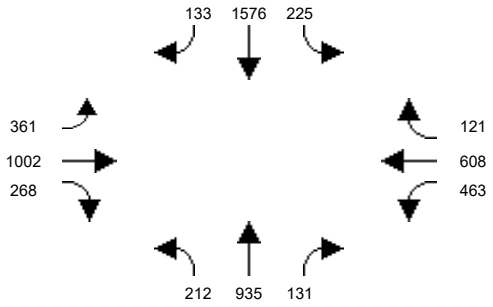
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

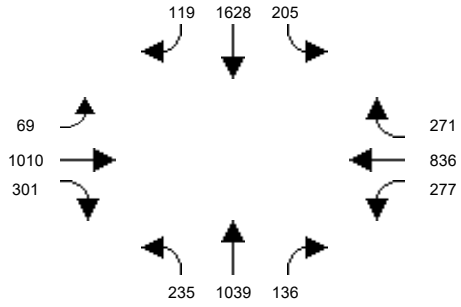
Intersection #21: Fairview St and McFadden Ave



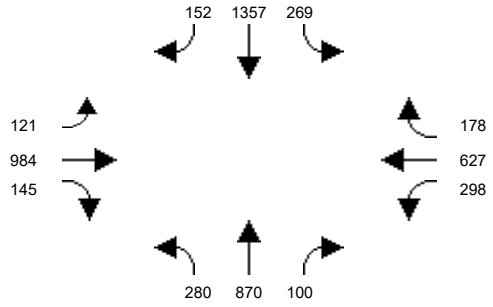
Intersection #22: Fairview St and Edinger Ave



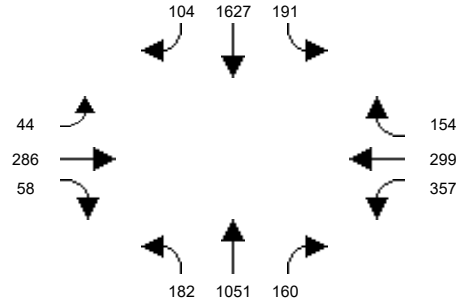
Intersection #23: Fairview St and Warner Ave



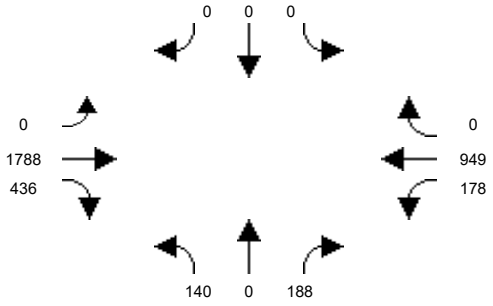
Intersection #24: Fairview St and MacArthur Blvd



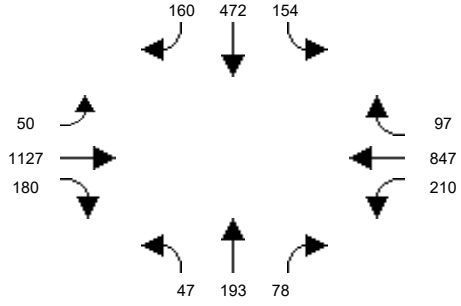
Intersection #25: Fairview Rd and Sunflower Ave



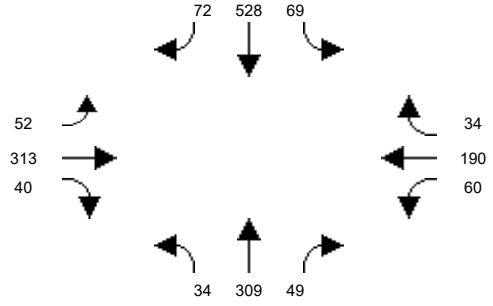
Intersection #26: Greenville St and Edinger Ave



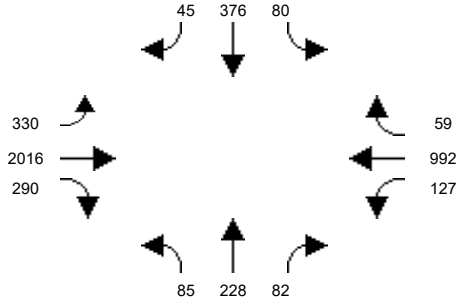
Intersection #27: Greenville St and Segerstrom Ave



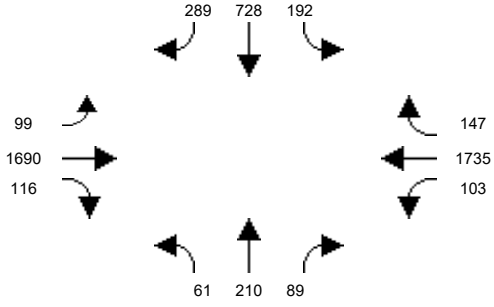
Intersection #28: Raitt St and McFadden Ave



Intersection #29: Raitt St and Edinger Ave



Intersection #30: Bear St and MacArthur Blvd



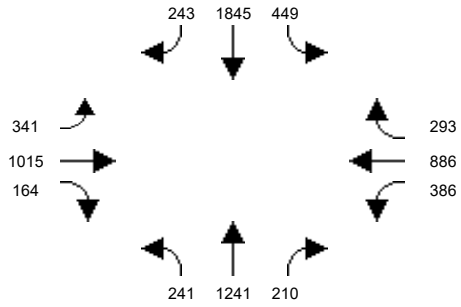
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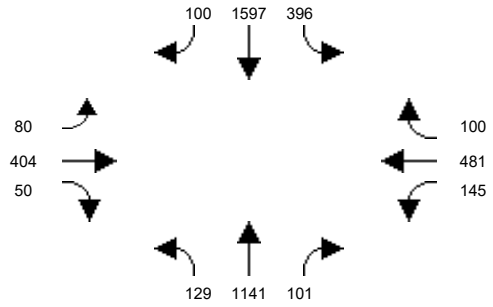
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

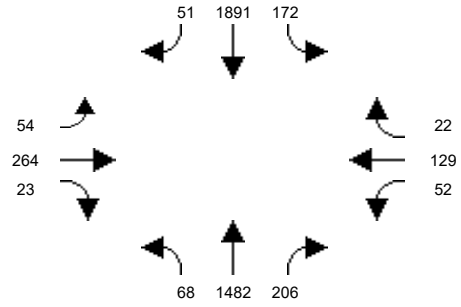
Intersection #31: Bristol St and 17th St



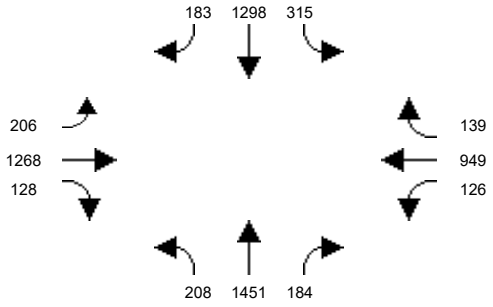
Intersection #32: Bristol St and Civic Center Dr



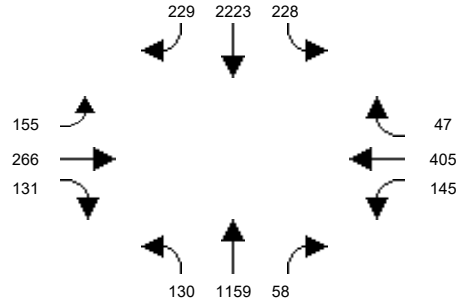
Intersection #33: Bristol St and Santa Ana Blvd



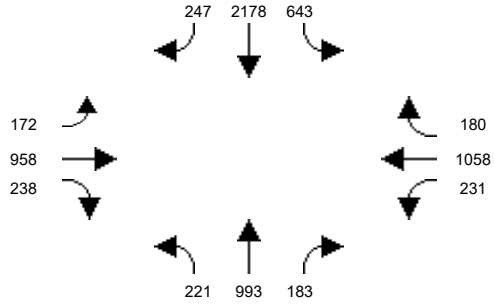
Intersection #34: Bristol St and 1st St



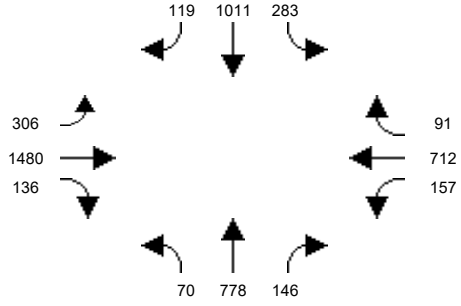
Intersection #35: Bristol St and McFadden Ave



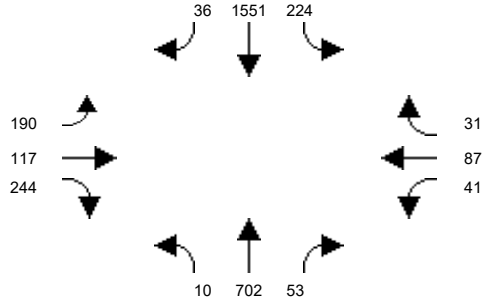
Intersection #36: Bristol St and Warner Ave



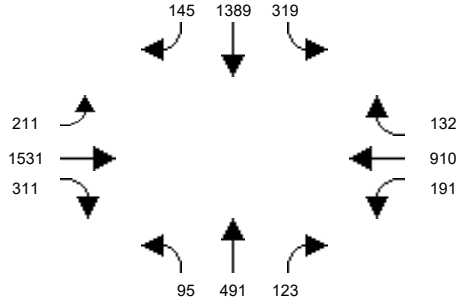
Intersection #37: Bristol St and Segerstrom Ave



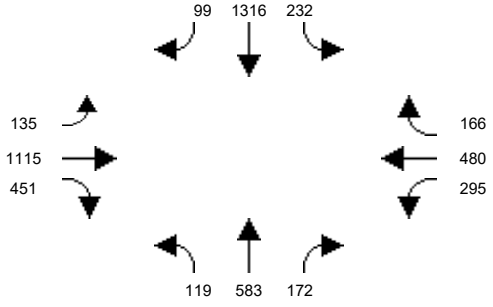
Intersection #38: Bristol St and Alton Ave



Intersection #39: Bristol St and MacArthur Blvd



Intersection #40: Bristol St and Sunflower Ave



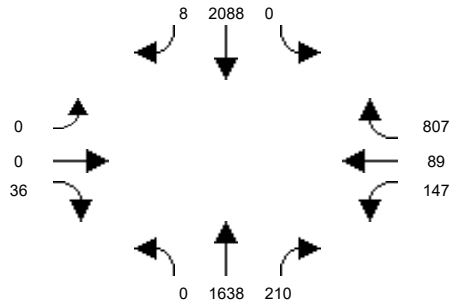
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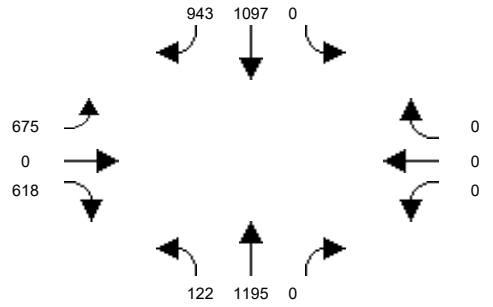
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

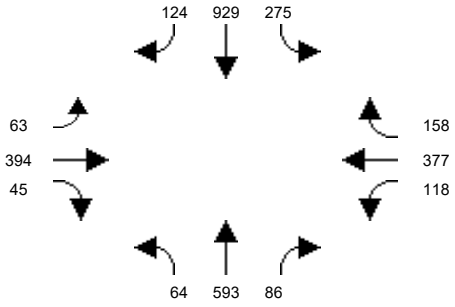
Intersection #41: Bristol St and I-405 NB Ramps



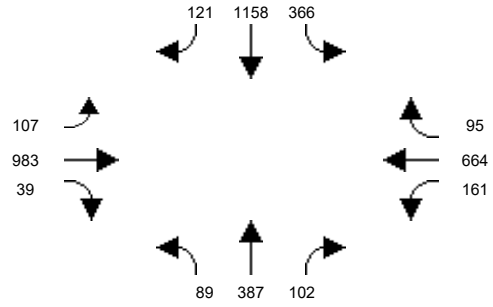
Intersection #42: Bristol St and I-405 SB Ramps



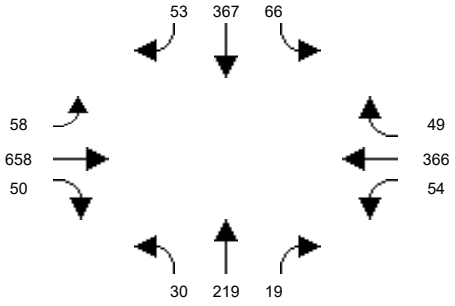
Intersection #43: Flower St and Santa Ana Blvd



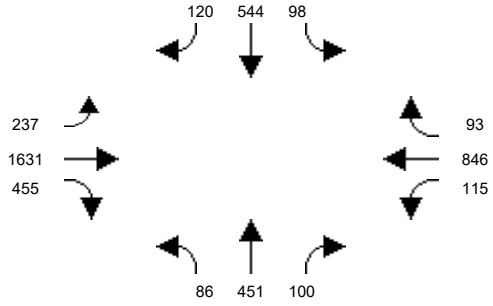
Intersection #44: Flower St and 1st St



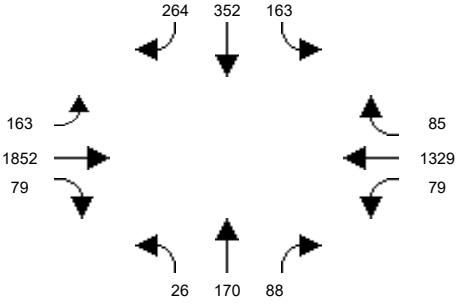
Intersection #45: Flower St and McFadden Ave



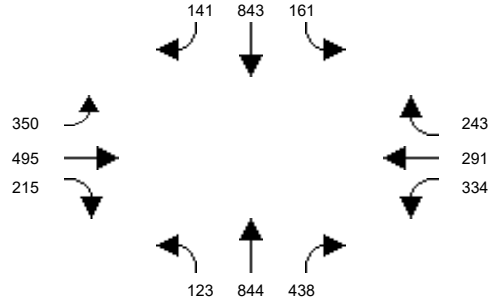
Intersection #46: Flower St and Segerstrom Ave



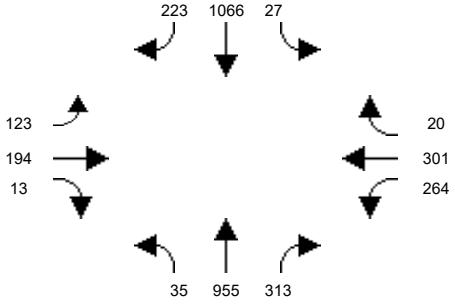
Intersection #47: Flower St and MacArthur Blvd



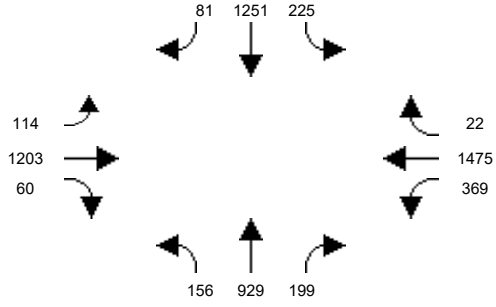
Intersection #48: Main St and La Veta Ave



Intersection #49: Main St and Mainplace Dr / Memory Ln



Intersection #50: Main St and 17th St



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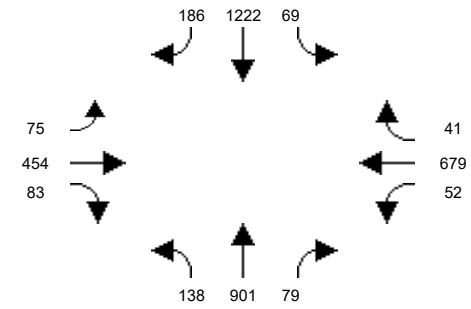
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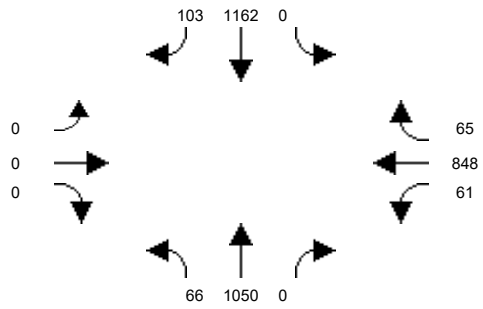
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

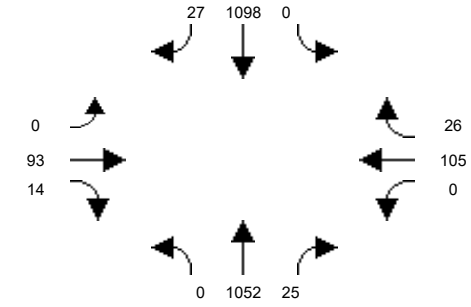
Intersection #51: Main St and Civic Center Dr



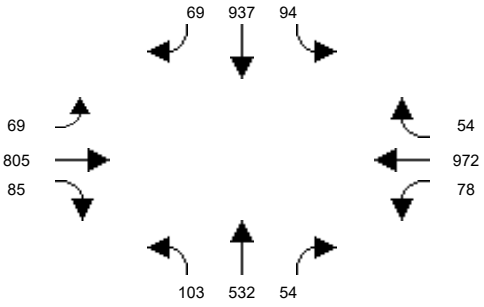
Intersection #52: Main St and Santa Ana Blvd



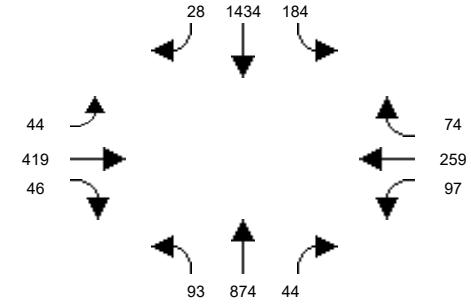
Intersection #53: Main St and 4th St



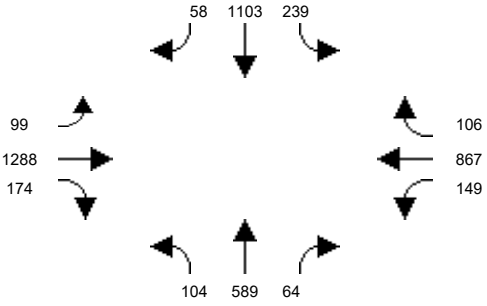
Intersection #54: Main St and 1st St



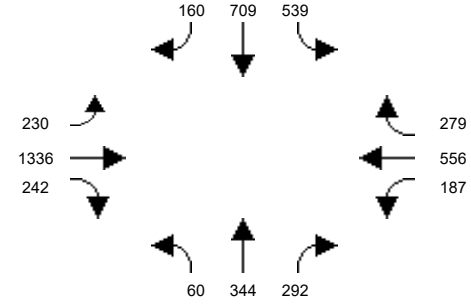
Intersection #55: Main St and McFadden Ave



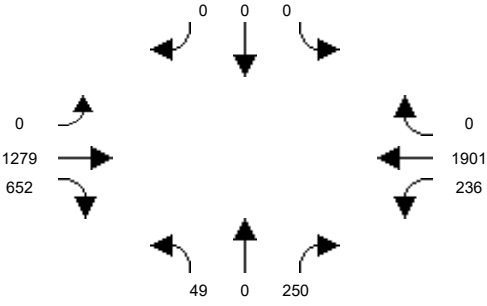
Intersection #56: Main St and Edinger Ave



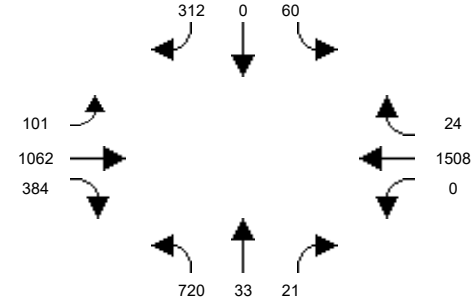
Intersection #57: Main St and MacArthur Blvd



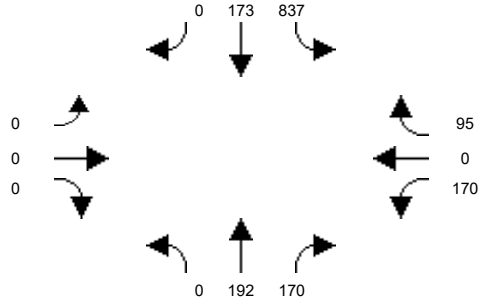
Intersection #58: Penn Wy and 17th St



Intersection #59: I-5 NB Off Ramps/17th Street



Intersection #60: Penn Wy and I-5 SB Ramps



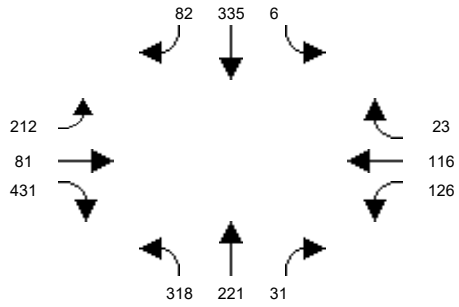
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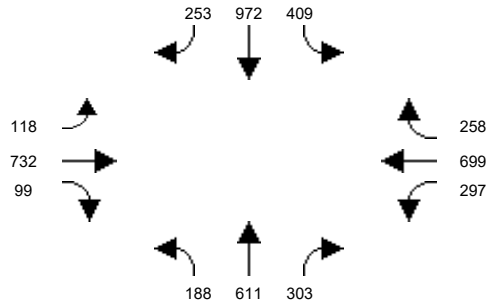
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

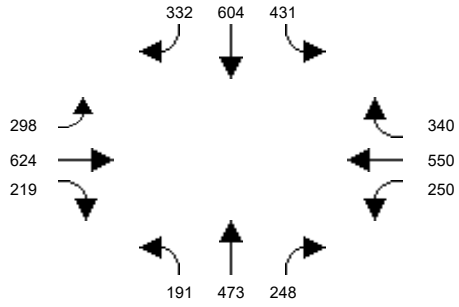
Intersection #61: Santiago St and Civic Center Dr



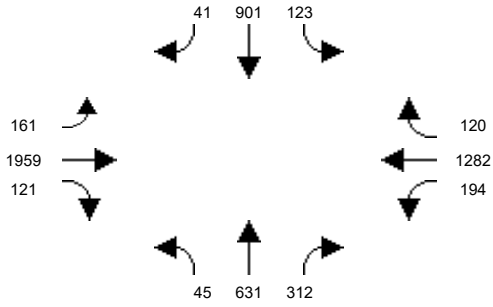
Intersection #62: Santiago St and Santa Ana Blvd



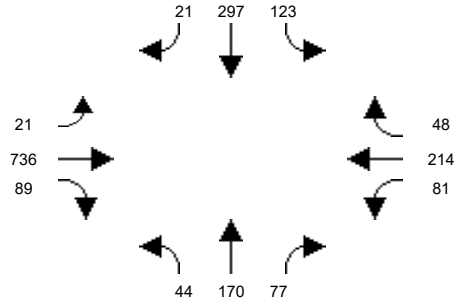
Intersection #63: Standard Ave and 4th St



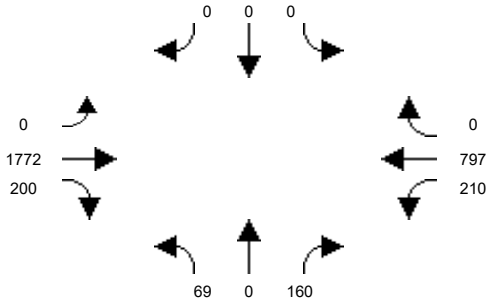
Intersection #64: Standard Ave and 1st St



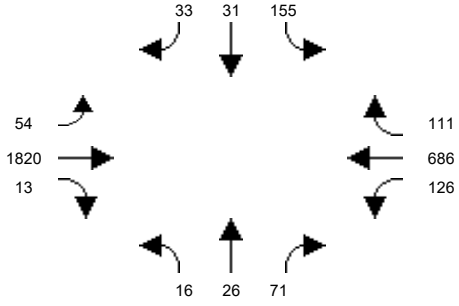
Intersection #65: Standard Ave and Mcfadden Ave



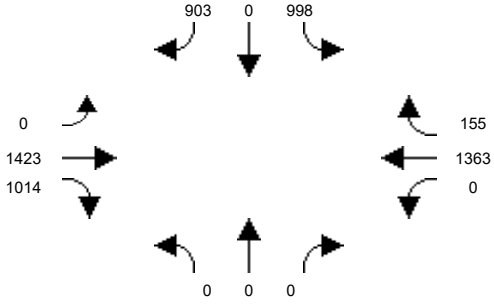
Intersection #66: Halladay St and Warner Ave



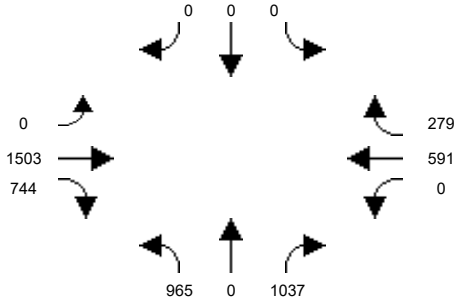
Intersection #67: Halladay St and Dyer Rd



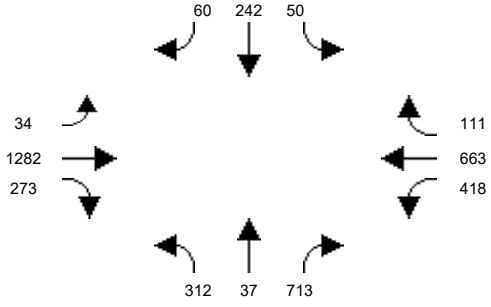
Intersection #68: SR-55 SB Ramps and MacArthur Blvd



Intersection #69: SR-55 NB Ramps and MacArthur Blvd



Intersection #70: SR-55 SB Ramps and Dyer Rd



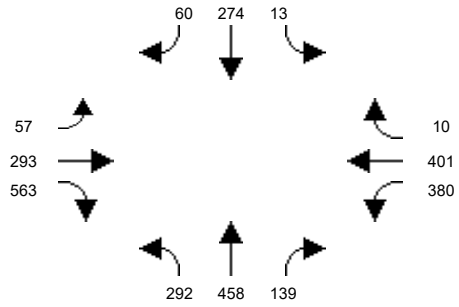
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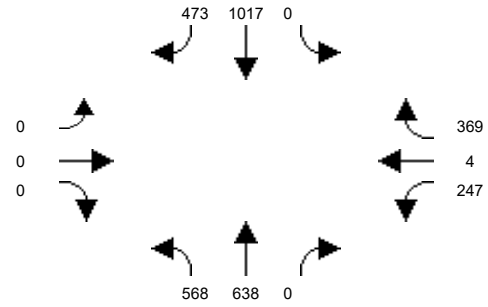
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

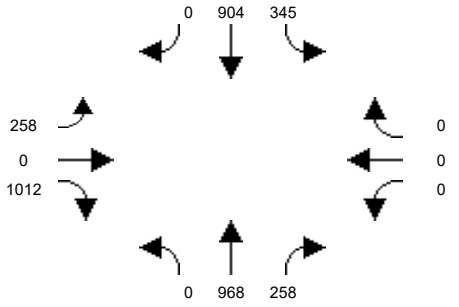
Intersection #71: Glassell St and La Veta Ave



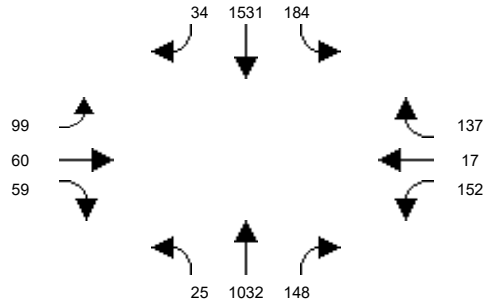
Intersection #72: Glassell St and SR-22 WB Ramps



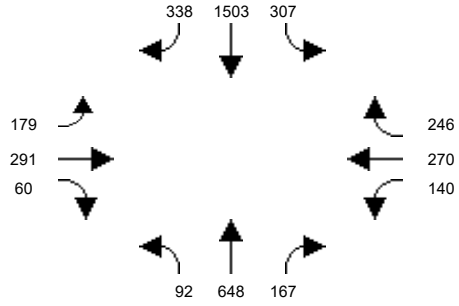
Intersection #73: Grand Ave / Glassell St and SR-22 EB Ramps



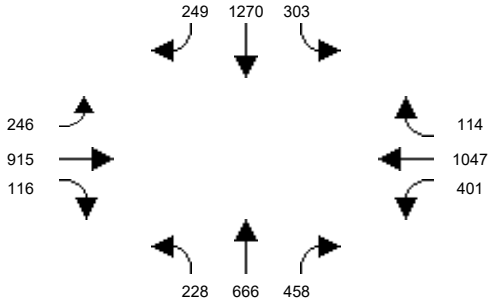
Intersection #74: Grand Ave and Fairhaven Ave



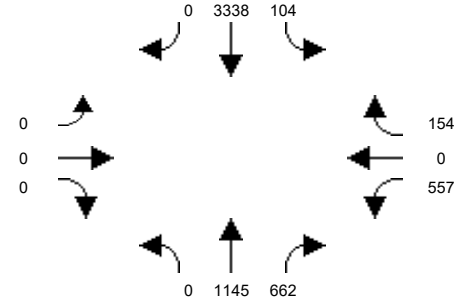
Intersection #75: Grand Ave and Santa Clara Ave



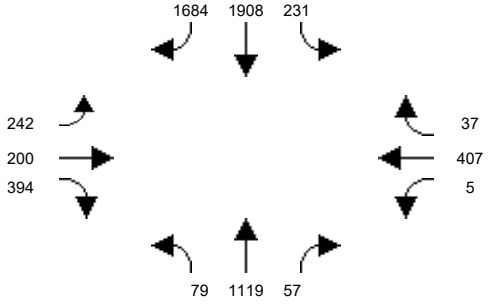
Intersection #76: Grand Ave and 17th St



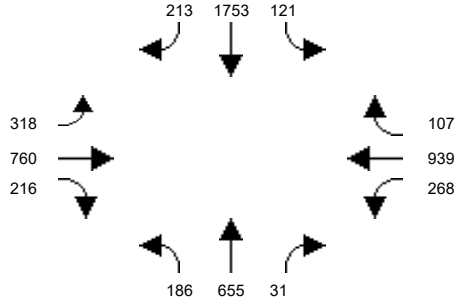
Intersection #77: Grand Ave and I-5 NB Ramps



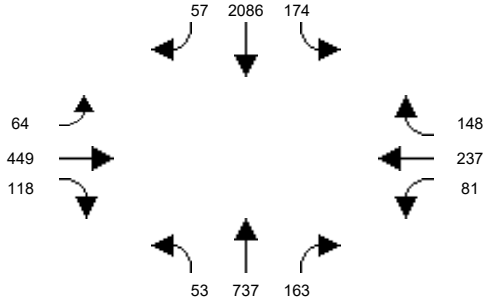
Intersection #78: Grand Ave and Santa Ana Blvd



Intersection #79: Grand Ave and 1st St



Intersection #80: Grand Ave and Chestnut Ave



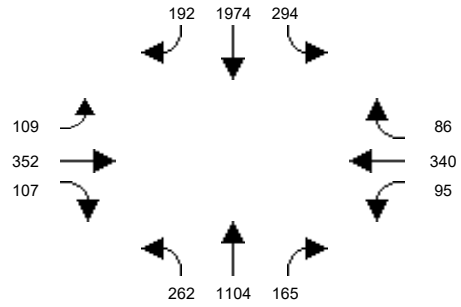
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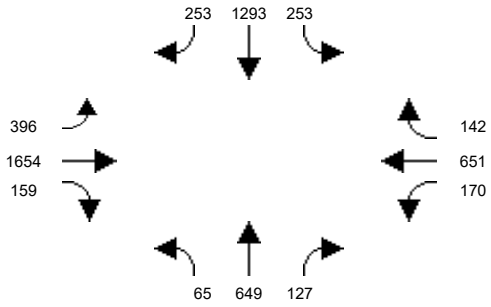
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

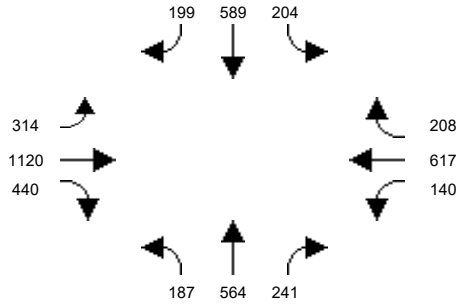
Intersection #81: Grand Ave and McFadden Ave



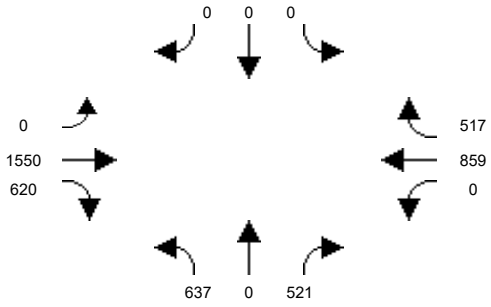
Intersection #82: Grand Ave and Edinger Ave



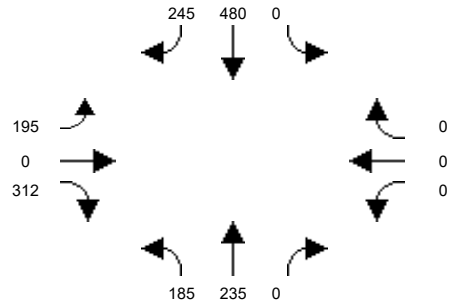
Intersection #83: Grand Ave and Warner Ave



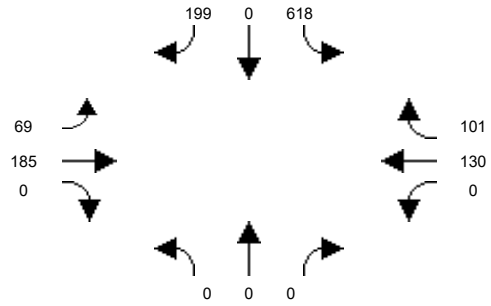
Intersection #84: SR-55 NB Ramps and Dyer Rd



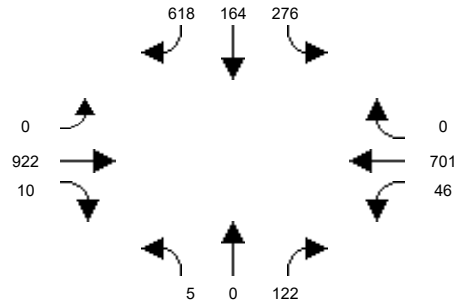
Intersection #85: Cambridge St and La Veta Ave



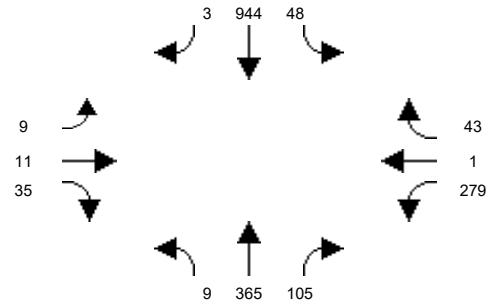
Intersection #86: Cambridge St and Fairhaven Ave



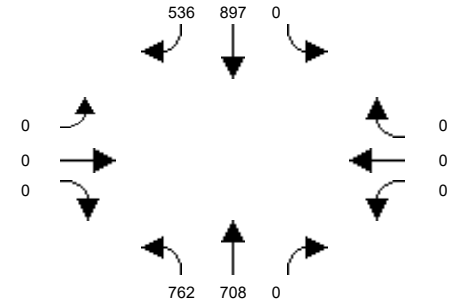
Intersection #87: Mabury St and 1st Street



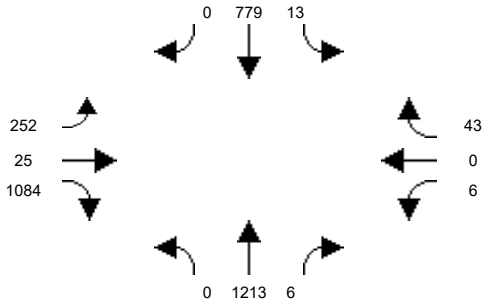
Intersection #88: Tustin St and La Veta Ave



Intersection #89: Tustin St and SR-22 WB On-Ramp



Intersection #90: Tustin St and SR-22 EB Off-Ramp / Seba Ave



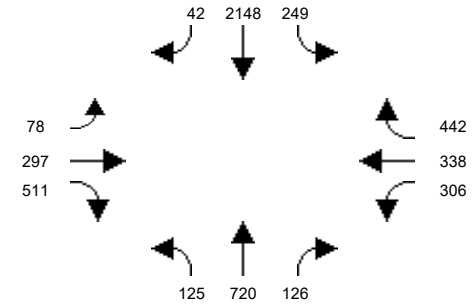
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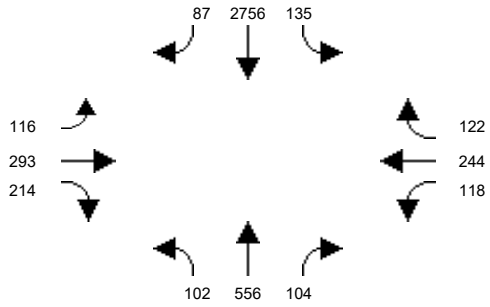
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

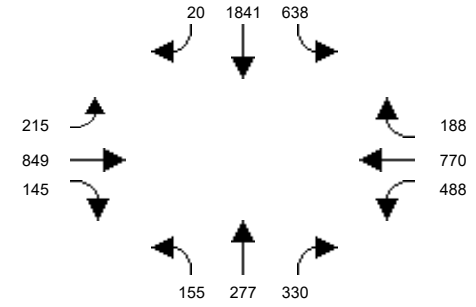
Intersection #91: Tustin Ave and Fairhaven Ave



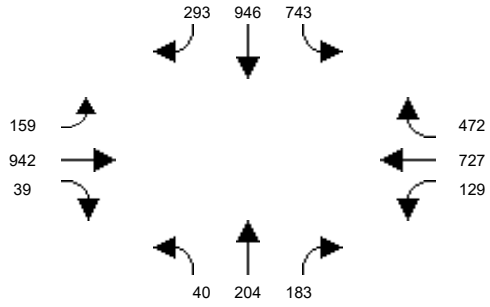
Intersection #92: Tustin Ave and Santa Clara Ave



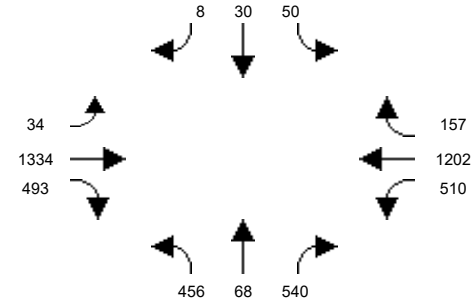
Intersection #93: Tustin Ave and 17th St



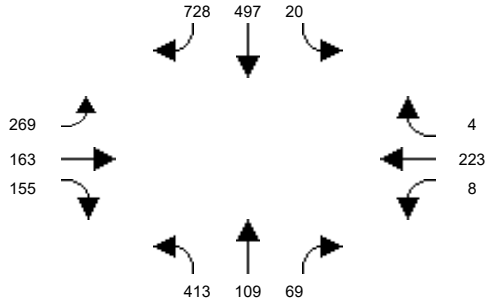
Intersection #94: Tustin Ave and 4th St



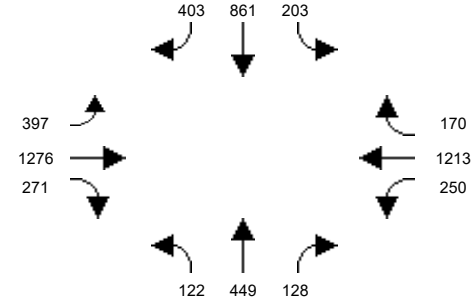
Intersection #95: SR-55 SB Ramps / Auto Mall Dr and Edinger Ave



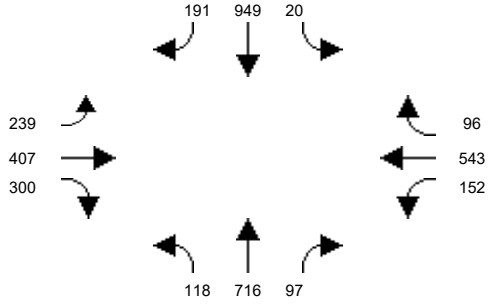
Intersection #96: SR-55 NB Ramps / Del Amo Ave and Newport Avenue



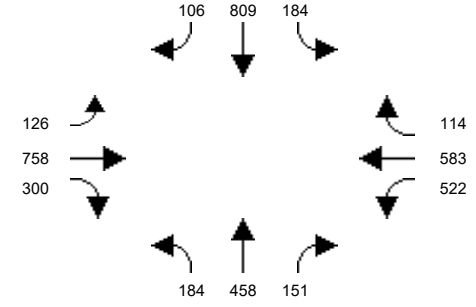
Intersection #97: Red Hill Ave and Edinger Ave



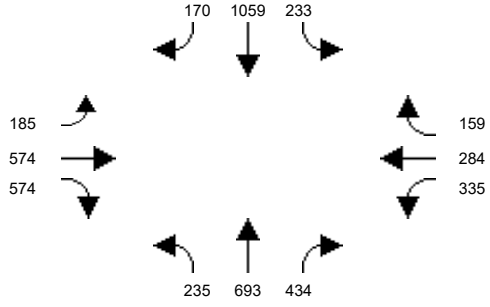
Intersection #98: Red Hill Ave and Warner Ave



Intersection #99: Red Hill Ave and Dyer Rd / barranca Pkwy



Intersection #100: Red Hill Ave and Alton Pkwy



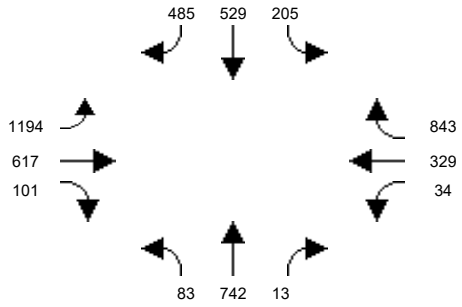
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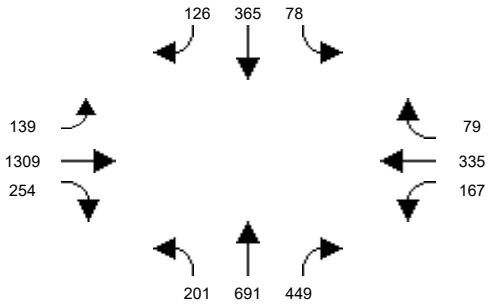
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

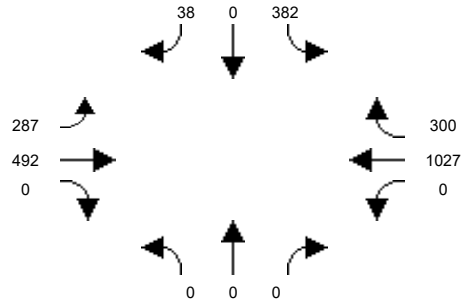
Intersection #101: Red Hill Ave and MacArthur Blvd



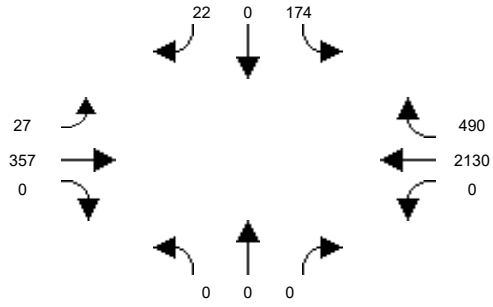
Intersection #102: Red Hill Ave and Main St



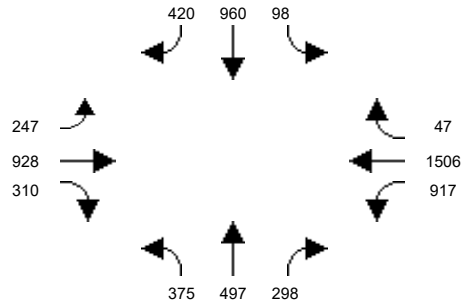
Intersection #103: I-5 SB Ramps and Santa Ana Blvd



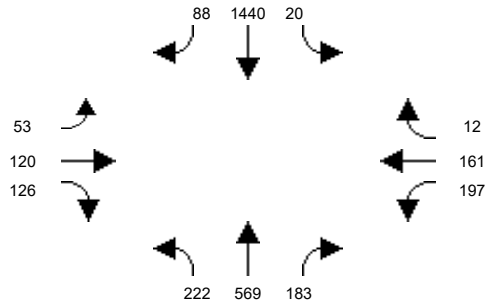
Intersection #104: Tustin Ranch Rd and Warner Ave



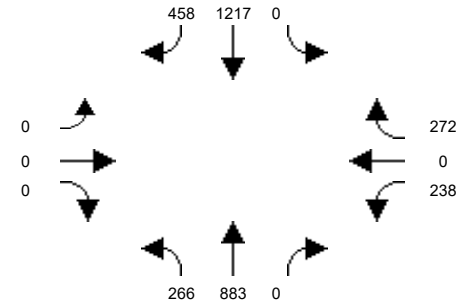
Intersection #105: Von Karman Ave and Barranca Pkwy



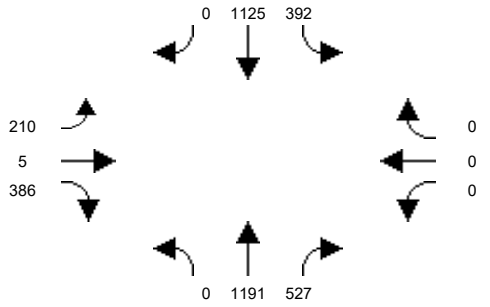
Intersection #106: Red Hill Avenue and El Camino Real



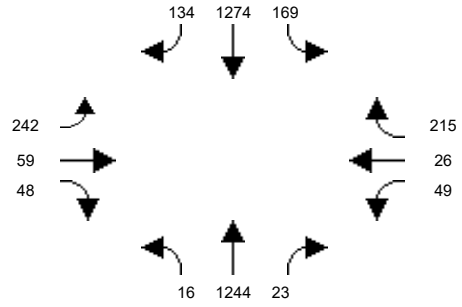
Intersection #107: Red Hill Avenue and I-5 NB Ramps



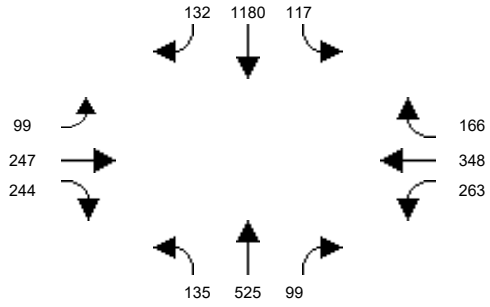
Intersection #108: Red Hill Avenue and I-5 SB Ramps



Intersection #109: Red Hill Avenue and Nisson Road



Intersection #110: Red Hill Avenue and Walnut Avenue



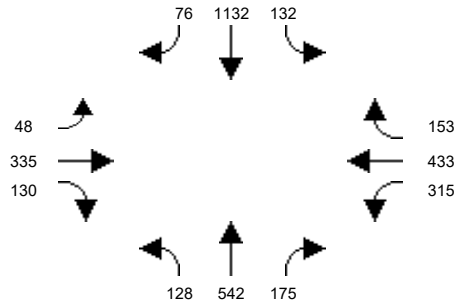
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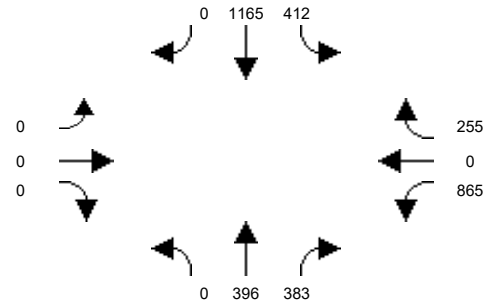
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP AM Peak Hour

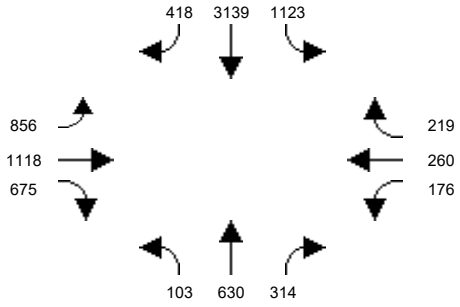
Intersection #111: Red Hill Avenue and Valencia Avenue



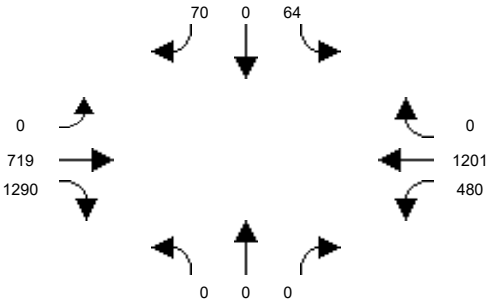
Intersection #112: Tustin Ranch Road and Warner Avenue North



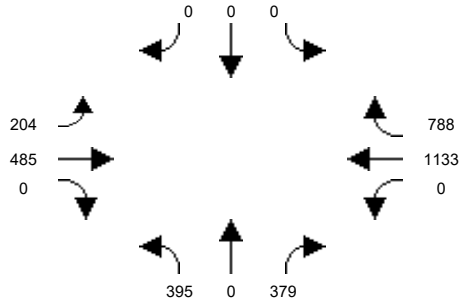
Intersection #113: Tustin Ranch Road and Walnut Avenue



Intersection #114: SR-55 SB Ramps and Irvine Boulevard



Intersection #115: SR-55 NB Ramps and Irvine Boulevard



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APPENDIX B.6

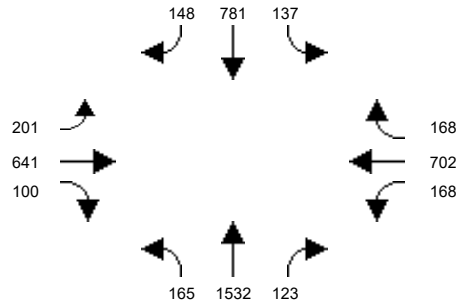
INTERSECTION VOLUMES –
2045 WP (PM PEAK HOUR)

Attachment 8

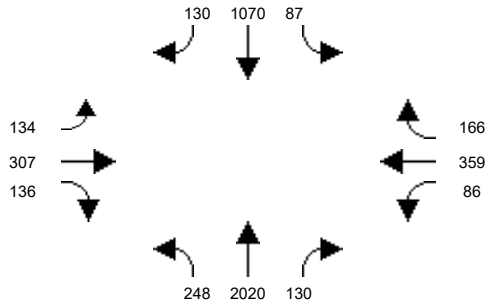
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

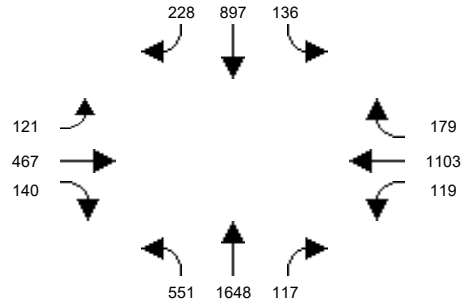
Intersection #1: Euclid St and 1st St



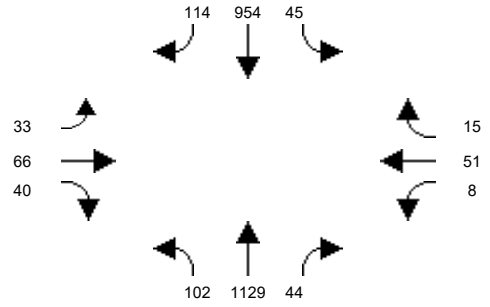
Intersection #2: Euclid St and McFadden Ave



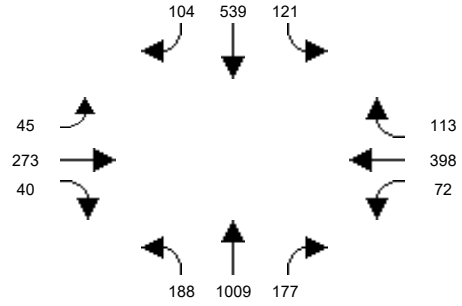
Intersection #3: Euclid St and Edinger Ave



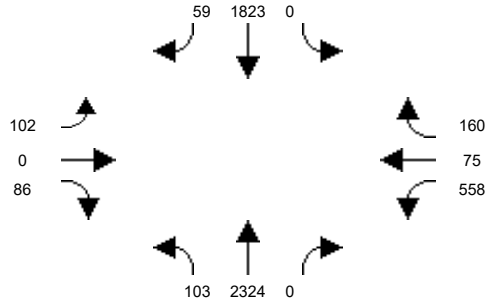
Intersection #4: Newhope St and Hazard Ave



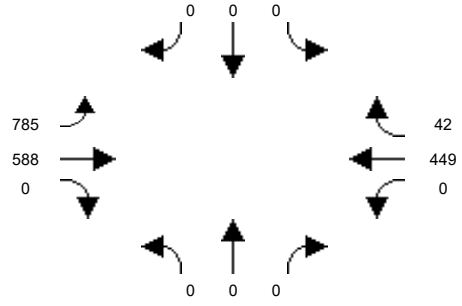
Intersection #5: Newhope St and McFadden Ave



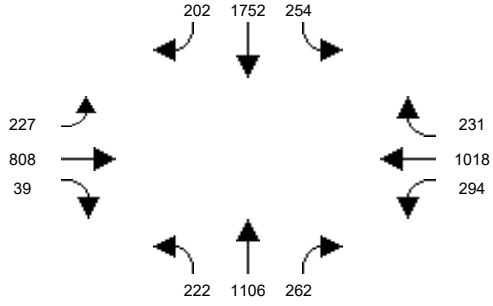
Intersection #6: Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr



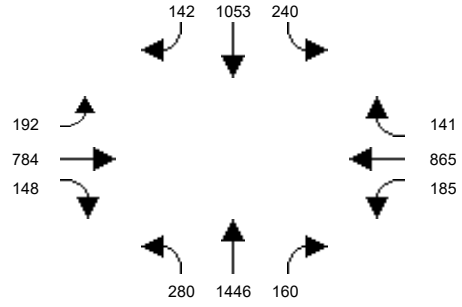
Intersection #7: Trask Avenue and SR-22 EB On-Ramp



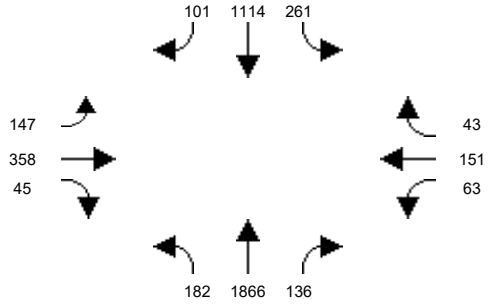
Intersection #8: Harbor Blvd and Westminster Ave



Intersection #9: Harbor Blvd and 1st St



Intersection #10: Harbor Blvd and McFadden Ave



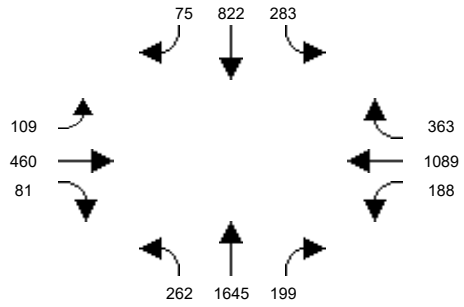
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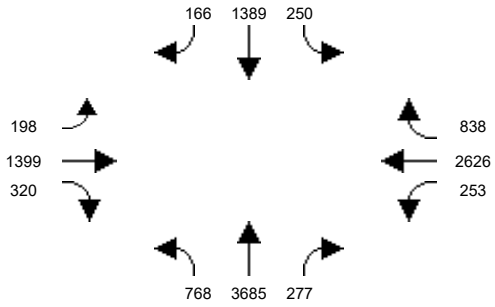
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

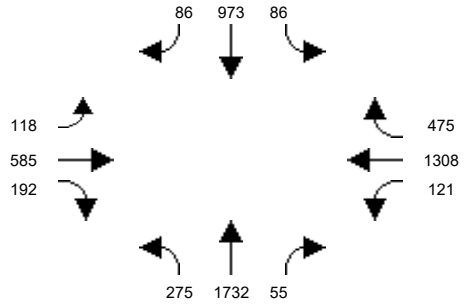
Intersection #11: Harbor Blvd and Edinger Ave



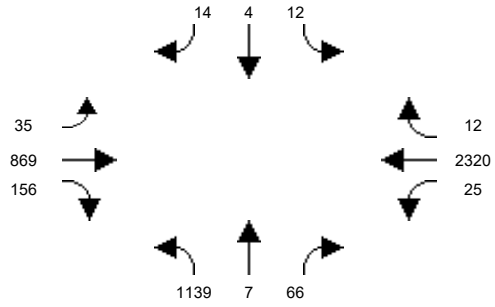
Intersection #12: Harbor Blvd and Warner Ave



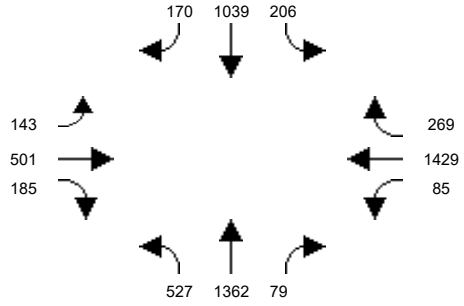
Intersection #13: Harbor Blvd and Segerstrom Ave



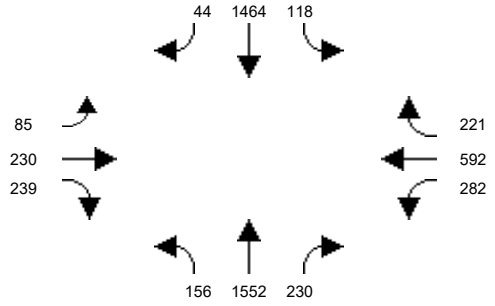
Intersection #14: MacArthur Blvd and Hyland Ave



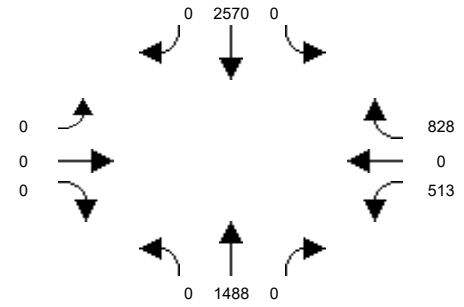
Intersection #15: MacArthur Blvd and Harbor Blvd



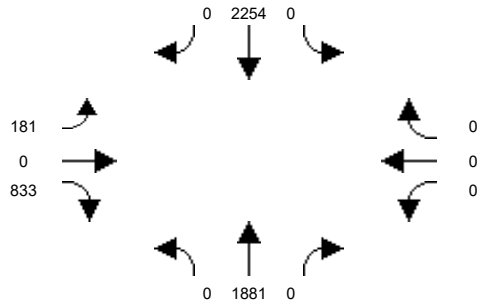
Intersection #16: Harbor Blvd and Sunflower Ave



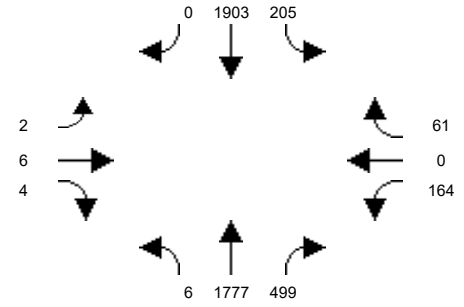
Intersection #17: Harbor Blvd and I-405 NB Off-Ramp



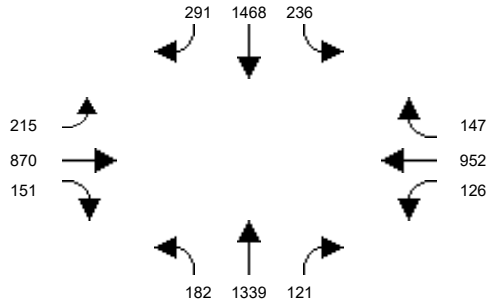
Intersection #18: Harbor Blvd and I-405 SB Off-Ramp



Intersection #19: Fairview St and Civic Center Dr



Intersection #20: Fairview St and 1st St



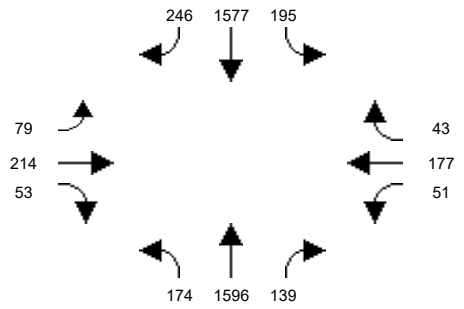
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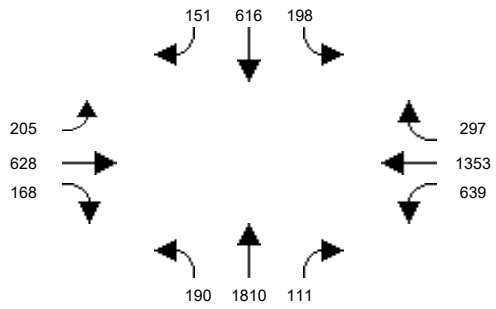
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

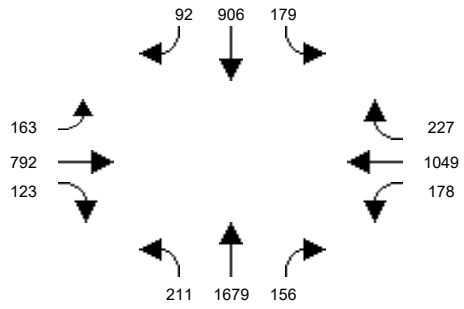
Intersection #21: Fairview St and McFadden Ave



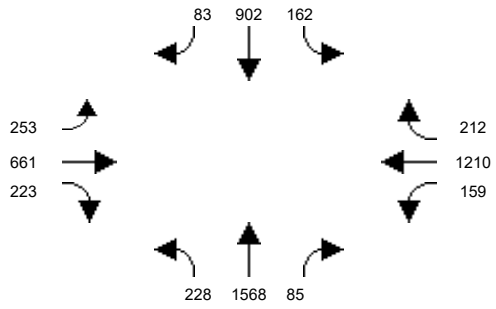
Intersection #22: Fairview St and Edinger Ave



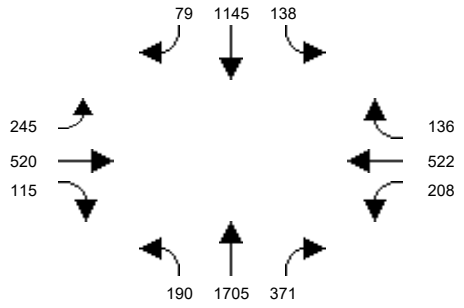
Intersection #23: Fairview St and Warner Ave



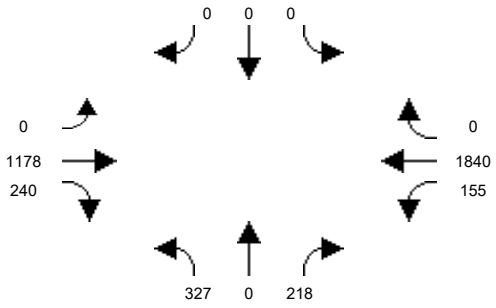
Intersection #24: Fairview St and MacArthur Blvd



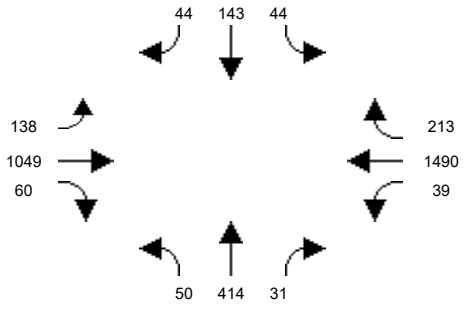
Intersection #25: Fairview Rd and Sunflower Ave



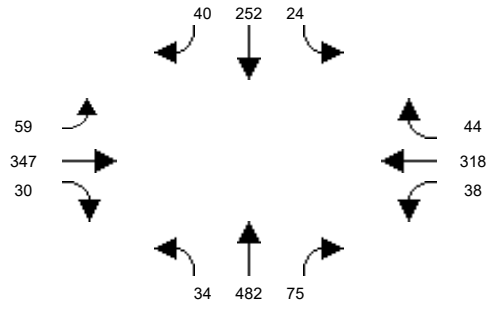
Intersection #26: Greenville St and Edinger Ave



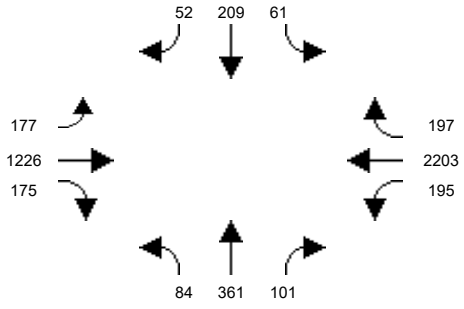
Intersection #27: Greenville St and Segerstrom Ave



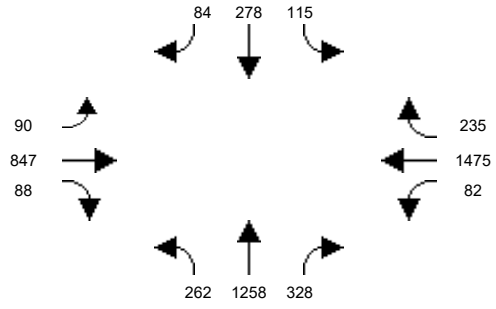
Intersection #28: Raitt St and McFadden Ave



Intersection #29: Raitt St and Edinger Ave



Intersection #30: Bear St and MacArthur Blvd



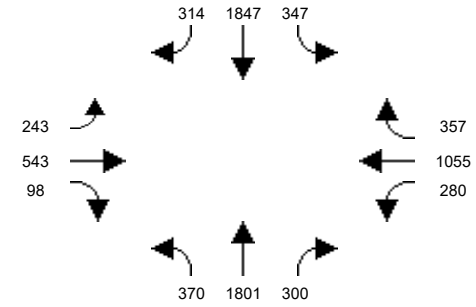
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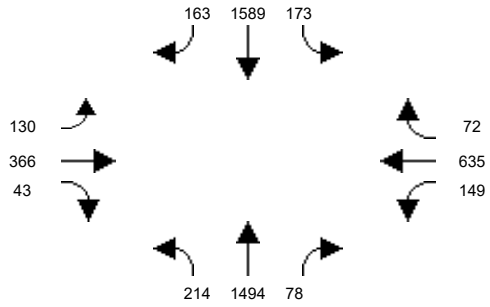
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

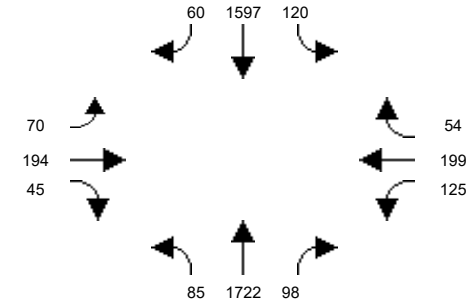
Intersection #31: Bristol St and 17th St



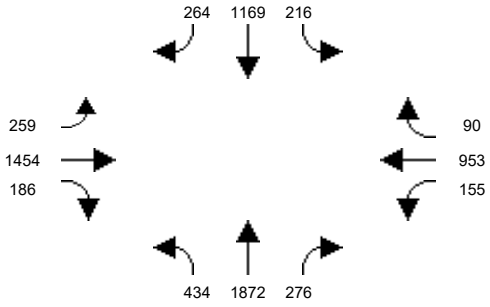
Intersection #32: Bristol St and Civic Center Dr



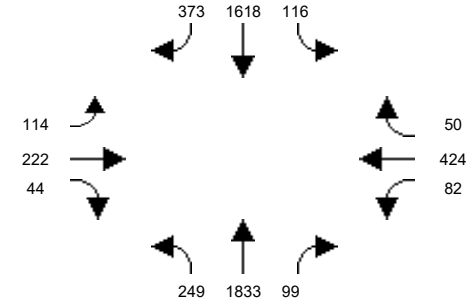
Intersection #33: Bristol St and Santa Ana Blvd



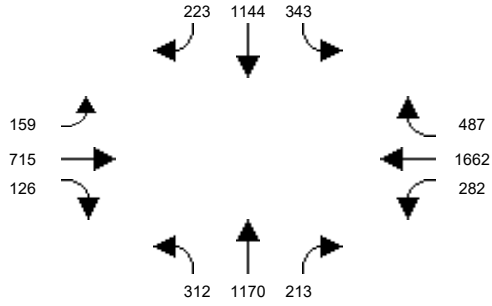
Intersection #34: Bristol St and 1st St



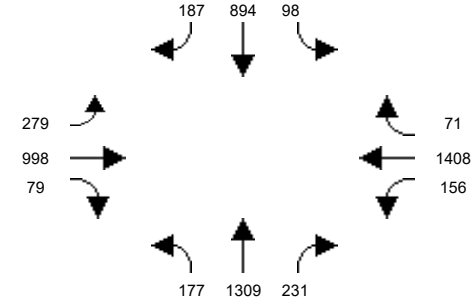
Intersection #35: Bristol St and McFadden Ave



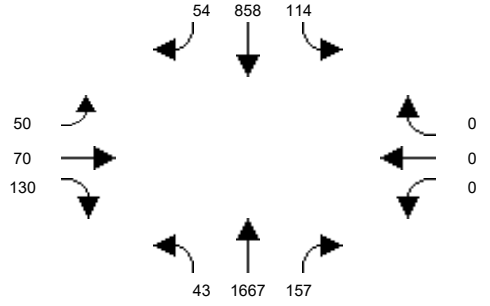
Intersection #36: Bristol St and Warner Ave



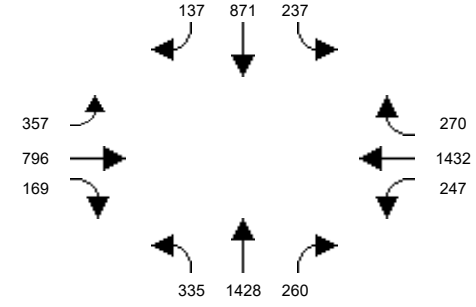
Intersection #37: Bristol St and Segerstrom Ave



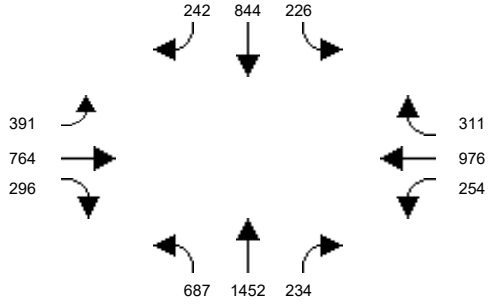
Intersection #38: Bristol St and Alton Ave



Intersection #39: Bristol St and MacArthur Blvd



Intersection #40: Bristol St and Sunflower Ave



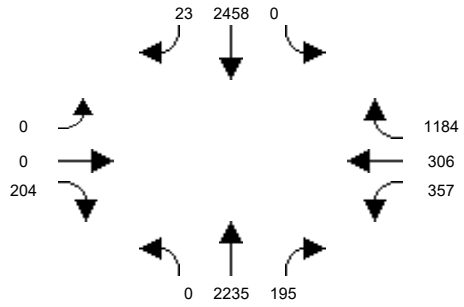
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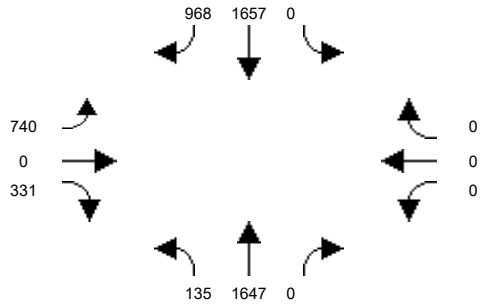
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

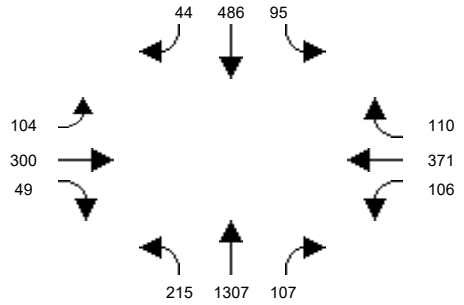
Intersection #41: Bristol St and I-405 NB Ramps



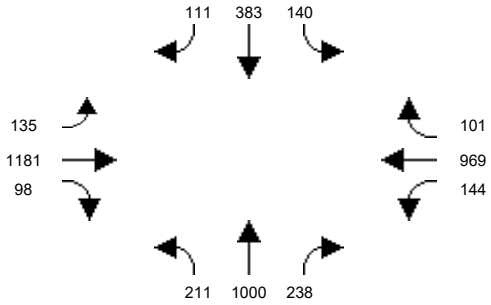
Intersection #42: Bristol St and I-405 SB Ramps



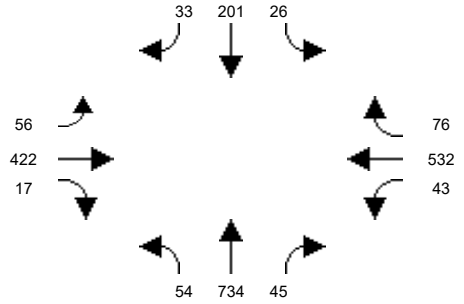
Intersection #43: Flower St and Santa Ana Blvd



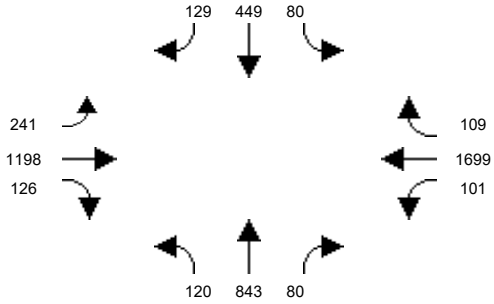
Intersection #44: Flower St and 1st St



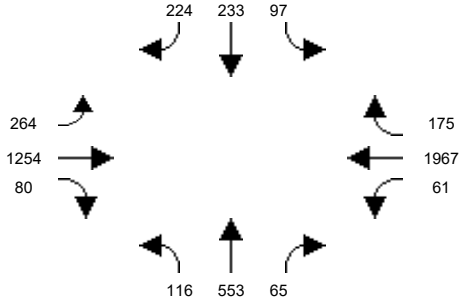
Intersection #45: Flower St and McFadden Ave



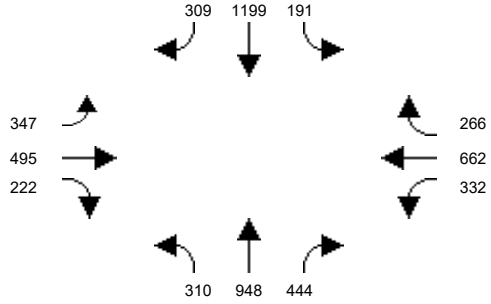
Intersection #46: Flower St and Segerstrom Ave



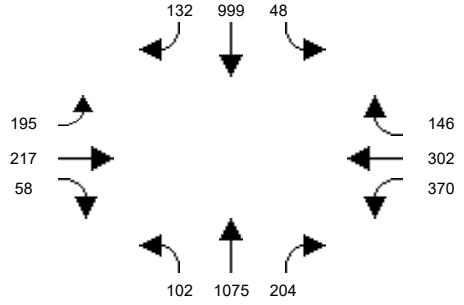
Intersection #47: Flower St and MacArthur Blvd



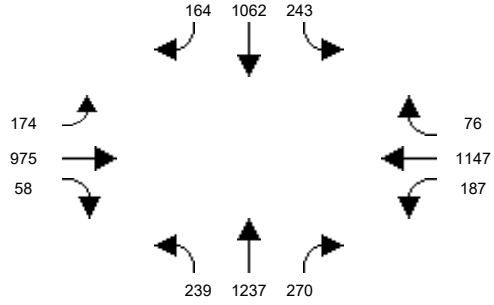
Intersection #48: Main St and La Veta Ave



Intersection #49: Main St and Mainplace Dr / Memory Ln



Intersection #50: Main St and 17th St



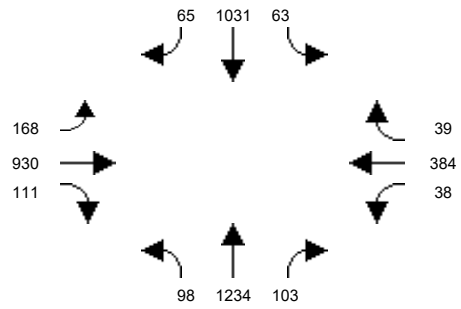
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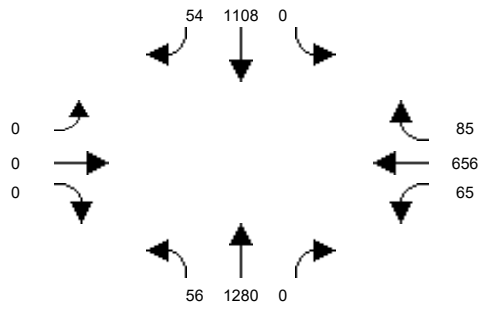
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

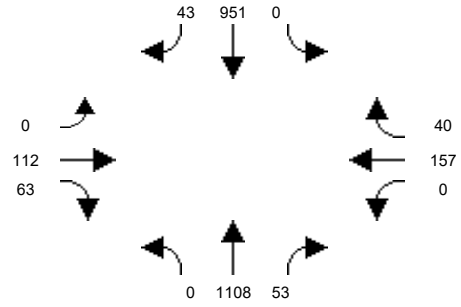
Intersection #51: Main St and Civic Center Dr



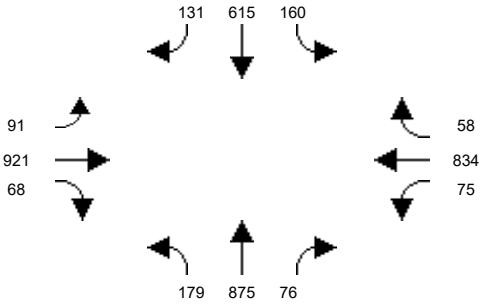
Intersection #52: Main St and Santa Ana Blvd



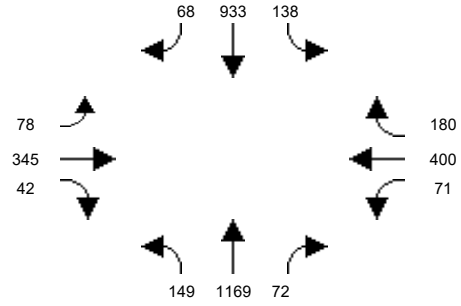
Intersection #53: Main St and 4th St



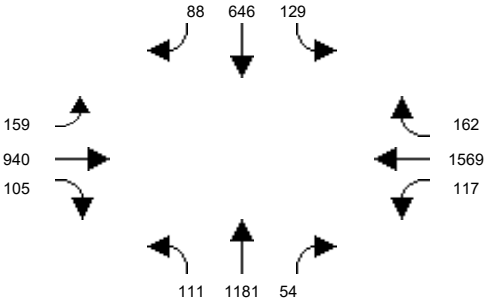
Intersection #54: Main St and 1st St



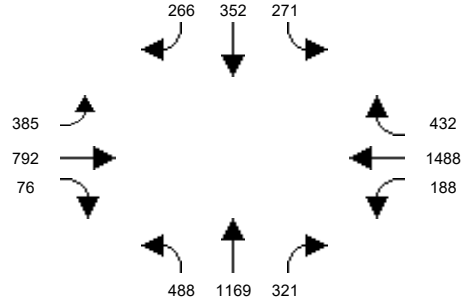
Intersection #55: Main St and McFadden Ave



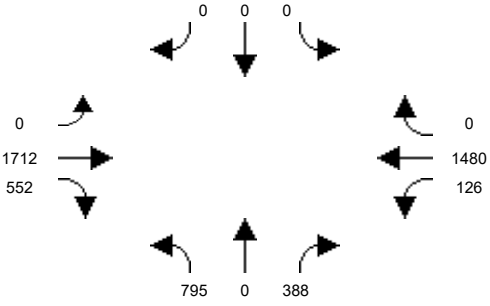
Intersection #56: Main St and Edinger Ave



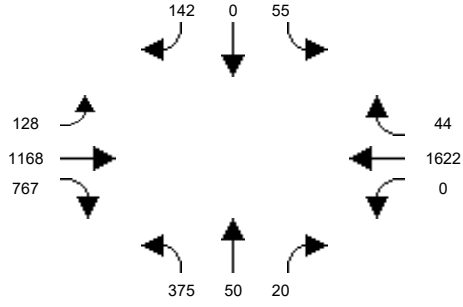
Intersection #57: Main St and MacArthur Blvd



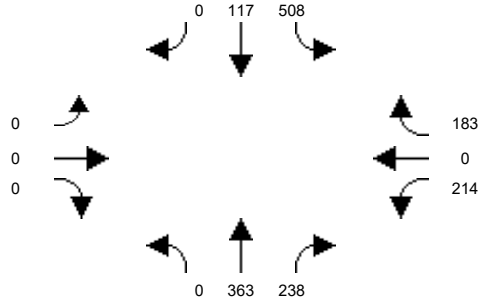
Intersection #58: Penn Wy and 17th St



Intersection #59: I-5 NB Off Ramps/17th Street



Intersection #60: Penn Wy and I-5 SB Ramps



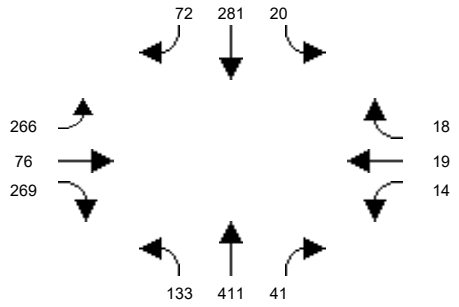
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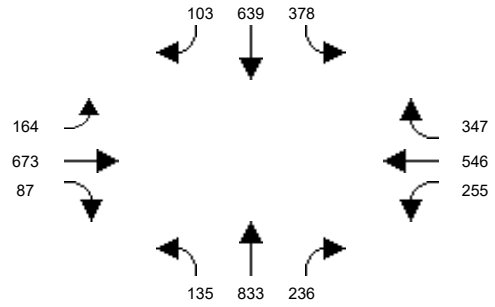
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

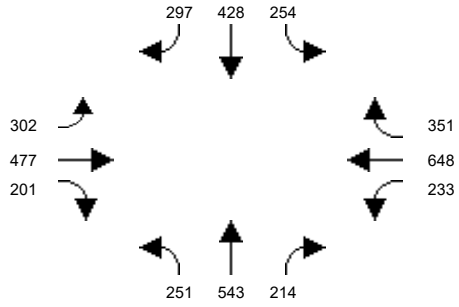
Intersection #61: Santiago St and Civic Center Dr



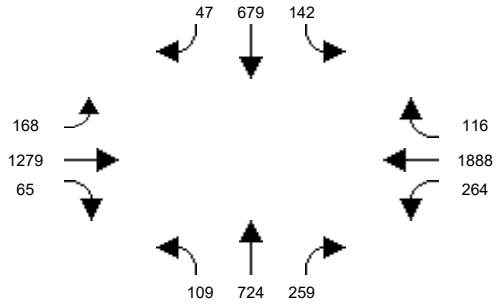
Intersection #62: Santiago St and Santa Ana Blvd



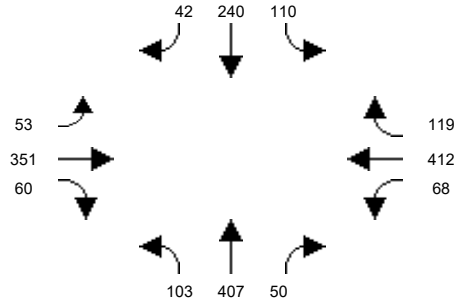
Intersection #63: Standard Ave and 4th St



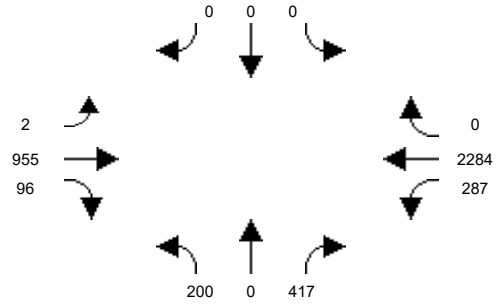
Intersection #64: Standard Ave and 1st St



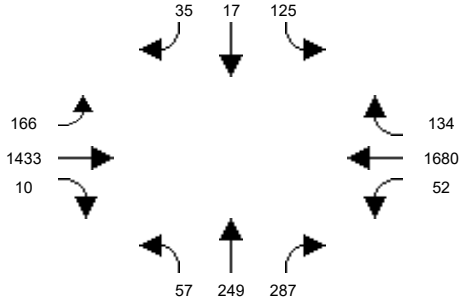
Intersection #65: Standard Ave and Mcfadden Ave



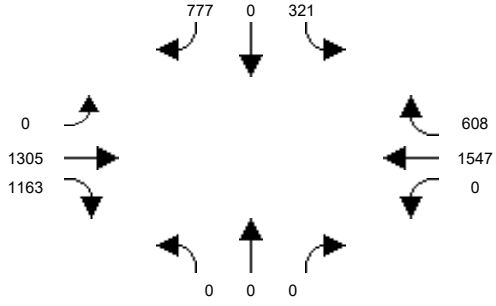
Intersection #66: Halladay St and Warner Ave



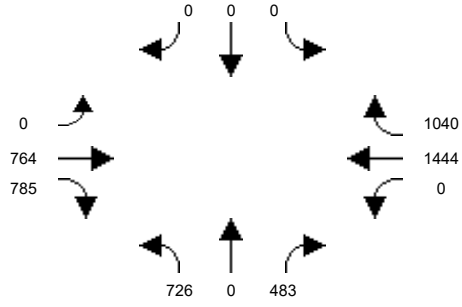
Intersection #67: Halladay St and Dyer Rd



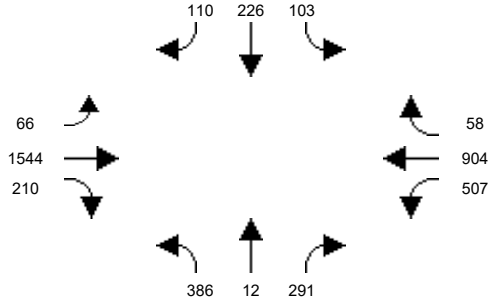
Intersection #68: SR-55 SB Ramps and MacArthur Blvd



Intersection #69: SR-55 NB Ramps and MacArthur Blvd



Intersection #70: SR-55 SB Ramps and Dyer Rd



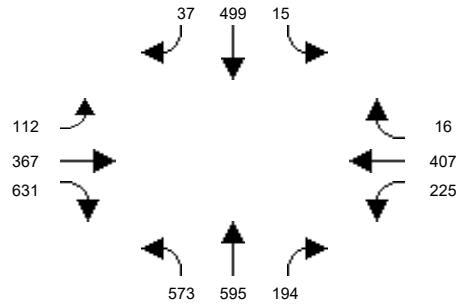
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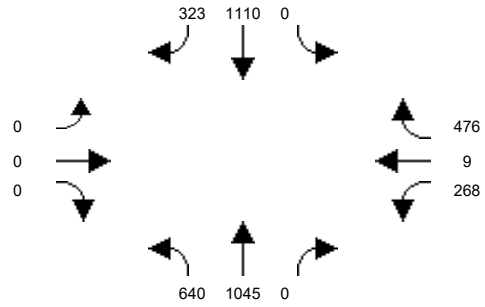
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

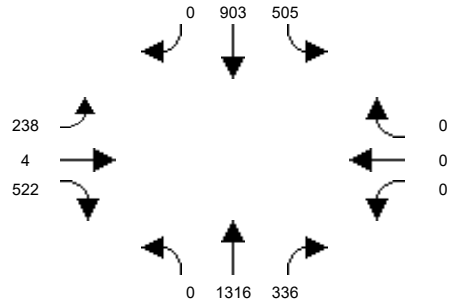
Intersection #71: Glassell St and La Veta Ave



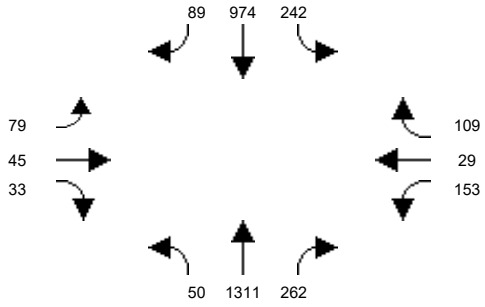
Intersection #72: Glassell St and SR-22 WB Ramps



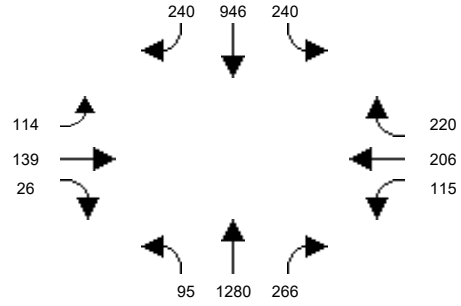
Intersection #73: Grand Ave / Glassell St and SR-22 EB Ramps



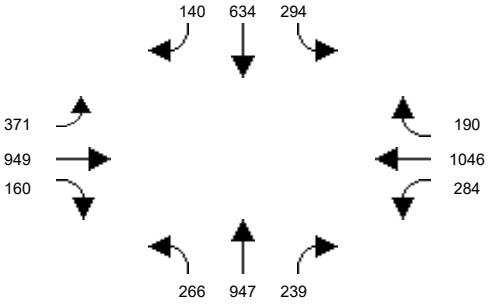
Intersection #74: Grand Ave and Fairhaven Ave



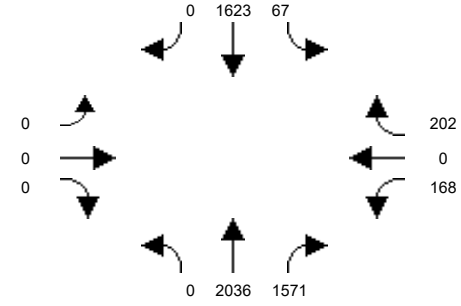
Intersection #75: Grand Ave and Santa Clara Ave



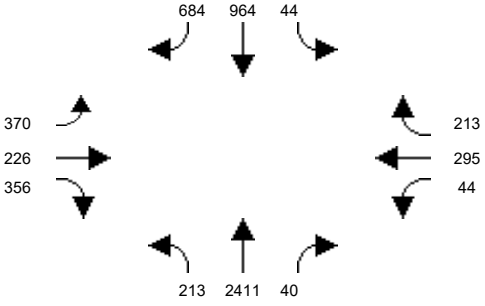
Intersection #76: Grand Ave and 17th St



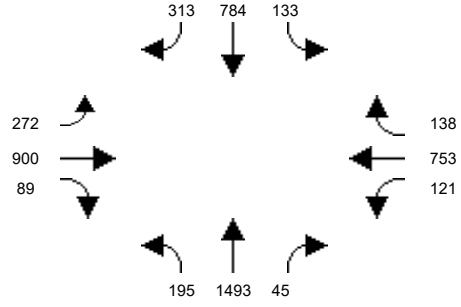
Intersection #77: Grand Ave and I-5 NB Ramps



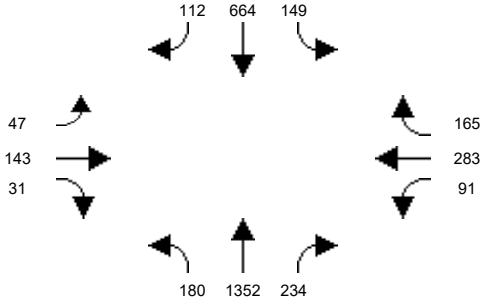
Intersection #78: Grand Ave and Santa Ana Blvd



Intersection #79: Grand Ave and 1st St



Intersection #80: Grand Ave and Chestnut Ave



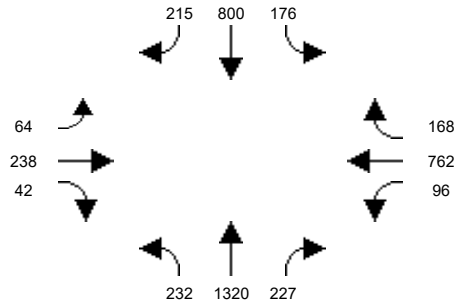
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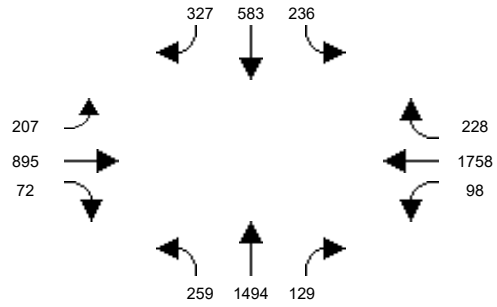
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

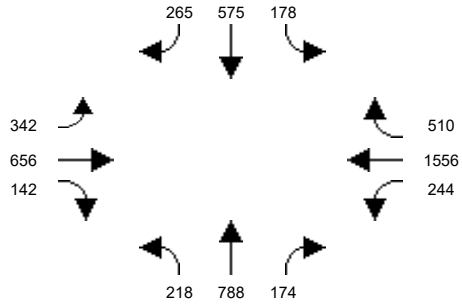
Intersection #81: Grand Ave and McFadden Ave



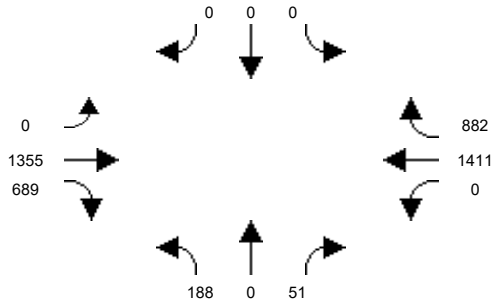
Intersection #82: Grand Ave and Edinger Ave



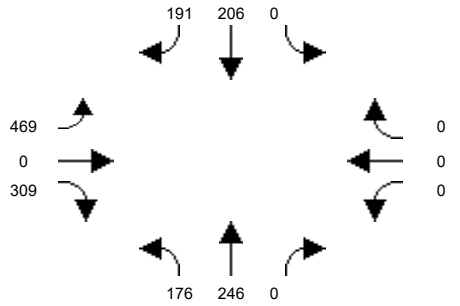
Intersection #83: Grand Ave and Warner Ave



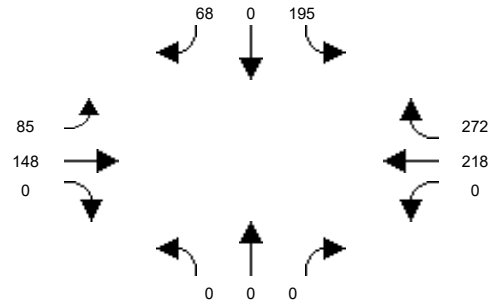
Intersection #84: SR-55 NB Ramps and Dyer Rd



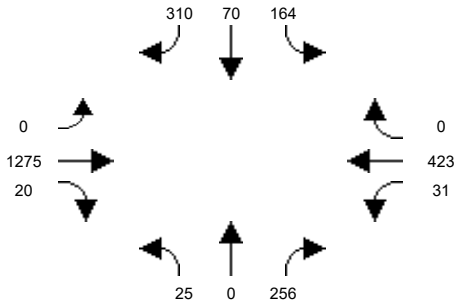
Intersection #85: Cambridge St and La Veta Ave



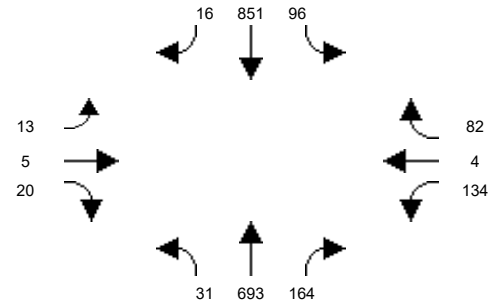
Intersection #86: Cambridge St and Fairhaven Ave



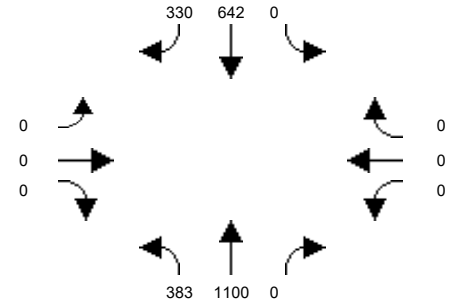
Intersection #87: Mabury St and 1st Street



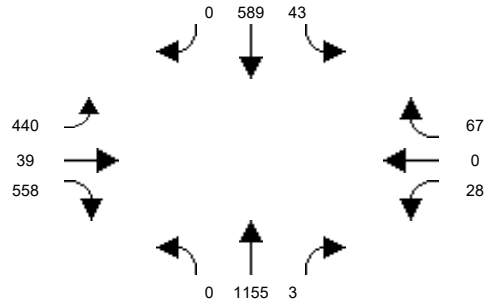
Intersection #88: Tustin St and La Veta Ave



Intersection #89: Tustin St and SR-22 WB On-Ramp



Intersection #90: Tustin St and SR-22 EB Off-Ramp / Seba Ave



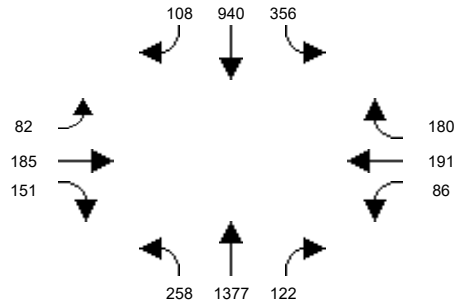
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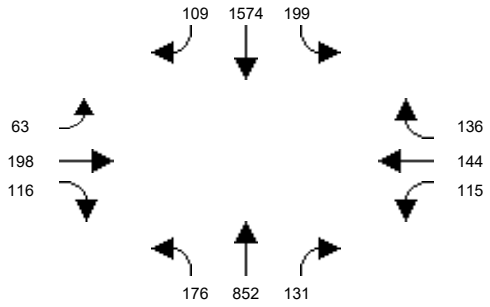
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

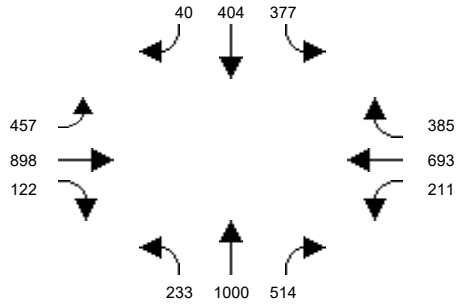
Intersection #91: Tustin Ave and Fairhaven Ave



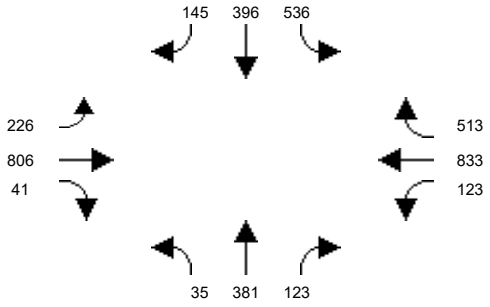
Intersection #92: Tustin Ave and Santa Clara Ave



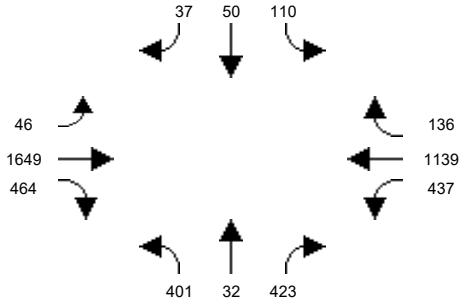
Intersection #93: Tustin Ave and 17th St



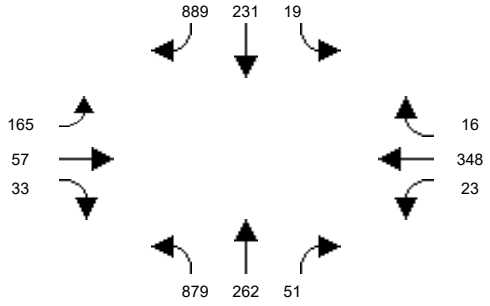
Intersection #94: Tustin Ave and 4th St



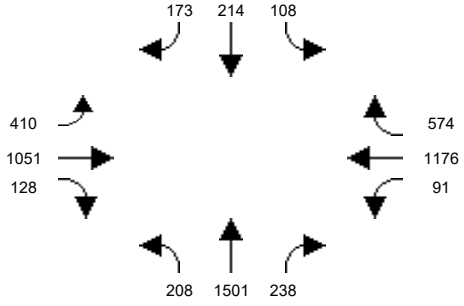
Intersection #95: SR-55 SB Ramps / Auto Mall Dr and Edinger Ave



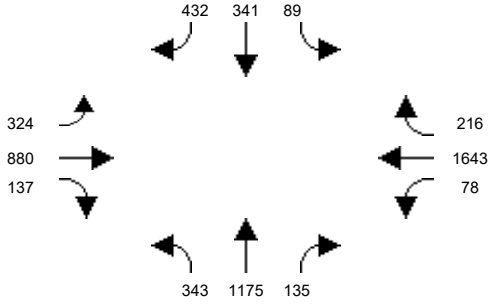
Intersection #96: SR-55 NB Ramps / Del Amo Ave and Newport Avenue



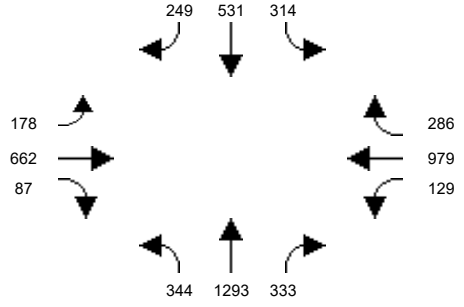
Intersection #97: Red Hill Ave and Edinger Ave



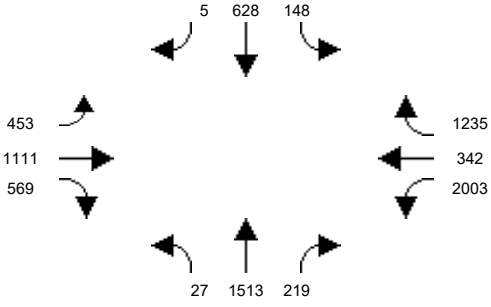
Intersection #98: Red Hill Ave and Warner Ave



Intersection #99: Red Hill Ave and Dyer Rd / barranca Pkwy



Intersection #100: Red Hill Ave and Alton Pkwy



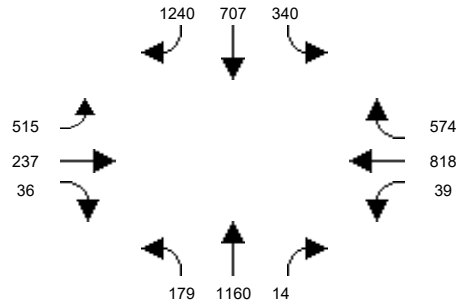
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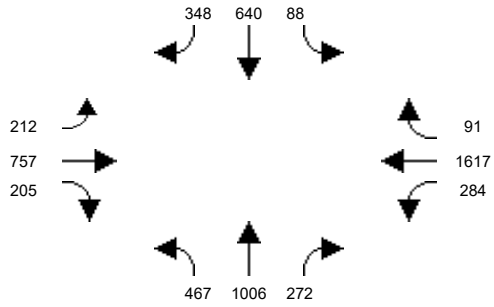
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

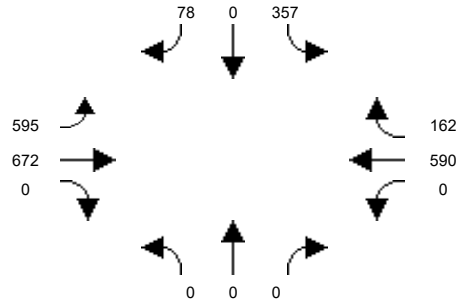
Intersection #101: Red Hill Ave and MacArthur Blvd



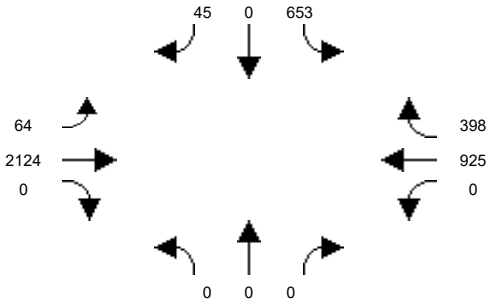
Intersection #102: Red Hill Ave and Main St



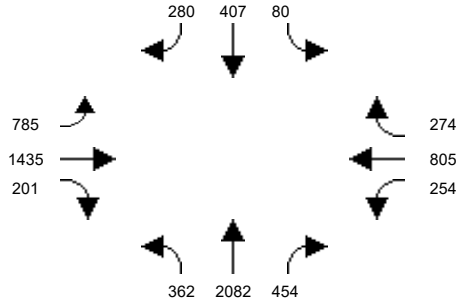
Intersection #103: I-5 SB Ramps and Santa Ana Blvd



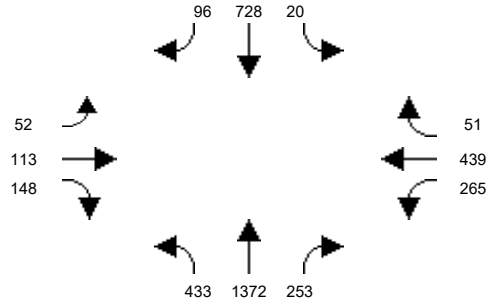
Intersection #104: Tustin Ranch Rd and Warner Ave



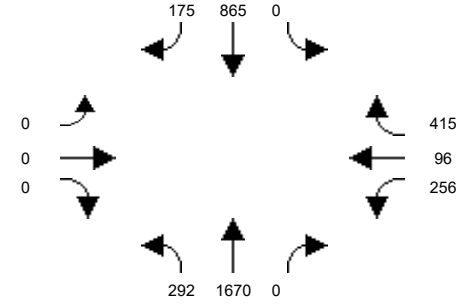
Intersection #105: Von Karman Ave and Barranca Pkwy



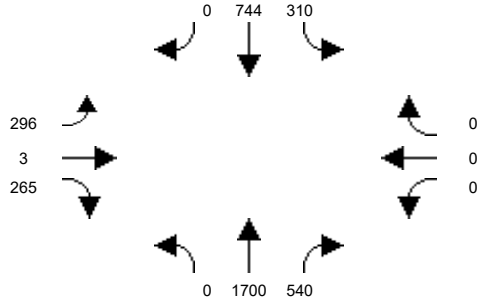
Intersection #106: Red Hill Avenue and El Camino Real



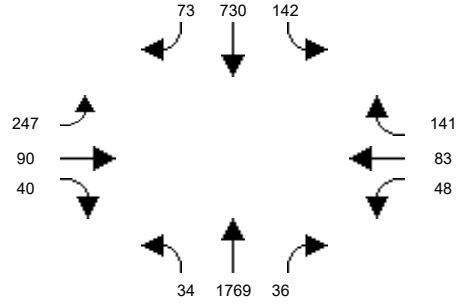
Intersection #107: Red Hill Avenue and I-5 NB Ramps



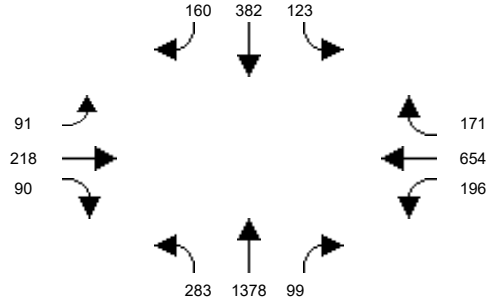
Intersection #108: Red Hill Avenue and I-5 SB Ramps



Intersection #109: Red Hill Avenue and Nisson Road



Intersection #110: Red Hill Avenue and Walnut Avenue



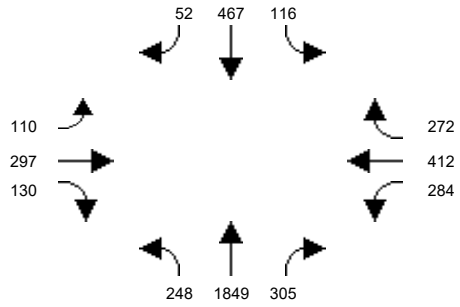
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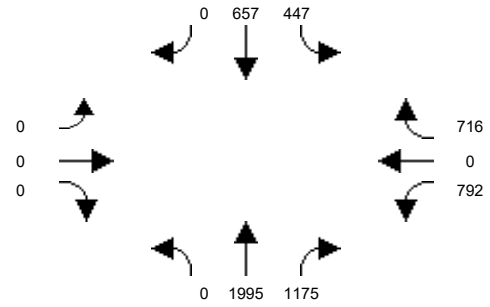
Santa Ana Circulation Element

Intersection Graphic Report
Entered Volume (Base Alternative)
2045 WP PM Peak Hour

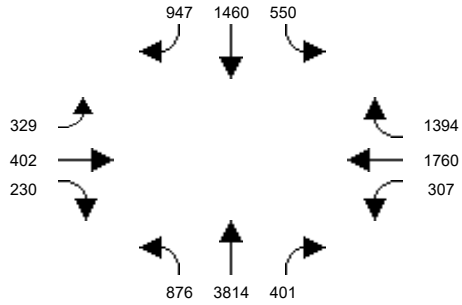
Intersection #111: Red Hill Avenue and Valencia Avenue



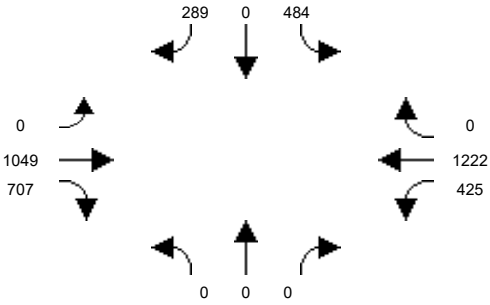
Intersection #112: Tustin Ranch Road and Warner Avenue North



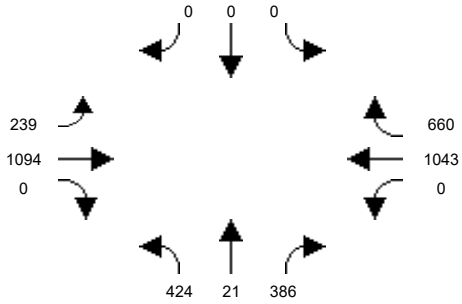
Intersection #113: Tustin Ranch Road and Walnut Avenue



Intersection #114: SR-55 SB Ramps and Irvine Boulevard



Intersection #115: SR-55 NB Ramps and Irvine Boulevard



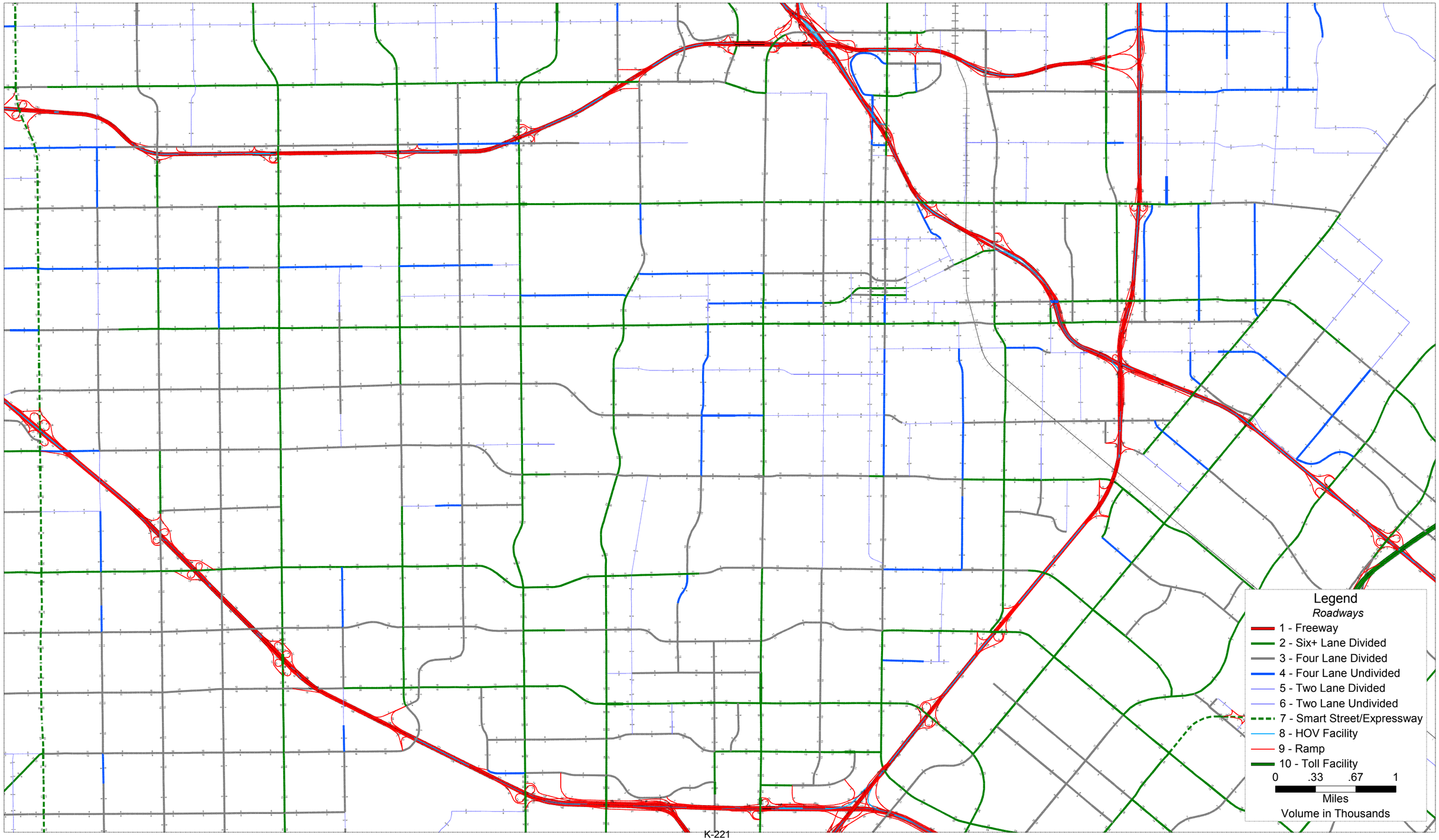
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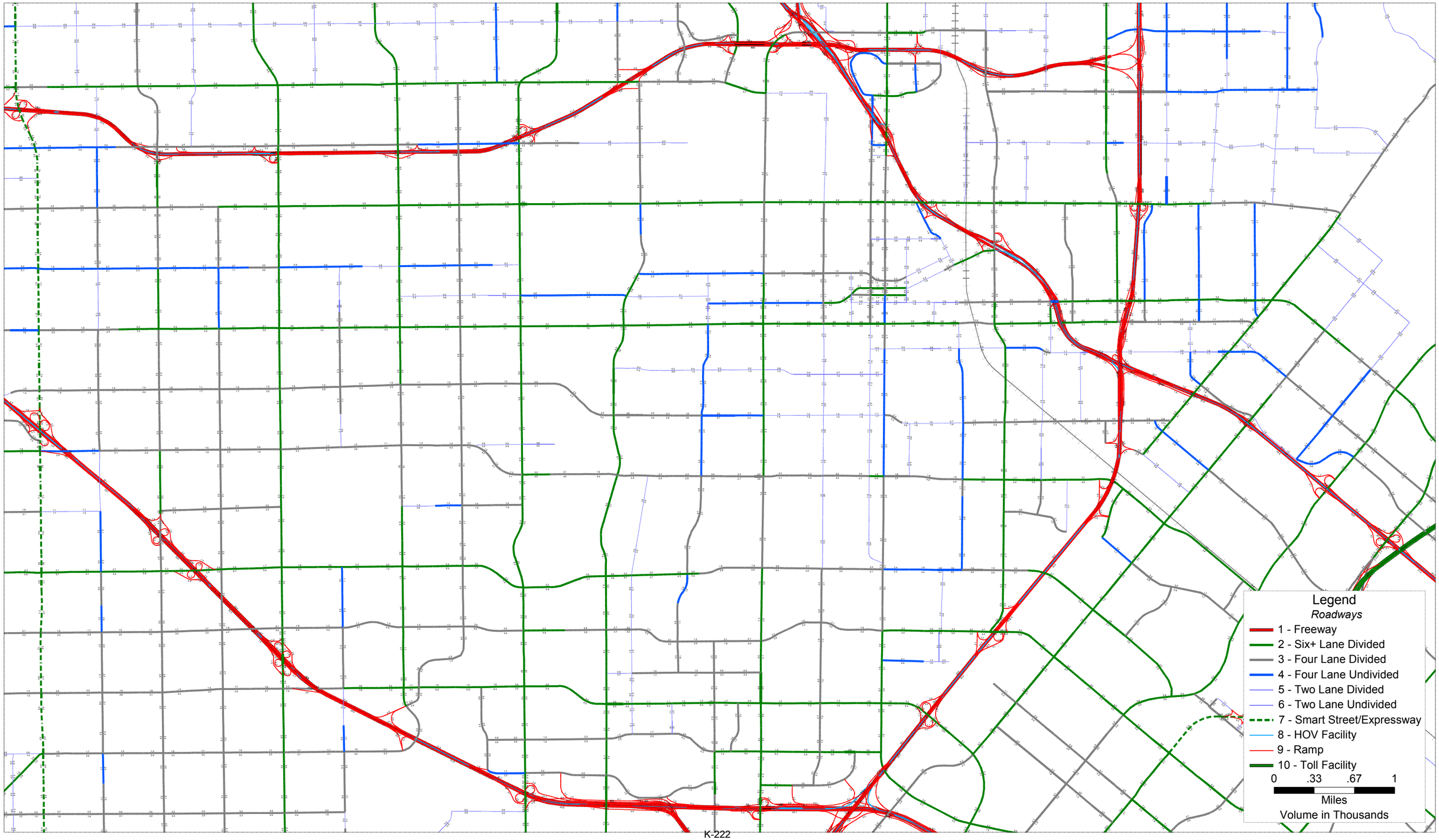
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APPENDIX C
OCTAM VOLUME PLOTS

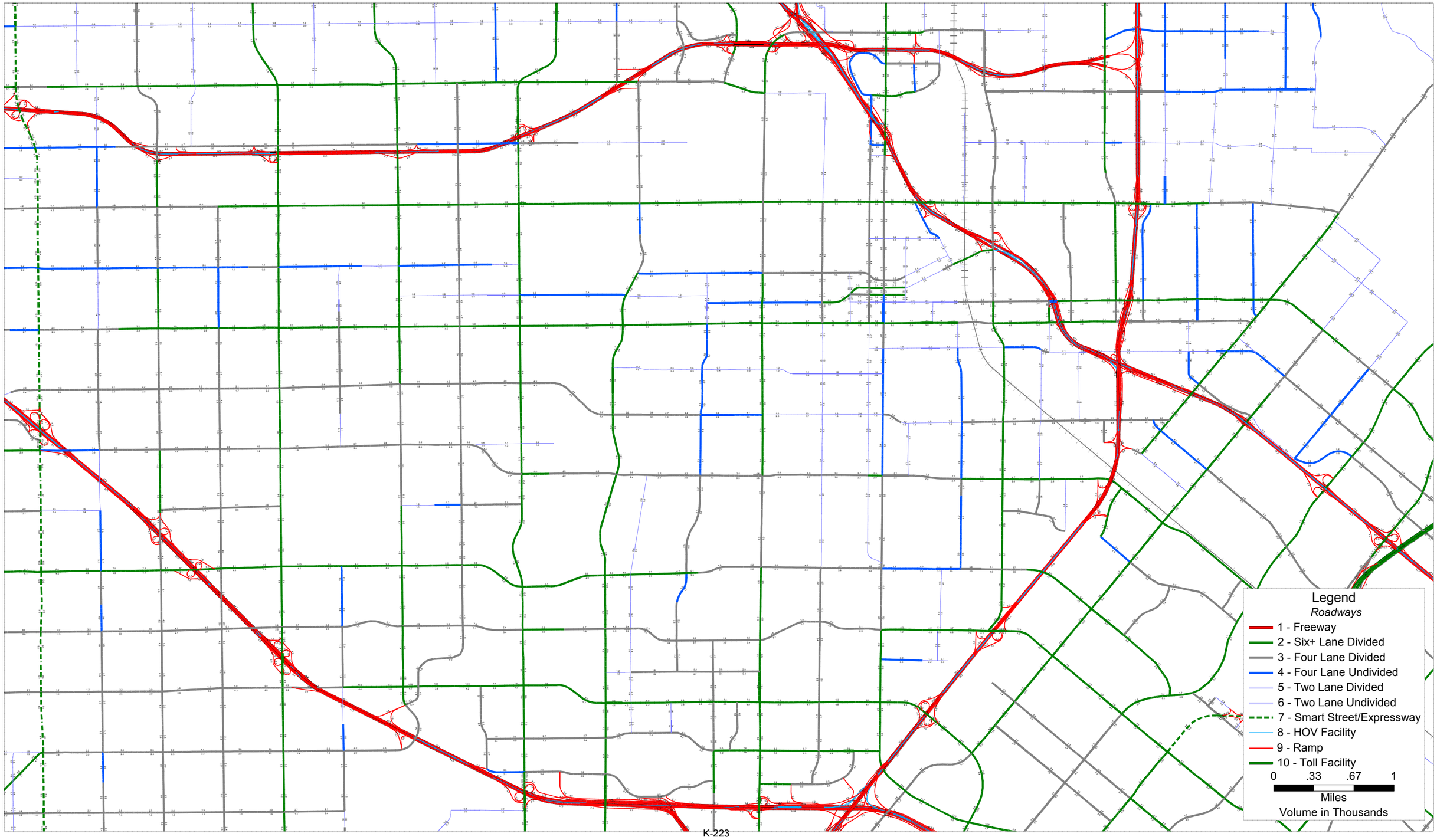
OCTAM 5.0 - Year 2016 Daily Forecasts
Volumes in Thousands
Raw Volumes - Not For Distribution



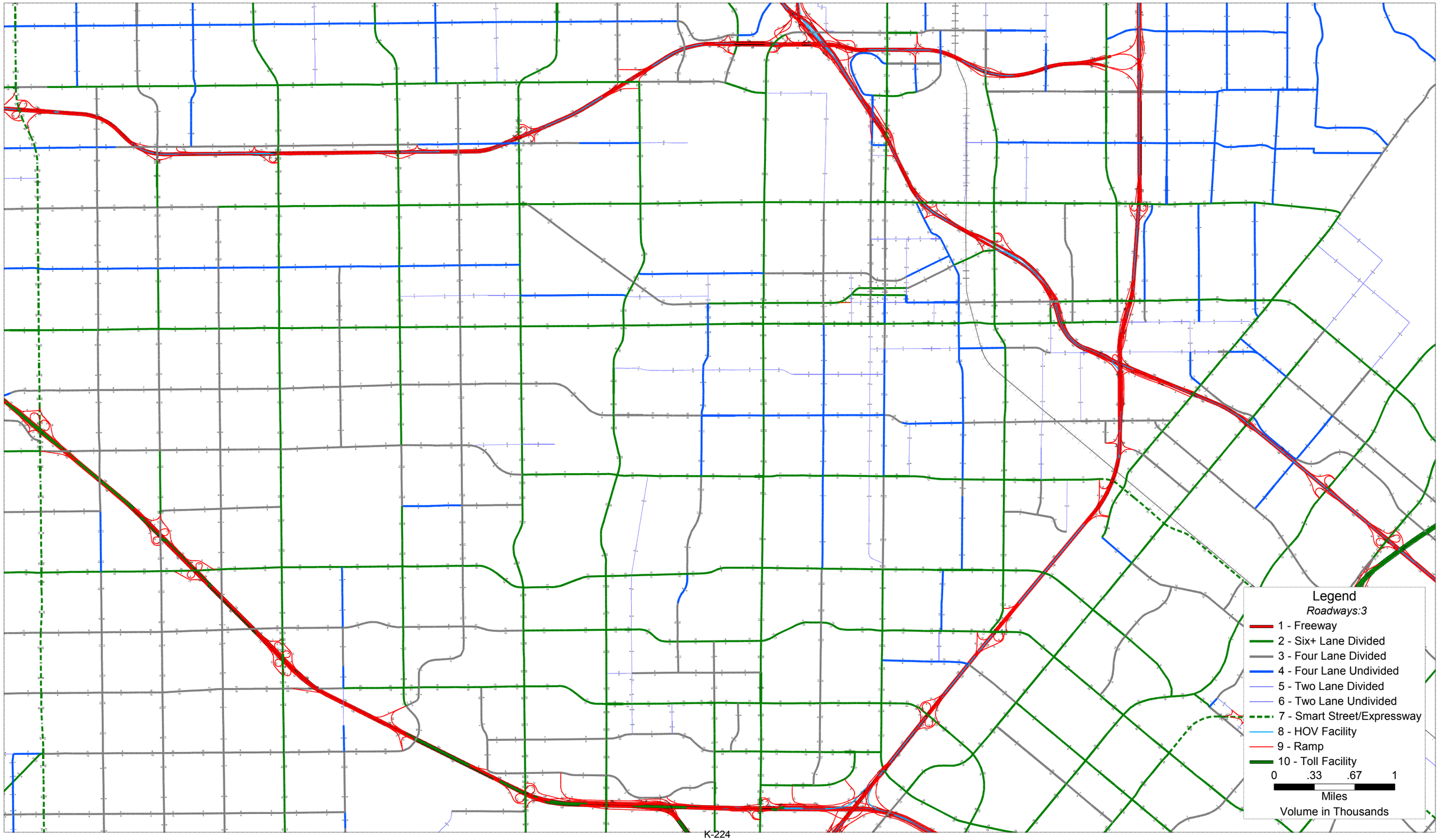
OCTAM 5.0 - Year 2016 AM Peak Period Forecasts
Volumes in Thousands
Raw Volumes - Not For Distribution



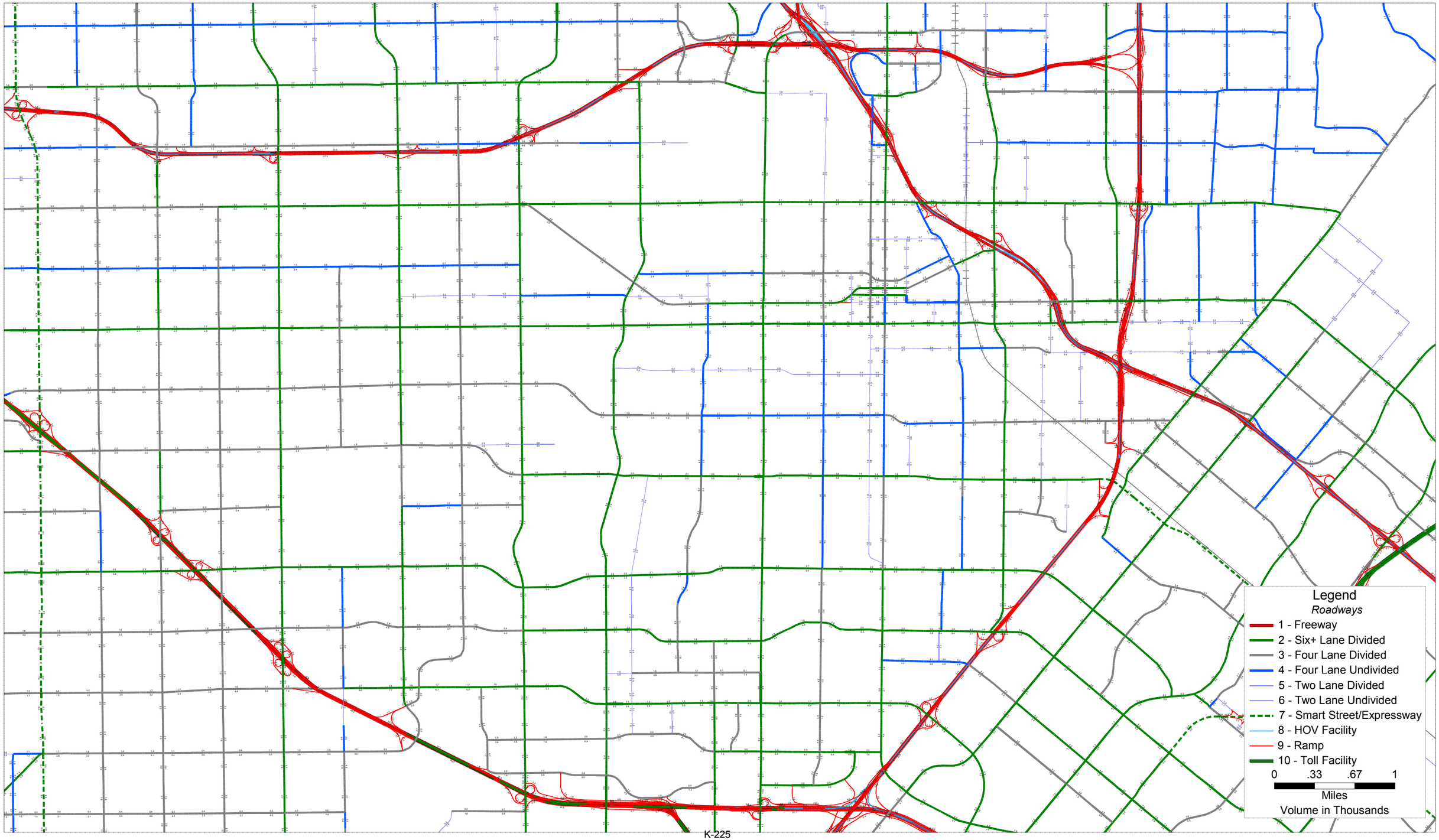
OCTAM 5.0 - Year 2016 PM Peak Period Forecasts
Volumes in Thousands
Raw Volumes - Not For Distribution



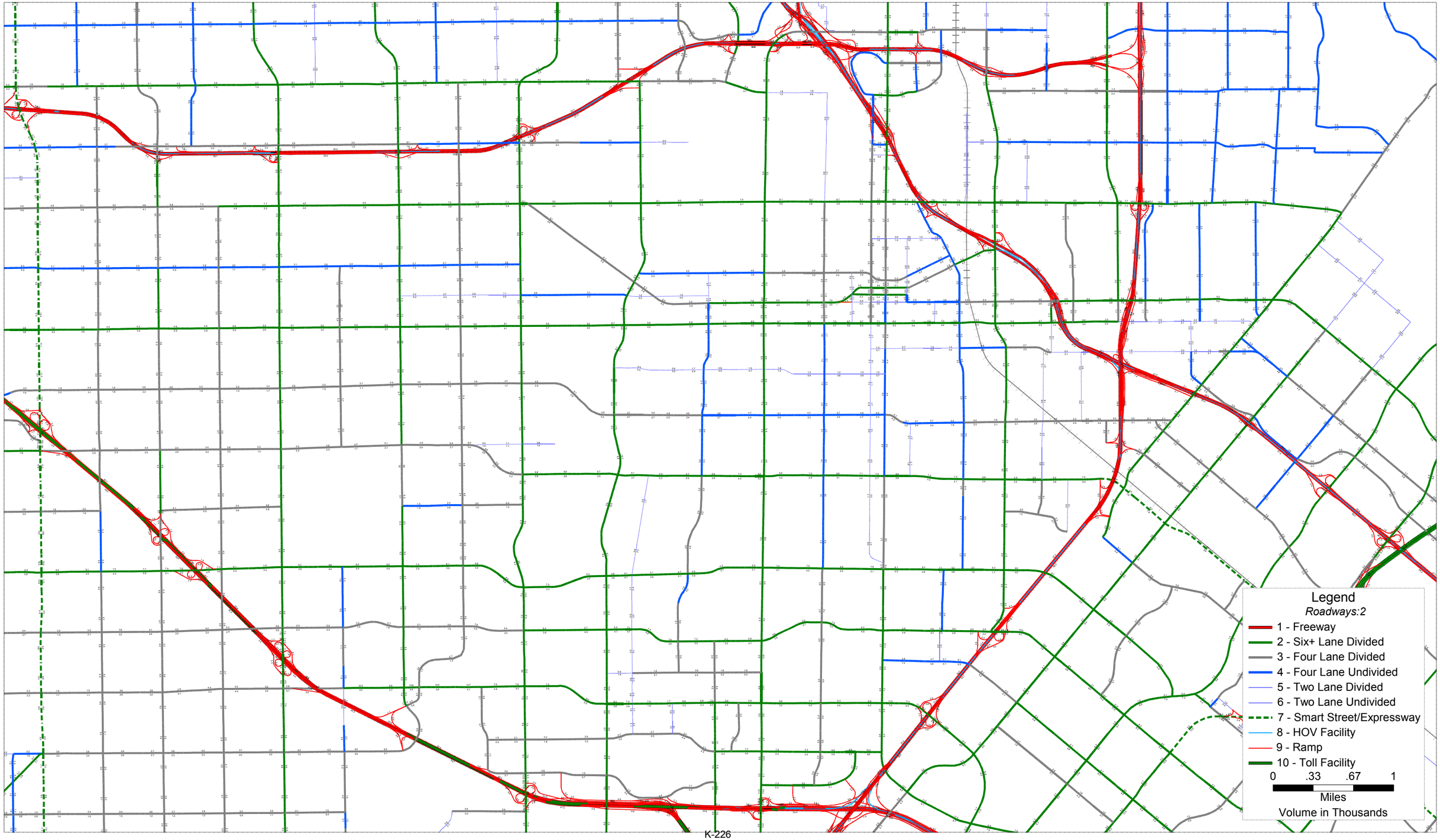
OCTAM 5.0 - Year 2045 SACE Baseline Daily Forecasts
Volumes in Thousands
Raw Volumes - Not For Distribution



OCTAM 5.0 - Year 2045 SACE Baseline AM Peak Period Forecasts
Volumes in Thousands
Raw Volumes - Not For Distribution



OCTAM 5.0 - Year 2045 SACE Baseline PM Peak Period Forecasts
Volumes in Thousands
Raw Volumes - Not For Distribution



APPENDIX D
ANALYSIS WORKSHEETS

APPENDIX D.1

ANALYSIS WORKSHEETS –
2020 NP (AM Peak Hour)

Santa Ana Circulation Element

Scenario Report

Scenario:	2020 NP AM Peak Hour
Command:	Default Command
Volume:	2020 NP AM
Geometry:	NP
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2020 NP AM Peak Hour Thu Oct 22, 2020 13:49:21 Page 2-1

Santa Ana Circulation Element

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Euclid St and 1st St	D	xxxxx	0.849	D	xxxxx	0.849	+ 0.000 V/C
# 2 Euclid St and McFadden Ave	E	xxxxx	0.909	E	xxxxx	0.909	+ 0.000 V/C
# 3 Euclid St and Edinger Ave	D	xxxxx	0.861	D	xxxxx	0.861	+ 0.000 V/C
# 4 Newhope St and Hazard Ave	C	xxxxx	0.709	C	xxxxx	0.709	+ 0.000 V/C
# 5 Newhope St and McFadden Ave	D	xxxxx	0.828	D	xxxxx	0.828	+ 0.000 V/C
# 6 Harbor Blvd and SR-22 WB Off-R	C	27.4	0.695	C	27.4	0.695	+ 0.000 D/V
# 7 Trask Avenue and SR-22 EB On-R	B	11.5	0.457	B	11.5	0.457	+ 0.000 D/V
# 8 Harbor Blvd and Westminster Av	D	xxxxx	0.820	D	xxxxx	0.820	+ 0.000 V/C
# 9 Harbor Blvd and 1st St	D	xxxxx	0.807	D	xxxxx	0.807	+ 0.000 V/C
# 10 Harbor Blvd and McFadden Ave	C	xxxxx	0.791	C	xxxxx	0.791	+ 0.000 V/C
# 11 Harbor Blvd and Edinger Ave	C	xxxxx	0.766	C	xxxxx	0.766	+ 0.000 V/C
# 12 Harbor Blvd and Warner Ave	D	xxxxx	0.808	D	xxxxx	0.808	+ 0.000 V/C
# 13 Harbor Blvd and Segerstrom Ave	E	xxxxx	0.978	E	xxxxx	0.978	+ 0.000 V/C
# 14 MacArthur Blvd and Hyland Ave	B	xxxxx	0.608	B	xxxxx	0.608	+ 0.000 V/C
# 15 MacArthur Blvd and Harbor Blvd	C	xxxxx	0.754	C	xxxxx	0.754	+ 0.000 V/C
# 16 Harbor Blvd and Sunflower Ave	C	xxxxx	0.702	C	xxxxx	0.702	+ 0.000 V/C
# 17 Harbor Blvd and I-405 WB Off-R	B	19.7	0.695	B	19.7	0.695	+ 0.000 D/V
# 18 Harbor Blvd and I-405 EB Off-R	B	13.2	0.524	B	13.2	0.524	+ 0.000 D/V
# 19 Fairview St and Civic Center D	B	xxxxx	0.667	B	xxxxx	0.667	+ 0.000 V/C
# 20 Fairview St and 1st St	D	xxxxx	0.872	D	xxxxx	0.872	+ 0.000 V/C
# 21 Fairview St and McFadden Ave	C	xxxxx	0.786	C	xxxxx	0.786	+ 0.000 V/C
# 22 Fairview St and Edinger Ave	C	xxxxx	0.753	C	xxxxx	0.753	+ 0.000 V/C
# 23 Fairview St and Warner Ave	D	xxxxx	0.850	D	xxxxx	0.850	+ 0.000 V/C
# 24 Fairview St and MacArthur Blvd	C	xxxxx	0.704	C	xxxxx	0.704	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 25 Fairview Rd and Sunflower Ave	C	xxxxx	0.705	C	xxxxx	0.705	+ 0.000 V/C
# 26 Greenville St and Edinger Ave	A	xxxxx	0.563	A	xxxxx	0.563	+ 0.000 V/C
# 27 Greenville St and Segerstrom A	C	xxxxx	0.727	C	xxxxx	0.727	+ 0.000 V/C
# 28 Raitt St and McFadden Ave	C	xxxxx	0.715	C	xxxxx	0.715	+ 0.000 V/C
# 29 Raitt St and Edinger Ave	D	xxxxx	0.851	D	xxxxx	0.851	+ 0.000 V/C
# 30 Bear St and MacArthur Blvd	C	xxxxx	0.737	C	xxxxx	0.737	+ 0.000 V/C
# 31 Bristol St and 17th St	C	xxxxx	0.725	C	xxxxx	0.725	+ 0.000 V/C
# 32 Bristol St and Civic Center Dr	D	xxxxx	0.827	D	xxxxx	0.827	+ 0.000 V/C
# 33 Bristol St and Santa Ana Blvd	B	xxxxx	0.669	B	xxxxx	0.669	+ 0.000 V/C
# 34 Bristol St and 1st St	C	xxxxx	0.745	C	xxxxx	0.745	+ 0.000 V/C
# 35 Bristol St and McFadden Ave	C	xxxxx	0.749	C	xxxxx	0.749	+ 0.000 V/C
# 36 Bristol St and Warner Ave	C	xxxxx	0.767	C	xxxxx	0.767	+ 0.000 V/C
# 37 Bristol St and Segerstrom Ave	C	xxxxx	0.794	C	xxxxx	0.794	+ 0.000 V/C
# 38 Bristol St and Alton Ave	A	xxxxx	0.556	A	xxxxx	0.556	+ 0.000 V/C
# 39 Bristol St and MacArthur Blvd	C	xxxxx	0.738	C	xxxxx	0.738	+ 0.000 V/C
# 40 Bristol St and Sunflower Ave	B	xxxxx	0.635	B	xxxxx	0.635	+ 0.000 V/C
# 41 Bristol St and I-405 WB Ramps	B	19.1	0.500	B	19.1	0.500	+ 0.000 D/V
# 42 Bristol St and I-405 EB Ramps	C	22.3	0.607	C	22.3	0.607	+ 0.000 D/V
# 43 Flower St and Santa Ana Blvd	A	xxxxx	0.596	A	xxxxx	0.596	+ 0.000 V/C
# 44 Flower St and 1st St	C	xxxxx	0.795	C	xxxxx	0.795	+ 0.000 V/C
# 45 Flower St and McFadden Ave	D	xxxxx	0.819	D	xxxxx	0.819	+ 0.000 V/C
# 46 Flower St and Segerstrom Ave	C	xxxxx	0.769	C	xxxxx	0.769	+ 0.000 V/C
# 47 Flower St and MacArthur Blvd	B	xxxxx	0.698	B	xxxxx	0.698	+ 0.000 V/C
# 48 Main St and La Veta Ave	A	xxxxx	0.574	A	xxxxx	0.574	+ 0.000 V/C
# 49 Main St and Mainplace Dr / Mem	A	xxxxx	0.485	A	xxxxx	0.485	+ 0.000 V/C
# 50 Main St and 17th St	D	xxxxx	0.821	D	xxxxx	0.821	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 51 Main St and Civic Center Dr	C	xxxxx	0.755	C	xxxxx	0.755	+ 0.000 V/C
# 52 Main St and Santa Ana Blvd	B	xxxxx	0.667	B	xxxxx	0.667	+ 0.000 V/C
# 53 Main St and 4th St	A	xxxxx	0.490	A	xxxxx	0.490	+ 0.000 V/C
# 54 Main St and 1st St	C	xxxxx	0.758	C	xxxxx	0.758	+ 0.000 V/C
# 55 Main St and McFadden Ave	E	xxxxx	0.902	E	xxxxx	0.902	+ 0.000 V/C
# 56 Main St and Edinger Ave	D	xxxxx	0.826	D	xxxxx	0.826	+ 0.000 V/C
# 57 Main St and MacArthur Blvd	C	xxxxx	0.735	C	xxxxx	0.735	+ 0.000 V/C
# 58 Penn Wy and 17th St	B	11.2	0.602	B	11.2	0.602	+ 0.000 D/V
# 59 I-5 NB Off Ramps/17th Street	C	31.2	0.740	C	31.2	0.740	+ 0.000 D/V
# 60 Penn Wy and I-5 SB Ramps	B	19.0	0.436	B	19.0	0.436	+ 0.000 D/V
# 61 Santiago St and Civic Center D	C	16.9	0.723	C	16.9	0.723	+ 0.000 V/C
# 62 Santiago St and Santa Ana Blvd	A	xxxxx	0.553	A	xxxxx	0.553	+ 0.000 V/C
# 64 Standard Ave and 1st St	D	xxxxx	0.803	D	xxxxx	0.803	+ 0.000 V/C
# 65 Standard Ave and Mcfadden Ave	B	xxxxx	0.609	B	xxxxx	0.609	+ 0.000 V/C
# 66 Halladay St and Warner Ave	B	xxxxx	0.659	B	xxxxx	0.659	+ 0.000 V/C
# 67 Halladay St and Dyer Rd	A	xxxxx	0.567	A	xxxxx	0.567	+ 0.000 V/C
# 68 SR-55 SB Ramps and MacArthur B	B	19.8	0.615	B	19.8	0.615	+ 0.000 D/V
# 69 SR-55 NB Ramps and MacArthur B	B	19.2	0.742	B	19.2	0.742	+ 0.000 D/V
# 70 SR-55 SB Ramps and Dyer Rd	C	23.7	0.552	C	23.7	0.552	+ 0.000 D/V
# 71 Glassell St and La Veta Ave	B	xxxxx	0.603	B	xxxxx	0.603	+ 0.000 V/C
# 72 Glassell St and SR-22 WB Ramps	C	28.5	0.741	C	28.5	0.741	+ 0.000 D/V
# 73 Grand Ave / Glassell St and SR	C	27.0	0.760	C	27.0	0.760	+ 0.000 D/V
# 74 Grand Ave and Fairhaven Ave	B	xxxxx	0.680	B	xxxxx	0.680	+ 0.000 V/C
# 75 Grand Ave and Santa Clara Ave	D	xxxxx	0.885	D	xxxxx	0.885	+ 0.000 V/C
# 76 Grand Ave and 17th St	C	xxxxx	0.797	C	xxxxx	0.797	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 77 Grand Ave and I-5 NB Ramps	B	12.9	0.516	B	12.9	0.516	+ 0.000 D/V
# 78 Grand Ave and Santa Ana Blvd	C	23.8	0.662	C	23.8	0.662	+ 0.000 D/V
# 79 Grand Ave and 1st St	D	xxxxx	0.803	D	xxxxx	0.803	+ 0.000 V/C
# 80 Grand Ave and Chestnut Ave	C	xxxxx	0.705	C	xxxxx	0.705	+ 0.000 V/C
# 81 Grand Ave and McFadden Ave	D	xxxxx	0.829	D	xxxxx	0.829	+ 0.000 V/C
# 82 Grand Ave and Edinger Ave	C	xxxxx	0.763	C	xxxxx	0.763	+ 0.000 V/C
# 83 Grand Ave and Warner Ave	A	xxxxx	0.528	A	xxxxx	0.528	+ 0.000 V/C
# 84 SR-55 NB Ramps and Dyer Rd	B	16.3	0.530	B	16.3	0.530	+ 0.000 D/V
# 85 Cambridge St and La Veta Ave	C	17.3	0.799	C	17.3	0.799	+ 0.000 V/C
# 86 Cambridge St and Fairhaven Ave	A	xxxxx	0.559	A	xxxxx	0.559	+ 0.000 V/C
# 87 Mabury St and 1st Street	C	28.3	0.691	C	28.3	0.691	+ 0.000 D/V
# 88 Tustin St and La Veta Ave	A	xxxxx	0.521	A	xxxxx	0.521	+ 0.000 V/C
# 89 Tustin St and SR-22 WB On-Ramp	B	12.9	0.734	B	12.9	0.734	+ 0.000 D/V
# 90 Tustin St and SR-22 EB Off-Ram	C	24.2	0.731	C	24.2	0.731	+ 0.000 D/V
# 91 Tustin Ave and Fairhaven Ave	E	xxxxx	0.977	E	xxxxx	0.977	+ 0.000 V/C
# 92 Tustin Ave and Santa Clara Ave	D	xxxxx	0.866	D	xxxxx	0.866	+ 0.000 V/C
# 93 Tustin Ave and 17th St	C	xxxxx	0.748	C	xxxxx	0.748	+ 0.000 V/C
# 94 Tustin Ave and 4th St	C	xxxxx	0.701	C	xxxxx	0.701	+ 0.000 V/C
# 95 SR-55 SB Ramps / Auto Mall Dr	C	24.4	0.558	C	24.4	0.558	+ 0.000 D/V
# 96 SR-55 NB Ramps / Del Amo Ave a	C	24.0	0.463	C	24.0	0.463	+ 0.000 D/V
# 97 Red Hill Ave and Edinger Ave	A	xxxxx	0.569	A	xxxxx	0.569	+ 0.000 V/C
# 98 Red Hill Ave and Warner Ave	A	xxxxx	0.485	A	xxxxx	0.485	+ 0.000 V/C
# 99 Red Hill Ave and Dyer Rd / bar	A	xxxxx	0.575	A	xxxxx	0.575	+ 0.000 V/C
#100 Red Hill Ave and Alton Pkwy	A	xxxxx	0.524	A	xxxxx	0.524	+ 0.000 V/C
#101 Red Hill Ave and MacArthur Blv	B	xxxxx	0.664	B	xxxxx	0.664	+ 0.000 V/C
#102 Red Hill Ave and Main St	B	xxxxx	0.670	B	xxxxx	0.670	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
#103 I-5 SB Ramps and Santa Ana Blv	B	17.4	0.514	B	17.4	0.514	+ 0.000 D/V
#104 Tustin Ranch Rd and Warner Ave	A	xxxxx	0.475	A	xxxxx	0.475	+ 0.000 V/C
#105 Von Karman Ave and Barranca Pk	C	xxxxx	0.762	C	xxxxx	0.762	+ 0.000 V/C
#106 Red Hill Avenue and El Camino	C	xxxxx	0.706	C	xxxxx	0.706	+ 0.000 V/C
#107 Red Hill Avenue and I-5 NB Ram	C	20.3	0.670	C	20.3	0.670	+ 0.000 D/V
#108 Red Hill Avenue and I-5 SB Ram	C	22.0	0.784	C	22.0	0.784	+ 0.000 D/V
#109 Red Hill Avenue and Nisson Roa	B	xxxxx	0.653	B	xxxxx	0.653	+ 0.000 V/C
#110 Red Hill Avenue and Walnut Ave	B	xxxxx	0.684	B	xxxxx	0.684	+ 0.000 V/C
#111 Red Hill Avenue and Valencia A	A	xxxxx	0.544	A	xxxxx	0.544	+ 0.000 V/C
#112 Tustin Ranch Road and Warner A	A	xxxxx	0.426	A	xxxxx	0.426	+ 0.000 V/C
#113 Tustin Ranch Road and Walnut A	F	xxxxx	1.193	F	xxxxx	1.193	+ 0.000 V/C
#114 SR-55 SB Ramps and Irvine Boul	C	23.2	0.970	C	23.2	0.970	+ 0.000 D/V
#115 SR-55 NB Ramps and Irvine Boul	B	19.8	0.797	B	19.8	0.797	+ 0.000 D/V

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #1 Euclid St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.849
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	65	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			WideBypass			WideBypass		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	124	1044	179	207	1844	104	218	811	153	184	586	188
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	124	1044	179	207	1844	104	218	811	153	184	586	188
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	124	1044	179	207	1844	104	218	811	153	184	586	188
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	124	1044	179	207	1844	104	218	811	153	184	586	188
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	124	1044	179	207	1844	104	218	811	153	184	586	188
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	1.00	2.56	0.44	1.00	2.84	0.16	1.00	2.52	0.48	1.00	2.27	0.73
Final Sat.:	1600	4297	703	1600	4744	256	1600	4238	762	1600	3834	1166
Capacity Analysis Module:												
Vol/Sat:	0.08	0.24	0.25	0.13	0.39	0.41	0.14	0.19	0.20	0.12	0.15	0.16
Crit Moves:	****					****			****	****		

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:49:26                  Page 4-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #2 Euclid St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.909
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        92               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     145 1100   131   137 1906   158   227  463   287   166  368   140
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  145 1100   131   137 1906   158   227  463   287   166  368   140
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   145 1100   131   137 1906   158   227  463   287   166  368   140
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  145 1100   131   137 1906   158   227  463   287   166  368   140
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  145 1100   131   137 1906   158   227  463   287   166  368   140
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 2.68  0.32  1.00 2.77  0.23  1.00 1.23  0.77  1.00 1.45  0.55
Final Sat.:  1600 4489   511  1600 4633   367  1600 2075  1225  1600 2418   882
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.25  0.26  0.09 0.41  0.43  0.14 0.22  0.23  0.10 0.15  0.16
Crit Moves:  ****                ****             ****  ****
******************************************************************************
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:49:28                  Page 5-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #3 Euclid St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.861
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        69               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     134  845    72   127 1842   169   172  753   460   100  609   111
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  134  845    72   127 1842   169   172  753   460   100  609   111
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   134  845    72   127 1842   169   172  753   460   100  609   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  134  845    72   127 1842   169   172  753   460   100  609   111
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  134  845    72   127 1842   169   172  753   460   100  609   111
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.76  0.24  2.00 2.75  0.25  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3200 4623   377  3200 4597   403  1600 3400  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.18  0.19  0.04 0.40  0.42  0.11 0.22  0.29  0.06 0.18  0.07
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:49:30                  Page 6-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #4 Newhope St and Hazard Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.709
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      98  738   105    91 1341   123    78  199   147    51  170    68
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   98  738   105    91 1341   123    78  199   147    51  170    68
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    98  738   105    91 1341   123    78  199   147    51  170    68
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   98  738   105    91 1341   123    78  199   147    51  170    68
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   98  738   105    91 1341   123    78  199   147    51  170    68
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 1.75  0.25  1.00 1.83  0.17  1.00 1.15  0.85  1.00 1.43  0.57
Final Sat.:  1600 2901   399  1600 3031   269  1600 1940  1360  1600 2386   914
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.25  0.26  0.06 0.44  0.46  0.05 0.10  0.11  0.03 0.07  0.07
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #5 Newhope St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.828
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        59               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     110  491   173   119 1183   110   135  492   160   176  449   100
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  110  491   173   119 1183   110   135  492   160   176  449   100
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   110  491   173   119 1183   110   135  492   160   176  449   100
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  110  491   173   119 1183   110   135  492   160   176  449   100
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  110  491   173   119 1183   110   135  492   160   176  449   100
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.48  0.52  1.00 1.83  0.17  1.00 1.51  0.49  1.00 1.64  0.36
Final Sat.:  1600 2466   834  1600 3028   272  1600 2515   785  1600 2717   583
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.20  0.21  0.07 0.39  0.40  0.08 0.20  0.20  0.11 0.17  0.17
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:49:32                 Page 8-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #6 Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.695
Loss Time (sec):       5               Average Delay (sec/veh):        27.4
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  2  1  0    0  0  1! 0  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70 1274     0     0 1354    18    74    0   121   836   44   117
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   70 1274     0     0 1354    18    74    0   121   836   44   117
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    70 1274     0     0 1354    18    74    0   121   836   44   117
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   70 1274     0     0 1354    18    74    0   121   836   44   117
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   70 1274     0     0 1354    18    74    0   121   836   44   117
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.90 1.00  0.90  0.96 0.96  0.85
Lanes:       1.00 3.00  0.00  0.00 2.96  0.04  0.38 0.00  0.62  1.90 0.10  1.00
Final Sat.:  1805 5187     0     0 5109    68   648    0  1059  3448  181  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.25  0.00  0.00 0.27  0.27  0.11 0.00  0.11  0.24 0.24  0.07
Crit Moves:  ****                 ****                    ****       ****
Green/Cycle: 0.06 0.44  0.00  0.00 0.38  0.38  0.16 0.00  0.16  0.35 0.35  0.35
Volume/Cap:  0.70 0.56  0.00  0.00 0.70  0.70  0.70 0.00  0.70  0.70 0.70  0.21
Delay/Veh:   65.4 21.3   0.0   0.0 27.2  27.2  46.8  0.0  46.8  29.7 29.7  23.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  65.4 21.3   0.0   0.0 27.2  27.2  46.8  0.0  46.8  29.7 29.7  23.0
LOS by Move:    E    C     A     A    C     C     D    A     D     C    C     C
HCM2k85thQ:     6   16     0     0   21    21    11    0    11    19   19     4
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Trask Avenue and SR-22 EB On-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.457
Loss Time (sec):       5               Average Delay (sec/veh):        11.5
Optimal Cycle:        23               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  0  0  0    2  0  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0     0   651  815     0     0  738   138
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0     0   651  815     0     0  738   138
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     0    0     0   651  815     0     0  738   138
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0     0    0     0   651  815     0     0  738   138
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0     0    0     0   651  815     0     0  738   138
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  0.92 1.00  1.00  1.00 0.93  0.93
Lanes:       0.00 0.00  0.00  0.00 0.00  0.00  2.00 1.00  0.00  0.00 1.68  0.32
Final Sat.:     0    0     0     0    0     0  3502 1900     0     0 2968   555
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.00 0.00  0.00  0.19 0.43  0.00  0.00 0.25  0.25
Crit Moves:                                     ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.00 0.00  0.00  0.41 0.95  0.00  0.00 0.54  0.54
Volume/Cap:  0.00 0.00  0.00  0.00 0.00  0.00  0.46 0.45  0.00  0.00 0.46  0.46
Delay/Veh:    0.0  0.0   0.0   0.0  0.0   0.0  21.9  0.4   0.0   0.0 14.0  14.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0   0.0  0.0   0.0  21.9  0.4   0.0   0.0 14.0  14.0
LOS by Move:    A    A     A     A    A     A     C    A     A     A    B     B
HCM2k85thQ:     0    0     0     0    0     0    12    4     0     0   13    13
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #8 Harbor Blvd and Westminster Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.820
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        56               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  1  0    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     178 1173   251   212 1663    95   176  927    33   212  574   156
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  178 1173   251   212 1663    95   176  927    33   212  574   156
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   178 1173   251   212 1663    95   176  927    33   212  574   156
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  178 1173   251   212 1663    95   176  927    33   212  574   156
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  178 1173   251   212 1663    95   176  927    33   212  574   156
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.90  0.10  1.00 3.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 4835   165  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.23  0.16  0.13 0.33  0.06  0.11 0.19  0.20  0.13 0.11  0.10
Crit Moves:  ****               ****                    ****  ****
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #9 Harbor Blvd and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.807
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     117  935   202   227 1914   124   140  932   181   245  621   145
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  117  935   202   227 1914   124   140  932   181   245  621   145
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   117  935   202   227 1914   124   140  932   181   245  621   145
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  117  935   202   227 1914   124   140  932   181   245  621   145
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  117  935   202   227 1914   124   140  932   181   245  621   145
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  2.00 2.51  0.49  2.00 2.43  0.57
Final Sat.:  1600 5100  1600  1600 5100  1600  3200 4219   781  3200 4091   909
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.18  0.13  0.14 0.38  0.08  0.04 0.22  0.23  0.08 0.15  0.16
Crit Moves:  ****               ****                   ****  ****
******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #10 Harbor Blvd and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.791
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	50	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	2 1	0	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	104	1059	101	182	1919	64	167	435	130	190	430	123
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	104	1059	101	182	1919	64	167	435	130	190	430	123
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	104	1059	101	182	1919	64	167	435	130	190	430	123
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	104	1059	101	182	1919	64	167	435	130	190	430	123
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	104	1059	101	182	1919	64	167	435	130	190	430	123
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	2.00	3.00	1.00	2.00	2.90	0.10	1.00	1.54	0.46	1.00	1.56	0.44
Final Sat.:	3200	5100	1600	3200	4845	155	1600	2564	736	1600	2588	712
Capacity Analysis Module:												
Vol/Sat:	0.03	0.21	0.06	0.06	0.40	0.41	0.10	0.17	0.18	0.12	0.17	0.17
Crit Moves:	****					****			****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #11 Harbor Blvd and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.766
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	46	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	2 0	2 1	0	2 0	3 0	1
Volume Module:												
Base Vol:	103	772	146	183	2105	61	107	644	323	221	491	204
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	103	772	146	183	2105	61	107	644	323	221	491	204
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	103	772	146	183	2105	61	107	644	323	221	491	204
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	103	772	146	183	2105	61	107	644	323	221	491	204
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	103	772	146	183	2105	61	107	644	323	221	491	204
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	3200	3400	1600	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.03	0.15	0.09	0.06	0.41	0.04	0.03	0.19	0.20	0.07	0.10	0.13
Crit Moves:	****			****					****	****		

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #12 Harbor Blvd and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.808
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     115  701   178   457 2059   123    97 1385   364   151  792   134
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  115  701   178   457 2059   123    97 1385   364   151  792   134
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   115  701   178   457 2059   123    97 1385   364   151  792   134
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  115  701   178   457 2059   123    97 1385   364   151  792   134
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  115  701   178   457 2059   123    97 1385   364   151  792   134
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.39  0.61  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4028   972  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.14 0.40  0.08  0.03 0.27  0.23  0.05 0.16  0.08
Crit Moves:  ****                ****             ****             ****
******************************************************************************
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                         Santa Ana Circulation Element
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                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #13 Harbor Blvd and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.978
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     111  791    50   171 2299    86    88  737   297   117  362    82
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  111  791    50   171 2299    86    88  737   297   117  362    82
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   111  791    50   171 2299    86    88  737   297   117  362    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  111  791    50   171 2299    86    88  737   297   117  362    82
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  111  791    50   171 2299    86    88  737   297   117  362    82
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 2.82  0.18  1.00 2.89  0.11  1.00 1.43  0.57  1.00 2.00  1.00
Final Sat.:  3200 4715   285  1600 4827   173  1600 2381   919  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.17  0.18  0.11 0.48  0.50  0.06 0.31  0.32  0.07 0.11  0.05
Crit Moves:  ****                ****             ****  ****
******************************************************************************
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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #14 MacArthur Blvd and Hyland Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.608
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      69    3    19     8    2    19     7 1953   775    64  490    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   69    3    19     8    2    19     7 1953   775    64  490    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    69    3    19     8    2    19     7 1953   775    64  490    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   69    3    19     8    2    19     7 1953   775    64  490    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   69    3    19     8    2    19     7 1953   775    64  490    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 0.14  0.86  1.00 1.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200  218  1382  1600 1700  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.01  0.01  0.01 0.00  0.01  0.00 0.38  0.48  0.04 0.10  0.01
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #15 MacArthur Blvd and Harbor Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.754
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	44	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	3 0	1	1 0	3 0	1
Volume Module:												
Base Vol:	128	898	92	316	1820	126	126	1141	344	133	443	132
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	128	898	92	316	1820	126	126	1141	344	133	443	132
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	128	898	92	316	1820	126	126	1141	344	133	443	132
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	128	898	92	316	1820	126	126	1141	344	133	443	132
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	128	898	92	316	1820	126	126	1141	344	133	443	132
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	5100	1600	1600	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.04	0.18	0.06	0.10	0.36	0.08	0.08	0.22	0.22	0.08	0.09	0.08
Crit Moves:	****			****			****			****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #16 Harbor Blvd and Sunflower Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.702
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	37	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	1 1	0	1 1	0 1	0
Volume Module:												
Base Vol:	217	1107	205	246	2324	57	9	109	42	130	166	94
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	217	1107	205	246	2324	57	9	109	42	130	166	94
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	217	1107	205	246	2324	57	9	109	42	130	166	94
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	217	1107	205	246	2324	57	9	109	42	130	166	94
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	217	1107	205	246	2324	57	9	109	42	130	166	94
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	1.44	0.56	1.00	1.28	0.72
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	2410	890	1603	2044	1152
Capacity Analysis Module:												
Vol/Sat:	0.07	0.22	0.13	0.08	0.46	0.04	0.01	0.05	0.05	0.08	0.08	0.08
Crit Moves:	****			****					****			****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #17 Harbor Blvd and I-405 WB Off-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.695
Loss Time (sec):       5               Average Delay (sec/veh):        19.7
Optimal Cycle:        38               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  0    0  0  4  0  0    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1567     0     0 2327     0     0    0     0   508    0   894
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1567     0     0 2327     0     0    0     0   508    0   894
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1567     0     0 2327     0     0    0     0   508    0   894
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1567     0     0 2327     0     0    0     0   508    0   894
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1567     0     0 2327     0     0    0     0   508    0   894
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  1.00 1.00  1.00  0.89 1.00  0.89
Lanes:       0.00 4.00  0.00  0.00 4.00  0.00  0.00 0.00  0.00  1.36 0.00  1.64
Final Sat.:     0 6916     0     0 6916     0     0    0     0  2298    0  2762
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.23  0.00  0.00 0.34  0.00  0.00 0.00  0.00  0.22 0.00  0.32
Crit Moves:  ****                 ****                                     ****
Green/Cycle: 0.00 0.48  0.00  0.00 0.48  0.00  0.00 0.00  0.00  0.47 0.00  0.47
Volume/Cap:  0.00 0.47  0.00  0.00 0.69  0.00  0.00 0.00  0.00  0.47 0.00  0.69
Delay/Veh:    0.0 17.3   0.0   0.0 20.7   0.0   0.0  0.0   0.0  18.4  0.0  22.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 17.3   0.0   0.0 20.7   0.0   0.0  0.0   0.0  18.4  0.0  22.2
LOS by Move:    A    B     A     A    C     A     A    A     A     B    A     C
HCM2k85thQ:     0   13     0     0   24     0     0    0     0    12    0    21
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #18 Harbor Blvd and I-405 EB Off-Ramp

Cycle (sec):	100	Critical Vol./Cap.(X):	0.524
Loss Time (sec):	5	Average Delay (sec/veh):	13.2
Optimal Cycle:	26	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ignore			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0 3	0 1	0	0 4	0 0	1	0 1!	0 1	0	0 0	0 0
Volume Module:												
Base Vol:	0	1729	0	0	1504	0	385	0	429	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1729	0	0	1504	0	385	0	429	0	0	0
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1729	0	0	1504	0	385	0	429	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1729	0	0	1504	0	385	0	429	0	0	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1729	0	0	1504	0	385	0	429	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	0.90	1.00	0.90	1.00	1.00	1.00
Lanes:	0.00	3.00	1.00	0.00	4.00	0.00	1.47	0.00	1.53	0.00	0.00	0.00
Final Sat.:	0	5187	1900	0	6916	0	2518	0	2611	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.33	0.00	0.00	0.22	0.00	0.15	0.00	0.16	0.00	0.00	0.00
Crit Moves:		****			****				****			
Green/Cycle:	0.00	0.64	0.00	0.00	0.64	0.00	0.31	0.00	0.31	0.00	0.00	0.00
Volume/Cap:	0.00	0.52	0.00	0.00	0.34	0.00	0.49	0.00	0.52	0.00	0.00	0.00
Delay/Veh:	0.0	10.1	0.0	0.0	8.5	0.0	28.0	0.0	28.5	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	10.1	0.0	0.0	8.5	0.0	28.0	0.0	28.5	0.0	0.0	0.0
LOS by Move:	A	B	A	A	A	A	C	A	C	A	A	A
HCM2k85thQ:	0	16	0	0	9	0	10	0	11	0	0	0

Note: Queue reported is the number of cars per lane.

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #19 Fairview St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.667
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    0  1  0  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       6 1278   414   243 1402     6     6   23    23   300    9   155
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6 1278   414   243 1402     6     6   23    23   300    9   155
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     6 1278   414   243 1402     6     6   23    23   300    9   155
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    6 1278   414   243 1402     6     6   23    23   300    9   155
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    6 1278   414   243 1402     6     6   23    23   300    9   155
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.27  0.73  1.00 2.99  0.01  0.23 0.89  0.88  1.94 0.06  1.00
Final Sat.:  1600 3826  1174  1600 4980    20   369 1415  1415  3107   93  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.33  0.35  0.15 0.28  0.29  0.02 0.02  0.02  0.10 0.10  0.10
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #20 Fairview St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.872
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        73               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include        WideBypass         Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     157 1206   227   241 1401   161   214 1233   191   163  732   245
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  157 1206   227   241 1401   161   214 1233   191   163  732   245
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   157 1206   227   241 1401   161   214 1233   191   163  732   245
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  157 1206   227   241 1401   161   214 1233   191   163  732   245
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  157 1206   227   241 1401   161   214 1233   191   163  732   245
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 2.69  0.31  1.00 2.60  0.40  1.00 2.25  0.75
Final Sat.:  1600 5100  1600  1600 4505   495  1600 4356   644  1600 3796  1204
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.24  0.14  0.15 0.31  0.33  0.13 0.28  0.30  0.10 0.19  0.20
Crit Moves:  ****                ****              ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #21 Fairview St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.786
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	49	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	3 0	1	1 0	3 0	1	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	121	1294	173	142	1727	125	221	522	120	194	500	40
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	121	1294	173	142	1727	125	221	522	120	194	500	40
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	121	1294	173	142	1727	125	221	522	120	194	500	40
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	121	1294	173	142	1727	125	221	522	120	194	500	40
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	121	1294	173	142	1727	125	221	522	120	194	500	40
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.03	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.63	0.37	1.00	1.85	0.15
Final Sat.:	1600	5100	1600	1600	5100	1600	1600	2702	598	1600	3063	237
Capacity Analysis Module:												
Vol/Sat:	0.08	0.25	0.11	0.09	0.34	0.08	0.14	0.19	0.20	0.12	0.16	0.17
Crit Moves:	****			****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #22 Fairview St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.753
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	44	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0
Volume Module:												
Base Vol:	188	831	116	215	1503	127	237	657	176	421	553	110
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	188	831	116	215	1503	127	237	657	176	421	553	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	188	831	116	215	1503	127	237	657	176	421	553	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	831	116	215	1503	127	237	657	176	421	553	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	831	116	215	1503	127	237	657	176	421	553	110
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	2.00	2.63	0.37	2.00	2.77	0.23	2.00	2.37	0.63	2.00	2.50	0.50
Final Sat.:	3200	4412	588	3200	4626	374	3200	3986	1014	3200	4204	796
Capacity Analysis Module:												
Vol/Sat:	0.06	0.19	0.20	0.07	0.32	0.34	0.07	0.16	0.17	0.13	0.13	0.14
Crit Moves:	****					****			****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #23 Fairview St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.850
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        65               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     215  952   125   205 1628   119    69 1010   301   307  926   300
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  215  952   125   205 1628   119    69 1010   301   307  926   300
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   215  952   125   205 1628   119    69 1010   301   307  926   300
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  215  952   125   205 1628   119    69 1010   301   307  926   300
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  215  952   125   205 1628   119    69 1010   301   307  926   300
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 2.65  0.35  2.00 2.80  0.20  2.00 2.31  0.69  2.00 2.27  0.73
Final Sat.:  3200 4443   557  3200 4673   327  3200 3898  1102  3200 3825  1175
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.21  0.22  0.06 0.35  0.36  0.02 0.26  0.27  0.10 0.24  0.26
Crit Moves:  ****                ****             ****  ****
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #24 Fairview St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.704
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     248  771    89   307 1546   173   125 1019   150   235  494   140
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  248  771    89   307 1546   173   125 1019   150   235  494   140
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   248  771    89   307 1546   173   125 1019   150   235  494   140
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  248  771    89   307 1546   173   125 1019   150   235  494   140
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  248  771    89   307 1546   173   125 1019   150   235  494   140
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.69  0.31  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4503   497  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.17  0.18  0.10 0.30  0.11  0.04 0.20  0.09  0.07 0.10  0.09
Crit Moves:  ****               ****             ****             ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #25 Fairview Rd and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.705
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     185 1071   163   204 1738   111    49  322    65   306  256   132
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  185 1071   163   204 1738   111    49  322    65   306  256   132
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   185 1071   163   204 1738   111    49  322    65   306  256   132
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  185 1071   163   204 1738   111    49  322    65   306  256   132
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  185 1071   163   204 1738   111    49  322    65   306  256   132
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.82  0.18  2.00 1.66  0.34  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4712   288  3200 2763   537  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.21  0.10  0.06 0.37  0.39  0.02 0.12  0.12  0.10 0.08  0.08
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #26 Greenville St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.563
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  2  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     186    0   251     0    0     0     0  960   234   172  915     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  186    0   251     0    0     0     0  960   234   172  915     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   186    0   251     0    0     0     0  960   234   172  915     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  186    0   251     0    0     0     0  960   234   172  915     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  186    0   251     0    0     0     0  960   234   172  915     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 0.00  1.00  0.00 0.00  0.00  0.00 2.41  0.59  1.00 2.00  0.00
Final Sat.:  1600    0  1600     0    0     0     0 4059   941  1600 3400     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.00  0.16  0.00 0.00  0.00  0.00 0.24  0.25  0.11 0.27  0.00
Crit Moves:             ****                                 ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #27 Greenville St and Segerstrom Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.727
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	40	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			WideBypass			WideBypass		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	0 1	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	47	193	78	154	472	160	33	739	118	164	662	76
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	47	193	78	154	472	160	33	739	118	164	662	76
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	47	193	78	154	472	160	33	739	118	164	662	76
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	193	78	154	472	160	33	739	118	164	662	76
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	47	193	78	154	472	160	33	739	118	164	662	76
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.03	1.00
Lanes:	1.00	1.42	0.58	1.00	1.00	1.00	1.00	1.72	0.28	1.00	1.79	0.21
Final Sat.:	1600	2379	921	1600	1700	1600	1600	2859	441	1600	2970	330
Capacity Analysis Module:												
Vol/Sat:	0.03	0.08	0.08	0.10	0.28	0.10	0.02	0.26	0.27	0.10	0.22	0.23
Crit Moves:	****				****				****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #28 Raitt St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.715
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        39               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      62  570    90   100  762   104   116  704    90   172  542    97
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   62  570    90   100  762   104   116  704    90   172  542    97
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    62  570    90   100  762   104   116  704    90   172  542    97
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   62  570    90   100  762   104   116  704    90   172  542    97
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   62  570    90   100  762   104   116  704    90   172  542    97
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.73  0.27  1.00 1.76  0.24  1.00 1.77  0.23  1.00 1.70  0.30
Final Sat.:  1600 2864   436  1600 2916   384  1600 2937   363  1600 2814   486
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.20  0.21  0.06 0.26  0.27  0.07 0.24  0.25  0.11 0.19  0.20
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #29 Raitt St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.851
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	65	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			WideBypass			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	188	501	181	152	716	85	165	1008	145	117	916	54
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	188	501	181	152	716	85	165	1008	145	117	916	54
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	188	501	181	152	716	85	165	1008	145	117	916	54
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	501	181	152	716	85	165	1008	145	117	916	54
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	501	181	152	716	85	165	1008	145	117	916	54
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.03	1.00	1.00	1.04	1.00	1.00	1.03	1.00
Lanes:	1.00	1.47	0.53	1.00	1.79	0.21	1.00	1.75	0.25	1.00	1.89	0.11
Final Sat.:	1600	2451	849	1600	2960	340	1600	2898	402	1600	3122	178
Capacity Analysis Module:												
Vol/Sat:	0.12	0.20	0.21	0.10	0.24	0.25	0.10	0.35	0.36	0.07	0.29	0.30
Crit Moves:	****					****			****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #30 Bear St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.737
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      81  280   119   199  756   300    97 1663   114    70 1180   100
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   81  280   119   199  756   300    97 1663   114    70 1180   100
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    81  280   119   199  756   300    97 1663   114    70 1180   100
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   81  280   119   199  756   300    97 1663   114    70 1180   100
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   81  280   119   199  756   300    97 1663   114    70 1180   100
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 2.81  0.19  1.00 2.77  0.23
Final Sat.:  1600 3400  1600  1600 3400  1600  1600 4692   308  1600 4625   375
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.08  0.07  0.12 0.22  0.19  0.06 0.35  0.37  0.04 0.26  0.27
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #31 Bristol St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.725
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     192  988   167   335 1376   181   324  963   156   359  824   273
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  192  988   167   335 1376   181   324  963   156   359  824   273
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   192  988   167   335 1376   181   324  963   156   359  824   273
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  192  988   167   335 1376   181   324  963   156   359  824   273
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  192  988   167   335 1376   181   324  963   156   359  824   273
OvlAdjVol:                                                              106
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.58  0.42  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4331   669  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.19  0.10  0.10 0.27  0.11  0.10 0.22  0.23  0.11 0.16  0.17
OvlAdjV/S:                                                              0.07
Crit Moves:  ****                ****                    ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #32 Bristol St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.827
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     123 1087    96   318 1284    80   149  755    93   121  401    83
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  123 1087    96   318 1284    80   149  755    93   121  401    83
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   123 1087    96   318 1284    80   149  755    93   121  401    83
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  123 1087    96   318 1284    80   149  755    93   121  401    83
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  123 1087    96   318 1284    80   149  755    93   121  401    83
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.76  0.24  1.00 2.82  0.18  1.00 1.78  0.22  1.00 1.66  0.34
Final Sat.:  1600 4610   390  1600 4718   282  1600 2949   351  1600 2751   549
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.24  0.25  0.20 0.27  0.28  0.09 0.26  0.26  0.08 0.15  0.15
Crit Moves:             ****  ****             ****        ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #33 Bristol St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.669
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      65 1419   197   137 1507    41    83  403    35    96  240    41
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   65 1419   197   137 1507    41    83  403    35    96  240    41
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    65 1419   197   137 1507    41    83  403    35    96  240    41
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   65 1419   197   137 1507    41    83  403    35    96  240    41
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   65 1419   197   137 1507    41    83  403    35    96  240    41
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 2.63  0.37  1.00 2.92  0.08  1.00 1.84  0.16  1.00 1.71  0.29
Final Sat.:  1600 4415   585  1600 4873   127  1600 3044   256  1600 2833   467
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.32  0.34  0.09 0.31  0.32  0.05 0.13  0.14  0.06 0.08  0.09
Crit Moves:             ****  ****                          ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #34 Bristol St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.745
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        43               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     183 1278   162   275 1133   160   206 1268   128   108  813   119
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  183 1278   162   275 1133   160   206 1268   128   108  813   119
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   183 1278   162   275 1133   160   206 1268   128   108  813   119
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  183 1278   162   275 1133   160   206 1268   128   108  813   119
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  183 1278   162   275 1133   160   206 1268   128   108  813   119
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 2.72  0.28  1.00 2.62  0.38
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 4560   440  1600 4387   613
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.25  0.10  0.09 0.22  0.10  0.13 0.28  0.29  0.07 0.19  0.19
Crit Moves:       ****        ****                     ****  ****
******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:00                Page 37-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #35 Bristol St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.749
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        43               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     118 1054    53   161 1571   162   275  472   232   155  432    50
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  118 1054    53   161 1571   162   275  472   232   155  432    50
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   118 1054    53   161 1571   162   275  472   232   155  432    50
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  118 1054    53   161 1571   162   275  472   232   155  432    50
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  118 1054    53   161 1571   162   275  472   232   155  432    50
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.03  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 1.34  0.66  1.00 1.79  0.21
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 2245  1055  1600 2968   332
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.21  0.03  0.10 0.31  0.10  0.17 0.21  0.22  0.10 0.15  0.15
Crit Moves:  ****               ****        ****                   ****
******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:01                Page 38-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #36 Bristol St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.767
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  1  0    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     192  862   159   386 1307   148   206 1149   286   188  860   146
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  192  862   159   386 1307   148   206 1149   286   188  860   146
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   192  862   159   386 1307   148   206 1149   286   188  860   146
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  192  862   159   386 1307   148   206 1149   286   188  860   146
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  192  862   159   386 1307   148   206 1149   286   188  860   146
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.00  1.00  2.00 2.69  0.31  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 3400  1600  3200 4512   488  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.25  0.10  0.12 0.29  0.30  0.13 0.23  0.18  0.12 0.17  0.09
Crit Moves:       ****        ****                   ****        ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #37 Bristol St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.794
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      65  725   136   283 1011   119   189  913    84   122  554    71
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   65  725   136   283 1011   119   189  913    84   122  554    71
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    65  725   136   283 1011   119   189  913    84   122  554    71
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   65  725   136   283 1011   119   189  913    84   122  554    71
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   65  725   136   283 1011   119   189  913    84   122  554    71
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 2.53  0.47  1.00 2.68  0.32  1.00 1.83  0.17  1.00 1.77  0.23
Final Sat.:  1600 4242   758  1600 4495   505  1600 3030   270  1600 2936   364
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.18 0.22  0.24  0.12 0.30  0.31  0.08 0.19  0.20
Crit Moves:             ****  ****                          ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #38 Bristol St and Alton Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.556
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	26	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	WideBypass			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 1	0	1 0	3 0	1	1 0	1 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	9	628	47	227	1571	36	190	117	244	41	87	31
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	628	47	227	1571	36	190	117	244	41	87	31
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	9	628	47	227	1571	36	190	117	244	41	87	31
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	9	628	47	227	1571	36	190	117	244	41	87	31
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	9	628	47	227	1571	36	190	117	244	41	87	31
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.00	1.00
Lanes:	1.00	2.79	0.21	1.00	3.00	1.00	1.00	1.00	1.00	1.00	0.74	0.26
Final Sat.:	1600	4666	334	1600	5100	1600	1600	1700	1600	1600	1180	420
Capacity Analysis Module:												
Vol/Sat:	0.01	0.13	0.14	0.14	0.31	0.02	0.12	0.07	0.15	0.03	0.07	0.07
Crit Moves:	****			****			****				****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #39 Bristol St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.738
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      92  478   120   326 1419   148   192 1394   283   191  910   132
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   92  478   120   326 1419   148   192 1394   283   191  910   132
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    92  478   120   326 1419   148   192 1394   283   191  910   132
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   92  478   120   326 1419   148   192 1394   283   191  910   132
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   92  478   120   326 1419   148   192 1394   283   191  910   132
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.72  0.28  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 4547   453  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.09  0.08  0.10 0.31  0.33  0.06 0.27  0.18  0.06 0.18  0.08
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #40 Bristol St and Sunflower Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.635
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	31	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 1	2 0	3	0 1	2 0	2	1 1	2 0	3	0 1
Volume Module:												
Base Vol:	94	461	136	245	1388	104	114	942	381	246	400	138
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	461	136	245	1388	104	114	942	381	246	400	138
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	461	136	245	1388	104	114	942	381	246	400	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	94	461	136	245	1388	104	114	942	381	246	400	138
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	94	461	136	245	1388	104	114	942	381	246	400	138
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.85	1.15	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	3200	4757	1843	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.03	0.09	0.09	0.08	0.27	0.07	0.04	0.20	0.21	0.08	0.08	0.09
Crit Moves:	****				****				****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #41 Bristol St and I-405 WB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.500
Loss Time (sec):       5               Average Delay (sec/veh):        19.1
Optimal Cycle:        25               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    0  0  4  1  0    0  0  0  0  2    1  1  1  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1489   191     0 1967     8     0    0    34   121   73   665
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1489   191     0 1967     8     0    0    34   121   73   665
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1489     0     0 1967     8     0    0    34   121   73   665
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1489     0     0 1967     8     0    0    34   121   73   665
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1489     0     0 1967     8     0    0    34   121   73   665
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  0.91  1.00 1.00  0.75  0.92 0.92  0.75
Lanes:       0.00 4.00  1.00  0.00 4.98  0.02  0.00 0.00  2.00  1.87 1.13  2.00
Final Sat.:     0 6916  1900     0 8601    35     0    0  2842  3276 1976  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.22  0.00  0.00 0.23  0.23  0.00 0.00  0.01  0.04 0.04  0.23
Crit Moves:  ****                ****                     ****               ****
Green/Cycle: 0.00 0.46  0.00  0.00 0.46  0.46  0.00 0.00  0.02  0.47 0.47  0.47
Volume/Cap:  0.00 0.47  0.00  0.00 0.50  0.50  0.00 0.00  0.50  0.08 0.08  0.50
Delay/Veh:    0.0 18.8   0.0   0.0 19.2  19.2   0.0  0.0  53.9  14.7 14.7  18.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 18.8   0.0   0.0 19.2  19.2   0.0  0.0  53.9  14.7 14.7  18.7
LOS by Move:    A    B     A     A    B     B     A    A     D     B    B     B
HCM2k85thQ:     0   13     0     0   14    14     0    0     2     2    2    13
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #42 Bristol St and I-405 EB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	0.607
Loss Time (sec):	5	Average Delay (sec/veh):	22.3
Optimal Cycle:	31	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Ignore			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	4 0	0	0 0	2	1 1	3 0	0	0 1	0 0	0	0 0
Volume Module:												
Base Vol:	113	1108	0	0	985	847	573	0	524	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	113	1108	0	0	985	847	573	0	524	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	113	1108	0	0	985	0	573	0	524	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	113	1108	0	0	985	0	573	0	524	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	113	1108	0	0	985	0	573	0	524	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.91	1.00	1.00	0.91	0.91	0.92	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	4.00	0.00	0.00	3.00	1.00	3.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	6916	0	0	5187	1729	5253	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.16	0.00	0.00	0.19	0.00	0.11	0.00	0.32	0.00	0.00	0.00
Crit Moves:	****				****				****			
Green/Cycle:	0.10	0.42	0.00	0.00	0.31	0.00	0.53	0.00	0.53	0.00	0.00	0.00
Volume/Cap:	0.61	0.39	0.00	0.00	0.61	0.00	0.20	0.00	0.61	0.00	0.00	0.00
Delay/Veh:	48.6	20.4	0.0	0.0	29.8	0.0	12.2	0.0	17.3	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.6	20.4	0.0	0.0	29.8	0.0	12.2	0.0	17.3	0.0	0.0	0.0
LOS by Move:	D	C	A	A	C	A	B	A	B	A	A	A
HCM2k85thQ:	7	10	0	0	15	0	5	0	17	0	0	0

Note: Queue reported is the number of cars per lane.

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #43 Flower St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.596
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	29	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	3 0	1	1 0	2 0	1
Volume Module:												
Base Vol:	87	811	118	168	568	76	114	710	81	101	323	135
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	811	118	168	568	76	114	710	81	101	323	135
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	87	811	118	168	568	76	114	710	81	101	323	135
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	87	811	118	168	568	76	114	710	81	101	323	135
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	87	811	118	168	568	76	114	710	81	101	323	135
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	3400	1600	1600	3400	1600	1600	5100	1600	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.05	0.24	0.07	0.11	0.17	0.05	0.07	0.14	0.05	0.06	0.10	0.08
Crit Moves:		****			****			****			****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #44 Flower St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.795
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     139  602   159   175  554    58   165 1514    60   209  861   123
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  139  602   159   175  554    58   165 1514    60   209  861   123
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   139  602   159   175  554    58   165 1514    60   209  861   123
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  139  602   159   175  554    58   165 1514    60   209  861   123
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  139  602   159   175  554    58   165 1514    60   209  861   123
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 1.81  0.19  1.00 2.89  0.11  1.00 2.62  0.38
Final Sat.:  1600 3400  1600  1600 2997   303  1600 4817   183  1600 4400   600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.18  0.10  0.11 0.18  0.19  0.10 0.31  0.33  0.13 0.20  0.21
Crit Moves:       ****        ****                          ****  ****
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #45 Flower St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.819
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        56               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      60  438    38    66  367    53    51  581    44    64  432    58
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   60  438    38    66  367    53    51  581    44    64  432    58
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    60  438    38    66  367    53    51  581    44    64  432    58
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   60  438    38    66  367    53    51  581    44    64  432    58
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   60  438    38    66  367    53    51  581    44    64  432    58
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.92  0.08  1.00 0.87  0.13  1.00 0.93  0.07  1.00 0.88  0.12
Final Sat.:  1600 1472   128  1600 1398   202  1600 1487   113  1600 1411   189
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.30  0.30  0.04 0.26  0.26  0.03 0.39  0.39  0.04 0.31  0.31
Crit Moves:       ****        ****                   ****        ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #46 Flower St and Segerstrom Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.769
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	46	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	63	331	73	98	544	120	155	1065	297	74	546	60
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	63	331	73	98	544	120	155	1065	297	74	546	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	63	331	73	98	544	120	155	1065	297	74	546	60
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	63	331	73	98	544	120	155	1065	297	74	546	60
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	63	331	73	98	544	120	155	1065	297	74	546	60
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.03	1.00
Lanes:	1.00	1.64	0.36	1.00	1.64	0.36	1.00	1.56	0.44	1.00	1.80	0.20
Final Sat.:	1600	2722	578	1600	2722	578	1600	2602	698	1600	2983	317
Capacity Analysis Module:												
Vol/Sat:	0.04	0.12	0.13	0.06	0.20	0.21	0.10	0.41	0.43	0.05	0.18	0.19
Crit Moves:	****					****			****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #47 Flower St and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.698
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	37	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	22	142	73	163	352	264	165	1879	80	54	909	58
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	22	142	73	163	352	264	165	1879	80	54	909	58
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	22	142	73	163	352	264	165	1879	80	54	909	58
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	22	142	73	163	352	264	165	1879	80	54	909	58
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	22	142	73	163	352	264	165	1879	80	54	909	58
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	1.32	0.68	1.00	1.14	0.86	1.00	2.88	0.12	1.00	2.82	0.18
Final Sat.:	1600	2213	1087	1600	1929	1371	1600	4804	196	1600	4712	288
Capacity Analysis Module:												
Vol/Sat:	0.01	0.06	0.07	0.10	0.18	0.19	0.10	0.39	0.41	0.03	0.19	0.20
Crit Moves:	****					****			****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #48 Main St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.574
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      84  579   300   198 1034   173   350  495   215   316  276   230
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   84  579   300   198 1034   173   350  495   215   316  276   230
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    84  579   300   198 1034   173   350  495   215   316  276   230
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   84  579   300   198 1034   173   350  495   215   316  276   230
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   84  579   300   198 1034   173   350  495   215   316  276   230
OvlAdjVol:               142                                              131
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.57  0.43  2.00 2.09  0.91  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4312   688  3200 3546  1454  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.11  0.19  0.06 0.24  0.25  0.11 0.14  0.15  0.10 0.08  0.14
OvlAdjV/S:               0.09                                             0.08
Crit Moves:  ****                      ****              ****  ****
******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:12                Page 51-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #49 Main St and Mainplace Dr / Memory Ln
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.485
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        23               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      28  764   250    32 1244   260   148  233    16   198  226    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   28  764   250    32 1244   260   148  233    16   198  226    15
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    28  764   250    32 1244   260   148  233    16   198  226    15
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   28  764   250    32 1244   260   148  233    16   198  226    15
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   28  764   250    32 1244   260   148  233    16   198  226    15
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 2.26  0.74  2.00 2.48  0.52  2.00 2.81  0.19  2.00 2.00  1.00
Final Sat.:  3200 3817  1183  3200 4170   830  3200 4692   308  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.20  0.21  0.01 0.30  0.31  0.05 0.05  0.05  0.06 0.07  0.01
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #50 Main St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.821
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        57               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  1  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     128  760   163   195 1086    70   116 1225    61   325 1300    19
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  128  760   163   195 1086    70   116 1225    61   325 1300    19
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   128  760   163   195 1086    70   116 1225    61   325 1300    19
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  128  760   163   195 1086    70   116 1225    61   325 1300    19
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  128  760   163   195 1086    70   116 1225    61   325 1300    19
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 1.88  0.12  2.00 2.86  0.14  2.00 2.96  0.04
Final Sat.:  3200 3400  1600  3200 3106   194  3200 4772   228  3200 4931    69
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.22  0.10  0.06 0.35  0.36  0.04 0.26  0.27  0.10 0.26  0.27
Crit Moves:  ****                ****              ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #51 Main St and Civic Center Dr

Cycle (sec):	100	Critical Vol./Cap.(X):	0.755
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	44	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	138	901	79	59	1042	159	90	545	99	43	566	34
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	138	901	79	59	1042	159	90	545	99	43	566	34
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	138	901	79	59	1042	159	90	545	99	43	566	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	901	79	59	1042	159	90	545	99	43	566	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	138	901	79	59	1042	159	90	545	99	43	566	34
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.03	1.00
Lanes:	1.00	1.84	0.16	1.00	1.74	0.26	1.00	1.69	0.31	1.00	1.89	0.11
Final Sat.:	1600	3042	258	1600	2876	424	1600	2808	492	1600	3119	181
Capacity Analysis Module:												
Vol/Sat:	0.09	0.30	0.31	0.04	0.36	0.38	0.06	0.19	0.20	0.03	0.18	0.19
Crit Moves:	****					****	****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #52 Main St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.667
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  1  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      68 1083     0     0 1107    98     0    0     0    61  848    65
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   68 1083     0     0 1107    98     0    0     0    61  848    65
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    68 1083     0     0 1107    98     0    0     0    61  848    65
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   68 1083     0     0 1107    98     0    0     0    61  848    65
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   68 1083     0     0 1107    98     0    0     0    61  848    65
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.02  1.00
Lanes:       1.00 2.00  0.00  0.00 1.84  0.16  0.00 0.00  0.00  0.19 2.61  0.20
Final Sat.:  1600 3400     0     0 3040   260     0    0     0   301 4279   320
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.32  0.00  0.00 0.36  0.38  0.00 0.00  0.00  0.04 0.20  0.20
Crit Moves:  ****                     ****                          ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #53 Main St and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.490
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        23               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1  1  0    0  0  1  1  0    0  0  0  1  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  977    23     0 1098    27     0   93    14     0  114    28
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  977    23     0 1098    27     0   93    14     0  114    28
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  977    23     0 1098    27     0   93    14     0  114    28
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  977    23     0 1098    27     0   93    14     0  114    28
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  977    23     0 1098    27     0   93    14     0  114    28
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 1.95  0.05  0.00 1.95  0.05  0.00 0.87  0.13  0.00 0.80  0.20
Final Sat.:     0 3226    74     0 3223    77     0 1391   209     0 1285   315
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.30  0.31  0.00 0.34  0.35  0.00 0.07  0.07  0.00 0.09  0.09
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #54 Main St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.758
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     116  596    60    88  882    65   119 1393   147    88 1097    61
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  116  596    60    88  882    65   119 1393   147    88 1097    61
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   116  596    60    88  882    65   119 1393   147    88 1097    61
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  116  596    60    88  882    65   119 1393   147    88 1097    61
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  116  596    60    88  882    65   119 1393   147    88 1097    61
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 1.82  0.18  1.00 2.00  1.00  1.00 2.71  0.29  1.00 2.84  0.16
Final Sat.:  1600 3007   293  1600 3400  1600  1600 4542   458  1600 4747   253
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.20  0.20  0.06 0.26  0.04  0.07 0.31  0.32  0.06 0.23  0.24
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:16                Page 57-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #55 Main St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.902
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        88               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      89  838    42   175 1364    27    42  396    43   140  373   107
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   89  838    42   175 1364    27    42  396    43   140  373   107
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    89  838    42   175 1364    27    42  396    43   140  373   107
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   89  838    42   175 1364    27    42  396    43   140  373   107
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   89  838    42   175 1364    27    42  396    43   140  373   107
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 1.90  0.10  1.00 1.96  0.04  1.00 0.90  0.10  1.00 1.00  1.00
Final Sat.:  1600 3147   153  1600 3238    62  1600 1443   157  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.27  0.28  0.11 0.42  0.43  0.03 0.27  0.27  0.09 0.22  0.07
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #56 Main St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.826
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  0  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     109  617    67   228 1052    55    75  971   131   122  709    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  109  617    67   228 1052    55    75  971   131   122  709    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   109  617    67   228 1052    55    75  971   131   122  709    87
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  109  617    67   228 1052    55    75  971   131   122  709    87
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  109  617    67   228 1052    55    75  971   131   122  709    87
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       1.00 1.80  0.20  1.00 1.90  0.10  1.00 2.00  1.00  1.00 2.67  0.33
Final Sat.:  1600 2987   313  1600 3141   159  1600 3400  1600  1600 4475   525
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.21  0.21  0.14 0.33  0.35  0.05 0.29  0.08  0.08 0.16  0.17
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:18                Page 59-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #57 Main St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.735
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      54  311   264   645  848   192   240 1393   252   146  435   218
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   54  311   264   645  848   192   240 1393   252   146  435   218
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    54  311   264   645  848   192   240 1393   252   146  435   218
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   54  311   264   645  848   192   240 1393   252   146  435   218
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   54  311   264   645  848   192   240 1393   252   146  435   218
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.06  0.17  0.20 0.17  0.12  0.08 0.27  0.16  0.05 0.09  0.14
Crit Moves:             ****  ****                   ****        ****
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:19                Page 60-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #58 Penn Wy and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.602
Loss Time (sec):       5               Average Delay (sec/veh):        11.2
Optimal Cycle:        30               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  2    0  0  0  0  0    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      43    0   217     0    0     0     0 1238   631   214 1722     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   43    0   217     0    0     0     0 1238   631   214 1722     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    43    0   217     0    0     0     0 1238   631   214 1722     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   43    0   217     0    0     0     0 1238   631   214 1722     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   43    0   217     0    0     0     0 1238   631   214 1722     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.75  1.00 1.00  1.00  1.00 0.86  0.86  0.95 0.91  1.00
Lanes:       2.00 0.00  2.00  0.00 0.00  0.00  0.00 2.00  1.00  1.00 3.00  0.00
Final Sat.:  3502    0  2842     0    0     0     0 3282  1641  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.00  0.08  0.00 0.00  0.00  0.00 0.38  0.38  0.12 0.33  0.00
Crit Moves:             ****                          ****        ****
Green/Cycle: 0.13 0.00  0.13  0.00 0.00  0.00  0.00 0.63  0.63  0.20 0.82  0.00
Volume/Cap:  0.10 0.00  0.60  0.00 0.00  0.00  0.00 0.60  0.61  0.60 0.40  0.00
Delay/Veh:   38.7  0.0  44.1   0.0  0.0   0.0   0.0 11.5  11.7  39.5  2.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  38.7  0.0  44.1   0.0  0.0   0.0   0.0 11.5  11.7  39.5  2.4   0.0
LOS by Move:    D    A     D     A    A     A     A    B     B     D    A     A
HCM2k85thQ:     1    0     7     0    0     0     0   19    20    10    8     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #59 I-5 NB Off Ramps/17th Street

Cycle (sec):	100	Critical Vol./Cap.(X):	0.740
Loss Time (sec):	5	Average Delay (sec/veh):	31.2
Optimal Cycle:	44	Level Of Service:	C

Street Name:	I-5 NB Off Ramps						17th Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 1	0	0 1	1	0 0	0 1	1	0 3	0 1	0	0 2	1 0
Volume Module:												
Base Vol:	768	35	22	57	0	295	99	1040	376	0	1245	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	768	35	22	57	0	295	99	1040	376	0	1245	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Volume:	768	35	22	57	0	295	99	1040	0	0	1245	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	768	35	22	57	0	295	99	1040	0	0	1245	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	768	35	22	57	0	295	99	1040	0	0	1245	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.95	1.00	0.85	0.95	0.91	1.00	1.00	0.91	0.91
Lanes:	1.91	0.09	1.00	1.00	0.00	1.00	1.00	3.00	1.00	0.00	2.95	0.05
Final Sat.:	3467	158	1615	1805	0	1615	1805	5187	1900	0	5095	82
Capacity Analysis Module:												
Vol/Sat:	0.22	0.22	0.01	0.03	0.00	0.18	0.05	0.20	0.00	0.00	0.24	0.24
Crit Moves:	****					****	****				****	
Green/Cycle:	0.30	0.30	0.30	0.25	0.00	0.25	0.07	0.40	0.00	0.00	0.33	0.33
Volume/Cap:	0.74	0.74	0.05	0.13	0.00	0.74	0.74	0.50	0.00	0.00	0.74	0.74
Delay/Veh:	34.3	34.3	24.9	29.4	0.0	42.0	64.9	22.4	0.0	0.0	31.5	31.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	34.3	34.3	24.9	29.4	0.0	42.0	64.9	22.4	0.0	0.0	31.5	31.5
LOS by Move:	C	C	C	C	A	D	E	C	A	A	C	C
HCM2k85thQ:	19	19	1	2	0	15	7	13	0	0	21	21

Note: Queue reported is the number of cars per lane.

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #60 Penn Wy and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.436
Loss Time (sec):       5               Average Delay (sec/veh):        19.0
Optimal Cycle:        22               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    2  0  2  0  0    0  0  0  0  0    1  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  158   140   799  165     0     0    0     0   179    0   100
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  158   140   799  165     0     0    0     0   179    0   100
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  158   140   799  165     0     0    0     0   179    0   100
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  158   140   799  165     0     0    0     0   179    0   100
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  158   140   799  165     0     0    0     0   179    0   100
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.92 0.95  1.00  1.00 1.00  1.00  0.95 1.00  0.75
Lanes:       0.00 2.00  1.00  2.00 2.00  0.00  0.00 0.00  0.00  1.00 0.00  2.00
Final Sat.:     0 3610  1615  3502 3610     0     0    0     0  1805    0  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.04  0.09  0.23 0.05  0.00  0.00 0.00  0.00  0.10 0.00  0.04
Crit Moves:             ****  ****                               ****
Green/Cycle: 0.00 0.20  0.20  0.52 0.72  0.00  0.00 0.00  0.00  0.23 0.00  0.75
Volume/Cap:  0.00 0.22  0.44  0.44 0.06  0.00  0.00 0.00  0.00  0.44 0.00  0.05
Delay/Veh:    0.0 33.7  36.1  14.9  4.0   0.0   0.0  0.0   0.0  33.9  0.0   3.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 33.7  36.1  14.9  4.0   0.0   0.0  0.0   0.0  33.9  0.0   3.2
LOS by Move:    A    C     D     B    A     A     A    A     A     C    A     A
HCM2k85thQ:     0    3     6    12    1     0     0    0     0     8    0     1
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #61 Santiago St and Civic Center Dr
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.723
Loss Time (sec):       5               Average Delay (sec/veh):        16.9
Optimal Cycle:         0               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     206  143    20     5  303    74   121   46   246    72   66    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  206  143    20     5  303    74   121   46   246    72   66    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   206  143    20     5  303    74   121   46   246    72   66    13
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  206  143    20     5  303    74   121   46   246    72   66    13
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  206  143    20     5  303    74   121   46   246    72   66    13
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.88  0.12  1.00 0.80  0.20  0.72 0.28  1.00  0.48 0.44  0.08
Final Sat.:   468  443    62   471  419   102   337  128   540   208  190    37
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.44 0.32  0.32  0.01 0.72  0.72  0.36 0.36  0.46  0.35 0.35  0.35
Crit Moves:  ****                ****                     ****       ****
Delay/Veh:   15.5 12.6  12.6  10.2 24.0  24.0  14.0 14.0  13.9  14.2 14.2  14.2
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  15.5 12.6  12.6  10.2 24.0  24.0  14.0 14.0  13.9  14.2 14.2  14.2
LOS by Move:    C    B     B     B    C     C     B    B     B     B    B     B
ApproachDel:      14.2             23.8             13.9             14.2
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:       14.2             23.8             13.9             14.2
LOS by Appr:         B                C                B                B
AllWayAvgQ:   0.7  0.4   0.4   0.0  2.1   2.1   0.5  0.5   0.7   0.4  0.4   0.4
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #62 Santiago St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.553
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	26	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1 0	1	1 0	1 0	1	1 0	1 1	0	1 0	2 0	1
Volume Module:												
Base Vol:	24	71	56	311	161	133	48	474	14	108	807	271
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	24	71	56	311	161	133	48	474	14	108	807	271
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	24	71	56	311	161	133	48	474	14	108	807	271
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	24	71	56	311	161	133	48	474	14	108	807	271
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	24	71	56	311	161	133	48	474	14	108	807	271
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.03	1.00	1.00	1.06	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.94	0.06	1.00	2.00	1.00
Final Sat.:	1600	1700	1600	1600	1700	1600	1600	3208	92	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.02	0.04	0.04	0.19	0.09	0.08	0.03	0.15	0.15	0.07	0.24	0.17
Crit Moves:		****			****			****			****	

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:24                Page 65-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #64 Standard Ave and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.803
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     108  191   119    12  231    25    86 1317   214    64 1012    12
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  108  191   119    12  231    25    86 1317   214    64 1012    12
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   108  191   119    12  231    25    86 1317   214    64 1012    12
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  108  191   119    12  231    25    86 1317   214    64 1012    12
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  108  191   119    12  231    25    86 1317   214    64 1012    12
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.04  1.00  1.00 1.03  1.00
Lanes:       1.00 0.62  0.38  0.04 0.87  0.09  1.00 1.72  0.28  1.00 1.98  0.02
Final Sat.:  1600  986   614    72 1379   149  1600 2853   447  1600 3263    38
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.19  0.19  0.01 0.17  0.17  0.05 0.46  0.48  0.04 0.31  0.32
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #65 Standard Ave and Mcfadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.609
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      74  284   128   220  531    37    17  589    71   138  366    82
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   74  284   128   220  531    37    17  589    71   138  366    82
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    74  284   128   220  531    37    17  589    71   138  366    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   74  284   128   220  531    37    17  589    71   138  366    82
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   74  284   128   220  531    37    17  589    71   138  366    82
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.38  0.62  1.00 1.87  0.13  1.00 1.78  0.22  1.00 1.63  0.37
Final Sat.:  1600 2306   994  1600 3092   208  1600 2956   344  1600 2714   586
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.12  0.13  0.14 0.17  0.18  0.01 0.20  0.21  0.09 0.13  0.14
Crit Moves:             ****  ****                          ****  ****
******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:25                Page 67-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #66 Halladay St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.659
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  1  1  0    0  1  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      43    0   100     0    0     0     0 1283   145   160  607     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   43    0   100     0    0     0     0 1283   145   160  607     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    43    0   100     0    0     0     0 1283   145   160  607     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   43    0   100     0    0     0     0 1283   145   160  607     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   43    0   100     0    0     0     0 1283   145   160  607     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 0.00  1.00  0.00 0.00  0.00  0.00 1.80  0.20  0.42 1.58  0.00
Final Sat.:  1600    0  1600     0    0     0     0 2975   325   668 2632     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.00  0.06  0.00 0.00  0.00  0.00 0.43  0.45  0.10 0.23  0.00
Crit Moves:             ****                                 ****  ****
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:26                Page 68-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #67 Halladay St and Dyer Rd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.567
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   18    49   183   37    39    41 1375    10   115  626   101
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   11   18    49   183   37    39    41 1375    10   115  626   101
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    11   18    49   183   37    39    41 1375    10   115  626   101
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   11   18    49   183   37    39    41 1375    10   115  626   101
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   11   18    49   183   37    39    41 1375    10   115  626   101
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 0.27  0.73  1.00 0.49  0.51  1.00 2.98  0.02  1.00 2.58  0.42
Final Sat.:  1600  430  1170  1600  779   821  1600 4965    35  1600 4333   667
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.04  0.04  0.11 0.05  0.05  0.03 0.28  0.29  0.07 0.14  0.15
Crit Moves:             ****  ****                          ****  ****
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:26                Page 69-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #68 SR-55 SB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.615
Loss Time (sec):       5               Average Delay (sec/veh):        19.8
Optimal Cycle:        31               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  2    0  0  2  1  1    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   961    0   870     0 1441  1027     0 1275   145
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   961    0   870     0 1441  1027     0 1275   145
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:     0    0     0   961    0   870     0 1441     0     0 1275     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   961    0   870     0 1441     0     0 1275     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:    0    0     0   961    0   870     0 1441     0     0 1275     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.75  1.00 0.91  0.91  1.00 0.91  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  2.00  0.00 3.00  1.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3502    0  2842     0 5187  1729     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.27 0.00  0.31  0.00 0.28  0.00  0.00 0.25  0.00
Crit Moves:                               ****        ****        ****
Green/Cycle: 0.00 0.00  0.00  0.50 0.00  0.50  0.00 0.45  0.00  0.00 0.45  0.00
Volume/Cap:  0.00 0.00  0.00  0.55 0.00  0.61  0.00 0.61  0.00  0.00 0.54  0.00
Delay/Veh:    0.0  0.0   0.0  17.7  0.0  19.0   0.0 21.3   0.0   0.0 20.2   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  17.7  0.0  19.0   0.0 21.3   0.0   0.0 20.2   0.0
LOS by Move:    A    A     A     B    A     B     A    C     A     A    C     A
HCM2k85thQ:     0    0     0    16    0    17     0   19     0     0   16     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:27                Page 70-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #69 SR-55 NB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.742
Loss Time (sec):       5               Average Delay (sec/veh):        19.2
Optimal Cycle:        44               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Ignore           Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  2  0  2    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     908    0   976     0    0     0     0 1609   796     0  517   244
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  908    0   976     0    0     0     0 1609   796     0  517   244
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   908    0     0     0    0     0     0 1609     0     0  517     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  908    0     0     0    0     0     0 1609     0     0  517     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  908    0     0     0    0     0     0 1609     0     0  517     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.88  1.00 0.91  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  2.00  0.00 3.00  1.00
Final Sat.:  3502    0  1900     0    0     0     0 3610  3344     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.00  0.00  0.00 0.00  0.00  0.00 0.45  0.00  0.00 0.10  0.00
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.35 0.00  0.00  0.00 0.00  0.00  0.00 0.60  0.00  0.00 0.60  0.00
Volume/Cap:  0.74 0.00  0.00  0.00 0.00  0.00  0.00 0.74  0.00  0.00 0.17  0.00
Delay/Veh:   31.1  0.0   0.0   0.0  0.0   0.0   0.0 15.8   0.0   0.0  8.9   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.1  0.0   0.0   0.0  0.0   0.0   0.0 15.8   0.0   0.0  8.9   0.0
LOS by Move:    C    A     A     A    A     A     A    B     A     A    A     A
HCM2k85thQ:    21    0     0     0    0     0     0   29     0     0    4     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:28                Page 71-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #70 SR-55 SB Ramps and Dyer Rd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.552
Loss Time (sec):       5               Average Delay (sec/veh):        23.7
Optimal Cycle:        27               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:            Ovl              Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    0  1  1  0  1    1  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     221   26   505    50  242    60    35 1338   285   408  647   108
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  221   26   505    50  242    60    35 1338   285   408  647   108
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   221   26   505    50  242    60    35 1338   285   408  647   108
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  221   26   505    50  242    60    35 1338   285   408  647   108
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  221   26   505    50  242    60    35 1338   285   408  647   108
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.75  0.94 0.94  0.85  0.95 0.91  0.85  0.92 0.91  0.85
Lanes:       1.79 0.21  2.00  0.34 1.66  1.00  1.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3254  383  2842   613 2968  1615  1805 5187  1615  3502 5187  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.07  0.18  0.08 0.08  0.04  0.02 0.26  0.18  0.12 0.12  0.07
Crit Moves:       ****             ****             ****             ****
Green/Cycle: 0.12 0.12  0.33  0.15 0.15  0.15  0.09 0.47  0.47  0.21 0.59  0.59
Volume/Cap:  0.55 0.55  0.53  0.55 0.55  0.25  0.21 0.55  0.38  0.55 0.21  0.11
Delay/Veh:   42.7 42.7  27.5  40.8 40.8  38.3  42.7 19.4  17.5  36.1  9.7   9.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  42.7 42.7  27.5  40.8 40.8  38.3  42.7 19.4  17.5  36.1  9.7   9.2
LOS by Move:    D    D     C     D    D     D     D    B     B     D    A     A
HCM2k85thQ:     7    7    12     8    8     3     2   17     9    10    5     2
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:29                Page 72-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #71 Glassell St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.603
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Ovl              Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  1  1  0    1  0  1  0  1    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     263  412   125    17  358    79    38  195   375   236  249     6
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  263  412   125    17  358    79    38  195   375   236  249     6
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   263  412   125    17  358    79    38  195   375   236  249     6
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  263  412   125    17  358    79    38  195   375   236  249     6
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  263  412   125    17  358    79    38  195   375   236  249     6
OvlAdjVol:                 0                                  244
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.03  1.00
Lanes:       2.00 1.00  1.00  1.00 1.64  0.36  1.00 1.00  1.00  1.00 1.95  0.05
Final Sat.:  3200 1700  1600  1600 2722   578  1600 1700  1600  1600 3225    75
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.24  0.08  0.01 0.13  0.14  0.02 0.11  0.23  0.15 0.08  0.08
OvlAdjV/S:                 0.00                               0.15
Crit Moves:        ****        ****                           ****  ****
******************************************************************************
```

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```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:30                Page 73-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #72 Glassell St and SR-22 WB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.741
Loss Time (sec):       5               Average Delay (sec/veh):        28.5
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted      Split Phase      Split Phase
Rights:           Include           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  2  0  1    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     500  561     0     0  743   346     0    0     0   285    5   426
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  500  561     0     0  743   346     0    0     0   285    5   426
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   500  561     0     0  743   346     0    0     0   285    5   426
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  500  561     0     0  743   346     0    0     0   285    5   426
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  500  561     0     0  743   346     0    0     0   285    5   426
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  1.00  1.00 0.95  0.85  1.00 1.00  1.00  0.86 0.86  0.86
Lanes:       1.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  1.40 0.01  1.59
Final Sat.:  1805 3610     0     0 3610  1615     0    0     0  2270   23  2588
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.16  0.00  0.00 0.21  0.21  0.00 0.00  0.00  0.13 0.22  0.16
Crit Moves:  ****                 ****                               ****
Green/Cycle: 0.37 0.65  0.00  0.00 0.28  0.28  0.00 0.00  0.00  0.30 0.30  0.30
Volume/Cap:  0.74 0.24  0.00  0.00 0.74  0.77  0.00 0.00  0.00  0.42 0.74  0.55
Delay/Veh:   31.5  7.3   0.0   0.0 35.9  41.3   0.0  0.0   0.0  28.3 34.7  29.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.5  7.3   0.0   0.0 35.9  41.3   0.0  0.0   0.0  28.3 34.7  29.9
LOS by Move:    C    A     A     A    D     D     A    A     A     C    C     C
HCM2k85thQ:    22    6     0     0   19    17     0    0     0     8   17    11
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA

```
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:31                Page 74-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #73 Grand Ave / Glassell St and SR-22 EB Ramps
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.760
Loss Time (sec):       5                Average Delay (sec/veh):        27.0
Optimal Cycle:        47                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted       Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  2  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  818   218   280  733     0   258    0  1012     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  818   218   280  733     0   258    0  1012     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  818   218   280  733     0   258    0  1012     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  818   218   280  733     0   258    0  1012     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  818   218   280  733     0   258    0  1012     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.95 0.95  1.00  0.87 1.00  0.87  1.00 1.00  1.00
Lanes:       0.00 2.00  1.00  1.00 2.00  0.00  1.20 0.00  1.80  0.00 0.00  0.00
Final Sat.:     0 3610  1615  1805 3610     0  1992    0  2974     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.23  0.13  0.16 0.20  0.00  0.13 0.00  0.34  0.00 0.00  0.00
Crit Moves:       ****        ****                      ****
Green/Cycle: 0.00 0.30  0.30  0.20 0.50  0.00  0.45 0.00  0.45  0.00 0.00  0.00
Volume/Cap:  0.00 0.76  0.45  0.76 0.40  0.00  0.29 0.00  0.76  0.00 0.00  0.00
Delay/Veh:    0.0 35.0  29.1  46.4 15.7   0.0  17.6  0.0  25.2   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 35.0  29.1  46.4 15.7   0.0  17.6  0.0  25.2   0.0  0.0   0.0
LOS by Move:    A    D     C     D    B     A     B    A     C     A    A     A
HCM2k85thQ:     0   20     9    15   11     0     7    0    23     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:32                Page 75-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #74 Grand Ave and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.680
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  1    1  0  1  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      18  737   106   174 1444    32    99   60    59   254   28   229
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   18  737   106   174 1444    32    99   60    59   254   28   229
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    18  737   106   174 1444    32    99   60    59   254   28   229
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   18  737   106   174 1444    32    99   60    59   254   28   229
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   18  737   106   174 1444    32    99   60    59   254   28   229
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.62  0.38  1.00 2.00  1.00  1.00 1.01  0.99  1.00 1.00  1.00
Final Sat.:  1600 4396   604  1600 3400  1600  1600 1713  1587  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.17  0.18  0.11 0.42  0.02  0.06 0.04  0.04  0.16 0.02  0.14
Crit Moves:  ****                ****            ****            ****
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:33                Page 76-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #75 Grand Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.885
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        79               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include        WideBypass          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  1  1  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      66  463   119   290 1418   319   143  233    48   120  231   211
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   66  463   119   290 1418   319   143  233    48   120  231   211
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    66  463   119   290 1418   319   143  233    48   120  231   211
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   66  463   119   290 1418   319   143  233    48   120  231   211
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   66  463   119   290 1418   319   143  233    48   120  231   211
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.39  0.61  1.00 1.63  0.37  1.00 0.83  0.17  1.00 1.00  1.00
Final Sat.:  1600 4019   981  1600 2712   588  1600 1327   273  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.12  0.12  0.18 0.52  0.54  0.09 0.18  0.18  0.08 0.14  0.13
Crit Moves:  ****                      ****        ****        ****
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:34                Page 77-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #76 Grand Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.797
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     163  476   327   286 1198   235   224  835   106   309  807    88
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  163  476   327   286 1198   235   224  835   106   309  807    88
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   163  476   327   286 1198   235   224  835   106   309  807    88
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  163  476   327   286 1198   235   224  835   106   309  807    88
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  163  476   327   286 1198   235   224  835   106   309  807    88
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  2.00 2.66  0.34  2.00 2.71  0.29
Final Sat.:  1600 3400  1600  1600 3400  1600  3200 4459   541  3200 4528   472
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.14  0.20  0.18 0.35  0.15  0.07 0.19  0.20  0.10 0.18  0.19
Crit Moves:  ****                ****                     ****  ****
*******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:35                Page 78-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #77 Grand Ave and I-5 NB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.516
Loss Time (sec):       5               Average Delay (sec/veh):        12.9
Optimal Cycle:        26               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  3  0  0    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  831   480    58 1869     0     0    0     0   456    0   126
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  831   480    58 1869     0     0    0     0   456    0   126
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  831     0    58 1869     0     0    0     0   456    0   126
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  831     0    58 1869     0     0    0     0   456    0   126
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  831     0    58 1869     0     0    0     0   456    0   126
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  1.00  0.95 0.91  1.00  1.00 1.00  1.00  0.92 1.00  0.85
Lanes:       0.00 2.00  1.00  1.00 3.00  0.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:     0 3610  1900  1805 5187     0     0    0     0  3502    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.23  0.00  0.03 0.36  0.00  0.00 0.00  0.00  0.13 0.00  0.08
Crit Moves:  ****                 ****                          ****
Green/Cycle: 0.00 0.61  0.00  0.09 0.70  0.00  0.00 0.00  0.00  0.25 0.00  0.25
Volume/Cap:  0.00 0.38  0.00  0.38 0.52  0.00  0.00 0.00  0.00  0.52 0.00  0.31
Delay/Veh:    0.0  9.9   0.0  44.7  7.3   0.0   0.0  0.0   0.0  32.7  0.0  30.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  9.9   0.0  44.7  7.3   0.0   0.0  0.0   0.0  32.7  0.0  30.8
LOS by Move:    A    A     A     D    A     A     A    A     A     C    A     C
HCM2k85thQ:     0   10     0     3   15     0     0    0     0    10    0     5
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:37                Page 79-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #78 Grand Ave and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.662
Loss Time (sec):       5               Average Delay (sec/veh):        23.8
Optimal Cycle:        35               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include           Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  2    2  0  1  0  2    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      71 1003    51   141 1166  1029   263  217   428     5  373    34
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   71 1003    51   141 1166  1029   263  217   428     5  373    34
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    71 1003    51   141 1166  1029   263  217   428     5  373    34
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   71 1003    51   141 1166  1029   263  217   428     5  373    34
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   71 1003    51   141 1166  1029   263  217   428     5  373    34
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.90  0.90  0.95 0.95  0.75  0.92 1.00  0.75  0.94 0.94  0.94
Lanes:       1.00 2.85  0.15  1.00 2.00  2.00  2.00 1.00  2.00  0.02 1.81  0.17
Final Sat.:  1805 4901   249  1805 3610  2842  3502 1900  2842    43 3226   294
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.20  0.20  0.08 0.32  0.36  0.08 0.11  0.15  0.12 0.12  0.12
Crit Moves:  ****                 ****                 ****                 ****
Green/Cycle: 0.06 0.40  0.40  0.15 0.49  0.72  0.23 0.23  0.23  0.17 0.17  0.17
Volume/Cap:  0.66 0.52  0.52  0.52 0.66  0.51  0.33 0.50  0.66  0.66 0.66  0.66
Delay/Veh:   60.4 23.1  23.1  40.8 20.3   6.5  32.5 34.6  37.7  41.2 41.2  41.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  60.4 23.1  23.1  40.8 20.3   6.5  32.5 34.6  37.7  41.2 41.2  41.2
LOS by Move:    E    C     C     D    C     A     C    C     D     D    D     D
HCM2k85thQ:     5   14    14     7   22    13     6   10    12    11   11    11
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:38                Page 80-1
------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #79 Grand Ave and 1st St
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.803
Loss Time (sec):       5                Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53                Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  2  1  0    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     213  751    35    99 1432   174   332  793   225   247  867    99
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  213  751    35    99 1432   174   332  793   225   247  867    99
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   213  751    35    99 1432   174   332  793   225   247  867    99
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  213  751    35    99 1432   174   332  793   225   247  867    99
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  213  751    35    99 1432   174   332  793   225   247  867    99
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.03  1.00
Lanes:       2.00 2.87  0.13  2.00 3.00  1.00  2.00 2.34  0.66  2.00 1.80  0.20
Final Sat.:  3200 4786   214  3200 5100  1600  3200 3939  1061  3200 2972   328
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.16  0.16  0.03 0.28  0.11  0.10 0.20  0.21  0.08 0.29  0.30
Crit Moves:  ****                ****        ****                        ****
******************************************************************************
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:40                Page 81-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #80 Grand Ave and Chestnut Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.705
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      53  737   163   149 1788    49    60  419   110   118  347   216
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   53  737   163   149 1788    49    60  419   110   118  347   216
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    53  737   163   149 1788    49    60  419   110   118  347   216
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   53  737   163   149 1788    49    60  419   110   118  347   216
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   53  737   163   149 1788    49    60  419   110   118  347   216
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 2.46  0.54  1.00 2.92  0.08  1.00 1.58  0.42  1.00 1.23  0.77
Final Sat.:  1600 4131   869  1600 4872   128  1600 2635   665  1600 2072  1228
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.18  0.19  0.09 0.37  0.38  0.04 0.16  0.17  0.07 0.17  0.18
Crit Moves:  ****                     ****             ****  ****
*******************************************************************************
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:40                Page 82-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #81 Grand Ave and McFadden Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.829
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        59               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     171  722   108   237 1590   155   186  601   182   117  420   106
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  171  722   108   237 1590   155   186  601   182   117  420   106
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   171  722   108   237 1590   155   186  601   182   117  420   106
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  171  722   108   237 1590   155   186  601   182   117  420   106
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  171  722   108   237 1590   155   186  601   182   117  420   106
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.61  0.39  1.00 2.73  0.27  1.00 1.54  0.46  1.00 1.60  0.40
Final Sat.:  1600 4375   625  1600 4574   426  1600 2556   744  1600 2655   645
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.17  0.17  0.15 0.35  0.36  0.12 0.24  0.24  0.07 0.16  0.16
Crit Moves:  ****                     ****       ****        ****
*******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:41                Page 83-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #82 Grand Ave and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.763
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        45               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47  472    92   224 1146   224   319 1332   128   151  579   126
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47  472    92   224 1146   224   319 1332   128   151  579   126
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47  472    92   224 1146   224   319 1332   128   151  579   126
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47  472    92   224 1146   224   319 1332   128   151  579   126
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47  472    92   224 1146   224   319 1332   128   151  579   126
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.51  0.49  1.00 2.51  0.49  1.00 2.74  0.26  1.00 2.46  0.54
Final Sat.:  1600 4217   783  1600 4215   785  1600 4579   421  1600 4142   858
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.11  0.12  0.14 0.27  0.29  0.20 0.29  0.30  0.09 0.14  0.15
Crit Moves:  ****                 ****             ****  ****
*******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:42                Page 84-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #83 Grand Ave and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.528
Loss Time (sec):       0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        48               Level Of Service:                   A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  3  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     169  510   218   199  574   194   256  914   359    88  388   131
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  169  510   218   199  574   194   256  914   359    88  388   131
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   169  510   218   199  574   194   256  914   359    88  388   131
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  169  510   218   199  574   194   256  914   359    88  388   131
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  169  510   218   199  574   194   256  914   359    88  388   131
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.10  0.90  1.00 2.24  0.76  2.00 3.00  1.00  2.00 2.00  1.00
Final Sat.:  1600 3563  1437  1600 3788  1213  3200 5100  1600  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.14  0.15  0.12 0.15  0.16  0.08 0.18  0.22  0.03 0.11  0.08
Crit Moves:             ****  ****                          ****  ****
*******************************************************************************
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:43                Page 85-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #84 SR-55 NB Ramps and Dyer Rd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.530
Loss Time (sec):       5               Average Delay (sec/veh):        16.3
Optimal Cycle:        26               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    0  0  3  0  1    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     557    0   456     0    0     0     0 1533   613     0  719   433
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  557    0   456     0    0     0     0 1533   613     0  719   433
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   557    0   456     0    0     0     0 1533     0     0  719     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  557    0   456     0    0     0     0 1533     0     0  719     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  557    0   456     0    0     0     0 1533     0     0  719     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.91 1.00  0.91  1.00 1.00  1.00  1.00 0.91  1.00  1.00 0.91  0.91
Lanes:       1.55 0.00  1.45  0.00 0.00  0.00  0.00 3.00  1.00  0.00 3.00  0.00
Final Sat.:  2673    0  2501     0    0     0     0 5187  1900     0 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.00  0.18  0.00 0.00  0.00  0.00 0.30  0.00  0.00 0.14  0.00
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.39 0.00  0.39  0.00 0.00  0.00  0.00 0.56  0.00  0.00 0.56  0.00
Volume/Cap:  0.53 0.00  0.46  0.00 0.00  0.00  0.00 0.53  0.00  0.00 0.25  0.00
Delay/Veh:   23.6  0.0  22.7   0.0  0.0   0.0   0.0 14.1   0.0   0.0 11.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  23.6  0.0  22.7   0.0  0.0   0.0   0.0 14.1   0.0   0.0 11.4   0.0
LOS by Move:    C    A     C     A    A     A     A    B     A     A    B     A
HCM2k85thQ:    13    0    11     0    0     0     0   16     0     0    6     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #85 Cambridge St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.799
Loss Time (sec):       5               Average Delay (sec/veh):        17.3
Optimal Cycle:         0               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0    0  0  1  0  1    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     160  204     0     0  480   245   117    0   187     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  160  204     0     0  480   245   117    0   187     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   160  204     0     0  480   245   117    0   187     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  160  204     0     0  480   245   117    0   187     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  160  204     0     0  480   245   117    0   187     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:   514  554     0     0  601   671   467    0   553     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.31 0.37  xxxx  xxxx 0.80  0.37  0.25 xxxx  0.34  xxxx xxxx  xxxx
Crit Moves:       ****             ****                   ****
Delay/Veh:   12.5 12.5   0.0   0.0 27.6  10.8  12.4  0.0  11.8   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  12.5 12.5   0.0   0.0 27.6  10.8  12.4  0.0  11.8   0.0  0.0   0.0
LOS by Move:    B    B     *     *    D     B     B    *     B     *    *     *
ApproachDel:       12.5             21.9             12.0           xxxxxx
Delay Adj:         1.00             1.00             1.00            xxxxx
ApprAdjDel:        12.5             21.9             12.0           xxxxxx
LOS by Appr:          B                C                B                *
AllWayAvgQ:   0.4  0.5   0.0   0.0  3.2   0.5   0.3  0.0   0.4   0.0  0.0   0.0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:44                Page 87-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #86 Cambridge St and Fairhaven Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.559
Loss Time (sec):       5                Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        26                Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:            Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   515    0   166    80  216     0     0  247   192
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   515    0   166    80  216     0     0  247   192
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   515    0   166    80  216     0     0  247   192
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   515    0   166    80  216     0     0  247   192
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   515    0   166    80  216     0     0  247   192
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  1.00 2.00  0.00  0.00 1.13  0.87
Final Sat.:     0    0     0  1600    0  1600  1600 3400     0     0 1900  1400
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.32 0.00  0.10  0.05 0.06  0.00  0.00 0.13  0.14
Crit Moves:                   ****             ****                     ****
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:45                Page 88-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #87 Mabury St and 1st Street
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.691
Loss Time (sec):       0               Average Delay (sec/veh):        28.3
Optimal Cycle:        74               Level Of Service:                  C
******************************************************************************
Street Name:              Mabury                          1st Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    1  0  1! 0  1    0  0  2  1  0    1  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:      10    0   244   238  141   533     0 1062    11    46  701     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   10    0   244   238  141   533     0 1062    11    46  701     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    10    0   244   238  141   533     0 1062    11    46  701     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   10    0   244   238  141   533     0 1062    11    46  701     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   10    0   244   238  141   533     0 1062    11    46  701     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 1.00  0.85  0.90 0.90  0.90  1.00 0.91  0.91  0.95 0.91  0.91
Lanes:       1.00 0.00  1.00  1.22 0.27  1.51  0.00 2.97  0.03  1.00 3.00  0.00
Final Sat.:  1805    0  1615  2097  458  2576     0 5129    53  1805 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.00  0.15  0.11 0.31  0.21  0.00 0.21  0.21  0.03 0.14  0.00
Crit Moves:             ****       ****             ****        ****
Green/Cycle: 0.22 0.00  0.22  0.45 0.45  0.45  0.00 0.30  0.30  0.04 0.34  0.00
Volume/Cap:  0.03 0.00  0.69  0.25 0.69  0.46  0.00 0.69  0.69  0.69 0.40  0.00
Delay/Veh:   30.7  0.0  41.8  17.4 23.8  19.6   0.0 32.3  32.3  74.4 25.6   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  30.7  0.0  41.8  17.4 23.8  19.6   0.0 32.3  32.3  74.4 25.6   0.0
LOS by Move:    C    A     D     B    C     B     A    C     C     E    C     A
HCM2k85thQ:     0    0    13     6   21    12     0   18    18     4    9     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:47                Page 89-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #88 Tustin St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.521
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       8  333    96    74 1452     4     9   11    35   447    2    69
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    8  333    96    74 1452     4     9   11    35   447    2    69
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     8  333    96    74 1452     4     9   11    35   447    2    69
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    8  333    96    74 1452     4     9   11    35   447    2    69
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    8  333    96    74 1452     4     9   11    35   447    2    69
OvlAdjVol:                                                                    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.33  0.67  1.00 2.99  0.01  1.00 1.00  1.00  1.99 0.01  1.00
Final Sat.:  1600 3926  1074  1600 4987    13  1600 1700  1600  3186   14  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.08  0.09  0.05 0.29  0.30  0.01 0.01  0.02  0.14 0.14  0.04
OvlAdjV/S:                                                                 0.00
Crit Moves:  ****                      ****            ****  ****
******************************************************************************
```

```
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:48                Page 90-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #89 Tustin St and SR-22 WB On-Ramp
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.734
Loss Time (sec):       5                Average Delay (sec/veh):        12.9
Optimal Cycle:        43                Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include           Include         Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  0    0  0  2  1  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     656  610     0     0 1395   833     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  656  610     0     0 1395   833     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   656  610     0     0 1395   833     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  656  610     0     0 1395   833     0    0     0     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  656  610     0     0 1395   833     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  1.00  1.00 0.86  0.86  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  0.00 0.00  0.00
Final Sat.:  3502 3610     0     0 3264  1632     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.19 0.17  0.00  0.00 0.43  0.51  0.00 0.00  0.00  0.00 0.00  0.00
Crit Moves:  ****                      ****
Green/Cycle: 0.26 0.95  0.00  0.00 0.69  0.69  0.00 0.00  0.00  0.00 0.00  0.00
Volume/Cap:  0.73 0.18  0.00  0.00 0.61  0.73  0.00 0.00  0.00  0.00 0.00  0.00
Delay/Veh:   37.3  0.2   0.0   0.0  8.4  10.5   0.0  0.0   0.0   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  37.3  0.2   0.0   0.0  8.4  10.5   0.0  0.0   0.0   0.0  0.0   0.0
LOS by Move:    D    A     A     A    A     B     A    A     A     A    A     A
HCM2k85thQ:    17    1     0     0   19    27     0    0     0     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:49                Page 91-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #90 Tustin St and SR-22 EB Off-Ramp / Seba Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.731
Loss Time (sec):       5                Average Delay (sec/veh):        24.2
Optimal Cycle:        43                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  1  0    1  0  3  0  0    1  0  1! 0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  996     5    22 1349     0   244   24  1051     6    0    43
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  996     5    22 1349     0   244   24  1051     6    0    43
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  996     5    22 1349     0   244   24  1051     6    0    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  996     5    22 1349     0   244   24  1051     6    0    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  996     5    22 1349     0   244   24  1051     6    0    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.91  0.16 0.91  1.00  0.87 0.87  0.87  0.88 1.00  0.88
Lanes:       0.00 2.99  0.01  1.00 3.00  0.00  1.18 0.04  1.78  0.12 0.00  0.88
Final Sat.:     0 5156    26   304 5187     0  1958   59  2954   204    0  1460
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.19  0.19  0.07 0.26  0.00  0.12 0.41  0.36  0.03 0.00  0.03
Crit Moves:                      ****             ****        ****
Green/Cycle: 0.00 0.36  0.36  0.36 0.36  0.00  0.55 0.55  0.55  0.04 0.00  0.04
Volume/Cap:  0.00 0.54  0.54  0.20 0.73  0.00  0.22 0.73  0.64  0.73 0.00  0.73
Delay/Veh:    0.0 26.1  26.1  23.3 29.6   0.0  11.4 18.3  16.1  80.9  0.0  80.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 26.1  26.1  23.3 29.6   0.0  11.4 18.3  16.1  80.9  0.0  80.9
LOS by Move:    A    C     C     C    C     A     B    B     B     F    A     F
HCM2k85thQ:     0   14    14     1   21     0     5   24    20     5    0     5
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP AM Peak Hour       Thu Oct 22, 2020 13:50:50                Page 92-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #91 Tustin Ave and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.977
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       178               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      89  514    90   235 2026    40    68  258   444   306  338   442
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   89  514    90   235 2026    40    68  258   444   306  338   442
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    89  514    90   235 2026    40    68  258   444   306  338   442
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   89  514    90   235 2026    40    68  258   444   306  338   442
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   89  514    90   235 2026    40    68  258   444   306  338   442
OvlAdjVol:                                                                 325
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.55  0.45  2.00 2.94  0.06  1.00 1.00  1.00  1.00 1.00  1.00
Final Sat.:  3200 4285   715  3200 4907    93  1600 1700  1600  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.12  0.13  0.07 0.41  0.43  0.04 0.15  0.28  0.19 0.20  0.28
OvlAdjV/S:                                                                 0.20
Crit Moves:  ****                      ****             ****  ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #92 Tustin Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.866
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        71               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:      73  397    74   127 2600    82   101  255   186   118  244   122
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   73  397    74   127 2600    82   101  255   186   118  244   122
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    73  397    74   127 2600    82   101  255   186   118  244   122
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   73  397    74   127 2600    82   101  255   186   118  244   122
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   73  397    74   127 2600    82   101  255   186   118  244   122
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.53  0.47  2.00 2.91  0.09  1.00 1.16  0.84  1.00 1.33  0.67
Final Sat.:  1600 4246   754  3200 4853   147  1600 1950  1350  1600 2233  1067
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.09  0.10  0.04 0.54  0.56  0.06 0.13  0.14  0.07 0.11  0.11
Crit Moves:  ****                         ****             ****  ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #93 Tustin Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.748
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        43               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     111  198   236   602 1737    19   187  738   126   488  770   188
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  111  198   236   602 1737    19   187  738   126   488  770   188
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   111  198   236   602 1737    19   187  738   126   488  770   188
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  111  198   236   602 1737    19   187  738   126   488  770   188
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  111  198   236   602 1737    19   187  738   126   488  770   188
OvlAdjVol:                 0                                                 0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.00  1.00  2.00 2.97  0.03  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 3400  1600  3200 4948    52  3200 5100  1600  3200 5100  1600
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.06  0.15  0.19 0.35  0.37  0.06 0.14  0.08  0.15 0.15  0.12
OvlAdjV/S:                 0.00                                              0.00
Crit Moves:  ****                         ****       ****        ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #94 Tustin Ave and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.701
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        37               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       48  245   219   664  845   262   114  676    28   103  579   376
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    48  245   219   664  845   262   114  676    28   103  579   376
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     48  245   219   664  845   262   114  676    28   103  579   376
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    48  245   219   664  845   262   114  676    28   103  579   376
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    48  245   219   664  845   262   114  676    28   103  579   376
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       1.00 2.00  1.00  2.00 2.00  1.00  1.00 2.88  0.12  1.00 2.00  1.00
Final Sat.:  1600 3400  1600  3200 3400  1600  1600 4809   191  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.07  0.14  0.21 0.25  0.16  0.07 0.14  0.15  0.06 0.17  0.24
Crit Moves:             ****  ****             ****                      ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #95 SR-55 SB Ramps / Auto Mall Dr and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.558
Loss Time (sec):       5               Average Delay (sec/veh):        24.4
Optimal Cycle:        28               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    1  0  1  0  1    1  0  3  0  1    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     421   63   498    50   30     8    28 1104   408   399  940   123
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  421   63   498    50   30     8    28 1104   408   399  940   123
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   421   63   498    50   30     8    28 1104     0   399  940   123
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  421   63   498    50   30     8    28 1104     0   399  940   123
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  421   63   498    50   30     8    28 1104     0   399  940   123
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.75  0.95 1.00  0.85  0.95 0.91  1.00  0.92 0.89  0.89
Lanes:       1.74 0.26  2.00  1.00 1.00  1.00  1.00 3.00  1.00  2.00 2.65  0.35
Final Sat.:  3167  474  2842  1805 1900  1615  1805 5187  1900  3502 4509   590
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.13  0.18  0.03 0.02  0.00  0.02 0.21  0.00  0.11 0.21  0.21
Crit Moves:             ****  ****                   ****        ****
Green/Cycle: 0.31 0.31  0.31  0.05 0.05  0.05  0.04 0.38  0.00  0.20 0.55  0.55
Volume/Cap:  0.42 0.42  0.56  0.56 0.32  0.10  0.38 0.56  0.00  0.56 0.38  0.38
Delay/Veh:   27.4 27.4  29.3  54.0 47.8  45.9  50.1 24.6   0.0  36.7 13.1  13.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  27.4 27.4  29.3  54.0 47.8  45.9  50.1 24.6   0.0  36.7 13.1  13.1
LOS by Move:    C    C     C     D    D     D     D    C     A     D    B     B
HCM2k85thQ:     9    9    12     4    2     1     2   15     0    10   11    11
******************************************************************************
```

Note: Queue reported is the number of cars per lane.
****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #96 SR-55 NB Ramps / Del Amo Ave and Newport Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.463
Loss Time (sec):       5               Average Delay (sec/veh):        24.0
Optimal Cycle:        23               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  3  0  1    2  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     227   60    38    14  344   504   253  153   146     8  223     4
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  227   60    38    14  344   504   253  153   146     8  223     4
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   227   60    38    14  344   504   253  153   146     8  223     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  227   60    38    14  344   504   253  153   146     8  223     4
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  227   60    38    14  344   504   253  153   146     8  223     4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.86  0.86  0.95 0.91  0.85  0.92 0.88  0.88  0.95 0.95  0.95
Lanes:       2.00 2.00  1.00  1.00 3.00  1.00  2.00 1.02  0.98  1.00 1.96  0.04
Final Sat.:  3502 3257  1629  1805 5187  1615  3502 1712  1634  1805 3536    63
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.02  0.02  0.01 0.07  0.31  0.07 0.09  0.09  0.00 0.06  0.06
Crit Moves:  ****                         ****  ****                   ****
Green/Cycle: 0.14 0.49  0.49  0.16 0.52  0.67  0.16 0.28  0.28  0.01 0.14  0.14
Volume/Cap:  0.46 0.04  0.05  0.05 0.13  0.46  0.46 0.32  0.32  0.32 0.46  0.46
Delay/Veh:   40.2 13.1  13.1  35.3 12.5   8.0  39.0 28.8  28.8  56.2 40.5  40.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  40.2 13.1  13.1  35.3 12.5   8.0  39.0 28.8  28.8  56.2 40.5  40.5
LOS by Move:    D    B     B     D    B     A     D    C     C     E    D     D
HCM2k85thQ:     6    1     1     1    3    11     6    6     6     1    6     6
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #97 Red Hill Ave and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.569
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Ovl            Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:      81  299    85   226  960   450   190  611   130   224 1085   152
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   81  299    85   226  960   450   190  611   130   224 1085   152
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    81  299    85   226  960   450   190  611   130   224 1085   152
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   81  299    85   226  960   450   190  611   130   224 1085   152
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   81  299    85   226  960   450   190  611   130   224 1085   152
OvlAdjVol:                                355                89
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.06  0.05  0.07 0.19  0.28  0.06 0.12  0.08  0.07 0.21  0.10
OvlAdjV/S:                                0.22             0.06
Crit Moves:  ****                         ****  ****                 ****
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #98 Red Hill Ave and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.485
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        23               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  1  0    2  0  2  1  0    1  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       56  339    46    19  891   179   202  343   253    98  349    62
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    56  339    46    19  891   179   202  343   253    98  349    62
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     56  339    46    19  891   179   202  343   253    98  349    62
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    56  339    46    19  891   179   202  343   253    98  349    62
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    56  339    46    19  891   179   202  343   253    98  349    62
OvlAdjVol:                                                                   53
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:        2.00 3.52  0.48  2.00 2.50  0.50  1.00 2.00  1.00  2.00 3.00  1.00
Final Sat.:   3200 5935   765  3200 4197   803  1600 3400  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.02 0.06  0.06  0.01 0.21  0.22  0.13 0.10  0.16  0.03 0.07  0.04
OvlAdjV/S:                                                                   0.03
Crit Moves:   ****                     ****  ****                 ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #99 Red Hill Ave and Dyer Rd / barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.575
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        27               Level Of Service:                    A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  4  0  1    2  0  4  0  1    2  0  3  1  0    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     127  316   104   199  876   115   118  710   281   578  645   126
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  127  316   104   199  876   115   118  710   281   578  645   126
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   127  316   104   199  876   115   118  710   281   578  645   126
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  127  316   104   199  876   115   118  710   281   578  645   126
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  127  316   104   199  876   115   118  710   281   578  645   126
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 4.00  1.00  2.00 4.00  1.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 6800  1600  3200 6800  1600  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.05  0.07  0.06 0.13  0.07  0.04 0.14  0.18  0.18 0.09  0.08
Crit Moves:  ****                 ****                 ****  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #100 Red Hill Ave and Alton Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.524
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     174  512   321   251 1141   183     9   28    28   223  189   106
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  174  512   321   251 1141   183     9   28    28   223  189   106
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   174  512   321   251 1141   183     9   28    28   223  189   106
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  174  512   321   251 1141   183     9   28    28   223  189   106
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  174  512   321   251 1141   183     9   28    28   223  189   106
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 3400  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.10  0.20  0.16 0.22  0.11  0.01 0.01  0.02  0.07 0.11  0.07
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #101 Red Hill Ave and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.664
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ignore           Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       64  569    10   208  537   492  1248  645   106    23  223   571
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    64  569    10   208  537   492  1248  645   106    23  223   571
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Volume:     64  569    10   208  537     0  1248  645   106    23  223     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    64  569    10   208  537     0  1248  645   106    23  223     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:    64  569    10   208  537     0  1248  645   106    23  223     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.95  0.05  2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 4917    83  3200 5100  1600  3200 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.12  0.12  0.07 0.11  0.00  0.39 0.13  0.07  0.01 0.04  0.00
Crit Moves:       ****        ****             ****                   ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #102 Red Hill Ave and Main St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.670
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     162  556   361    67  313   108   139 1309   254   154  309    73
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  162  556   361    67  313   108   139 1309   254   154  309    73
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   162  556   361    67  313   108   139 1309   254   154  309    73
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  162  556   361    67  313   108   139 1309   254   154  309    73
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  162  556   361    67  313   108   139 1309   254   154  309    73
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.51  0.49  2.00 2.43  0.57
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 4220   780  3200 4083   917
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.16  0.23  0.02 0.09  0.07  0.04 0.31  0.33  0.05 0.08  0.08
Crit Moves:             ****  ****                     ****  ****
******************************************************************************
```

```
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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #103 I-5 SB Ramps and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.514
Loss Time (sec):       5               Average Delay (sec/veh):        17.4
Optimal Cycle:        25               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   367    0    36   323  554     0     0 1130   330
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   367    0    36   323  554     0     0 1130   330
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   367    0    36   323  554     0     0 1130   330
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   367    0    36   323  554     0     0 1130   330
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   367    0    36   323  554     0     0 1130   330
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.85  0.92 0.91  1.00  1.00 0.88  0.88
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 2.32  0.68
Final Sat.:     0    0     0  3502    0  1615  3502 5187     0     0 3878  1133
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.10 0.00  0.02  0.09 0.11  0.00  0.00 0.29  0.29
Crit Moves:                   ****             ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.20 0.00  0.38  0.18 0.75  0.00  0.00 0.57  0.57
Volume/Cap:  0.00 0.00  0.00  0.51 0.00  0.06  0.51 0.14  0.00  0.00 0.51  0.51
Delay/Veh:    0.0  0.0   0.0  36.0  0.0  19.5  37.8  3.6   0.0   0.0 13.4  13.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

AdjDel/Veh:	0.0	0.0	0.0	36.0	0.0	19.5	37.8	3.6	0.0	0.0	13.4	13.4
LOS by Move:	A	A	A	D	A	B	D	A	A	A	B	B
HCM2k85thQ:	0	0	0	9	0	1	8	3	0	0	15	15

****

Note: Queue reported is the number of cars per lane.

****

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #104 Tustin Ranch Rd and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.475
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        23               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   265    0    33    18  238     0     0 1717   395
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   265    0    33    18  238     0     0 1717   395
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   265    0    33    18  238     0     0 1717   395
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   265    0    33    18  238     0     0 1717   395
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   265    0    33    18  238     0     0 1717   395
OvlAdjVol:                                                                 263
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3200    0  1600  3200 5100     0     0 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.08 0.00  0.02  0.01 0.05  0.00  0.00 0.34  0.25
OvlAdjV/S:                                                                 0.16
Crit Moves:                    ****             ****                 ****
*******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:02              Page 106-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #105 Von Karman Ave and Barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.762
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        45               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  1  0    2  0  2  0  2    2  0  3  0  1    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     107  142    85   119 1164   509   130  488   163   769 1263    39
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  107  142    85   119 1164   509   130  488   163   769 1263    39
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   107  142    85   119 1164   509   130  488   163   769 1263    39
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  107  142    85   119 1164   509   130  488   163   769 1263    39
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  107  142    85   119 1164   509   130  488   163   769 1263    39
OvlAdjVol:                          379
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 1.25  0.75  2.00 2.00  2.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 2102  1198  3200 3400  3200  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.07  0.07  0.04 0.34  0.16  0.04 0.10  0.10  0.24 0.19  0.02
OvlAdjV/S:                          0.12
Crit Moves:  ****                ****             ****        ****
*******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:03              Page 107-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #106 Red Hill Avenue and El Camino Real
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.706
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                   El Camino Real
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    1  0  2  1  0    1  0  1  0  1    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     306  785   253    18 1303    80    69  156   164   271  222    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  306  785   253    18 1303    80    69  156   164   271  222    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   306  785   253    18 1303    80    69  156   164   271  222    16
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  306  785   253    18 1303    80    69  156   164   271  222    16
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  306  785   253    18 1303    80    69  156   164   271  222    16
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       2.00 3.00  1.00  1.00 2.83  0.17  1.00 1.00  1.00  1.00 0.93  0.07
Final Sat.:  3200 5100  1600  1600 4722   278  1600 1700  1600  1600 1492   108
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.15  0.16  0.01 0.28  0.29  0.04 0.09  0.10  0.17 0.15  0.15
Crit Moves:  ****                     ****                ****  ****
******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:04              Page 108-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #107 Red Hill Avenue and I-5 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.670
Loss Time (sec):       5               Average Delay (sec/veh):        20.3
Optimal Cycle:        36               Level Of Service:                 C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 NB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  3  0  1    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     327 1084     0     0 1263   475     0    0     0   228    0   261
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  327 1084     0     0 1263   475     0    0     0   228    0   261
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   327 1084     0     0 1263   475     0    0     0   228    0   261
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  327 1084     0     0 1263   475     0    0     0   228    0   261
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  327 1084     0     0 1263   475     0    0     0   228    0   261
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.85  1.00 1.00  1.00  0.60 1.00  0.85
Lanes:       1.00 3.00  0.00  0.00 3.00  1.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:  1805 5187     0     0 5187  1615     0    0     0  2278    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.21  0.00  0.00 0.24  0.29  0.00 0.00  0.00  0.10 0.00  0.16
Crit Moves:  ****                     ****                                 ****
Green/Cycle: 0.27 0.71  0.00  0.00 0.44  0.44  0.00 0.00  0.00  0.24 0.00  0.24
Volume/Cap:  0.67 0.29  0.00  0.00 0.56  0.67  0.00 0.00  0.00  0.42 0.00  0.67
Delay/Veh:   36.1  5.4   0.0   0.0 21.1  24.8   0.0  0.0   0.0  32.5  0.0  38.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

AdjDel/Veh:	36.1	5.4	0.0	0.0	21.1	24.8	0.0	0.0	0.0	32.5	0.0	38.8
LOS by Move:	D	A	A	A	C	C	A	A	A	C	A	D
HCM2k85thQ:	15	7	0	0	16	19	0	0	0	5	0	13

****

Note: Queue reported is the number of cars per lane.

****

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:05              Page 109-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #108 Red Hill Avenue and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.784
Loss Time (sec):       5               Average Delay (sec/veh):        22.0
Optimal Cycle:        51               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 SB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    1  0  3  0  0    0  1  0  0  1    0  0  0  0  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       0 1243   550   385 1105     0   168    4   309     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1243   550   385 1105     0   168    4   309     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1243   550   385 1105     0   168    4   309     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1243   550   385 1105     0   168    4   309     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1243   550   385 1105     0   168    4   309     0    0     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  0.95 0.91  1.00  0.95 0.95  0.85  1.00 1.00  1.00
Lanes:       0.00 4.00  1.00  1.00 3.00  0.00  0.98 0.02  1.00  0.00 0.00  0.00
Final Sat.:     0 6916  1615  1805 5187     0  1759   42  1615     0    0     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.18  0.34  0.21 0.21  0.00  0.10 0.10  0.19  0.00 0.00  0.00
Crit Moves:             ****  ****                     ****
Green/Cycle: 0.00 0.43  0.43  0.27 0.71  0.00  0.24 0.24  0.24  0.00 0.00  0.00
Volume/Cap:  0.00 0.41  0.78  0.78 0.30  0.00  0.39 0.39  0.78  0.00 0.00  0.00
Delay/Veh:    0.0 19.6  30.1  41.8  5.5   0.0  32.2 32.2  45.3   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 19.6  30.1  41.8  5.5   0.0  32.2 32.2  45.3   0.0  0.0   0.0
LOS by Move:    A    B     C     D    A     A     C    C     D     A    A     A
HCM2k85thQ:     0   11    24    19    7     0     7    7    16     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:06              Page 110-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #109 Red Hill Avenue and Nisson Road
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.653
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33               Level Of Service:                  B
******************************************************************************
Street Name:         Red Hill Avenue                    Nisson Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      17 1298    24   152 1144   120   242   59    48    49   26   215
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17 1298    24   152 1144   120   242   59    48    49   26   215
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    17 1298    24   152 1144   120   242   59    48    49   26   215
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   17 1298    24   152 1144   120   242   59    48    49   26   215
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   17 1298    24   152 1144   120   242   59    48    49   26   215
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.93  0.07  1.00 2.72  0.28  1.00 0.55  0.45  1.00 0.11  0.89
Final Sat.:  1600 6584   116  1600 4544   456  1600  882   718  1600  173  1427
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.20  0.21  0.10 0.25  0.26  0.15 0.07  0.07  0.03 0.15  0.15
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:07                Page 111-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #110 Red Hill Avenue and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.684
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        35               Level Of Service:                    B
*******************************************************************************
Street Name:         Red Hill Avenue                   Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135  525    99   104 1046   117   160  398   392   192  254   121
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  135  525    99   104 1046   117   160  398   392   192  254   121
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   135  525    99   104 1046   117   160  398   392   192  254   121
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  135  525    99   104 1046   117   160  398   392   192  254   121
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  135  525    99   104 1046   117   160  398   392   192  254   121
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       1.00 2.52  0.48  1.00 2.70  0.30  1.00 1.01  0.99  2.00 1.35  0.65
Final Sat.:  1600 4238   762  1600 4517   483  1600 1712  1588  3200 2267  1033
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.12  0.13  0.07 0.23  0.24  0.10 0.23  0.25  0.06 0.11  0.12
Crit Moves:  ****                 ****            ****  ****
*******************************************************************************
```

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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:08              Page 112-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #111 Red Hill Avenue and Valencia Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.544
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        26               Level Of Service:                  A
******************************************************************************
Street Name:         Red Hill Avenue                 Valencia Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  1  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       77  325   105   120 1032    69    20  139    54   252  346   122
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    77  325   105   120 1032    69    20  139    54   252  346   122
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     77  325   105   120 1032    69    20  139    54   252  346   122
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    77  325   105   120 1032    69    20  139    54   252  346   122
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    77  325   105   120 1032    69    20  139    54   252  346   122
OvlAdjVol:                  0                                                 2
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.02  0.98  1.00 2.81  0.19  1.00 1.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5137  1563  1600 4699   301  1600 1700  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.06  0.07  0.08 0.22  0.23  0.01 0.08  0.03  0.08 0.20  0.08
OvlAdjV/S:               0.00                                              0.00
Crit Moves:  ****                      ****  ****                 ****
******************************************************************************
```

```
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:08              Page 113-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #112 Tustin Ranch Road and Warner Avenue North
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.426
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        21               Level Of Service:                  A
*******************************************************************************
Street Name:        Tustin Ranch Road               Warner Avenue North
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    2  0  3  0  0    0  0  0  0  0    3  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  272   263   456 1289     0     0    0     0   591    0   174
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  272   263   456 1289     0     0    0     0   591    0   174
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  272   263   456 1289     0     0    0     0   591    0   174
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  272   263   456 1289     0     0    0     0   591    0   174
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  272   263   456 1289     0     0    0     0   591    0   174
OvlAdjVol:                66                                                 0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 3.00  1.00  2.00 3.00  0.00  0.00 0.00  0.00  3.00 0.00  2.00
Final Sat.:     0 5100  1600  3200 5100     0     0    0     0  4800    0  3200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.05  0.16  0.14 0.25  0.00  0.00 0.00  0.00  0.12 0.00  0.05
OvlAdjV/S:              0.04                                                0.00
Crit Moves:  ****                ****                          ****
*******************************************************************************
```

```
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:09              Page 114-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #113 Tustin Ranch Road and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.193
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Street Name:        Tustin Ranch Road                 Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     123  756   377  1045 2921   389   702  917   554   231  341   288
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  123  756   377  1045 2921   389   702  917   554   231  341   288
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   123  756   377  1045 2921   389   702  917   554   231  341   288
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  123  756   377  1045 2921   389   702  917   554   231  341   288
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  123  756   377  1045 2921   389   702  917   554   231  341   288
OvlAdjVol:                262               38                               0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 1.25  0.75  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 2095  1205  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.15  0.24  0.33 0.57  0.24  0.22 0.44  0.46  0.07 0.10  0.18
OvlAdjV/S:                0.16               0.02                             0.00
Crit Moves:  ****                 ****                     ****  ****
*******************************************************************************
```

```
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:10              Page 115-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #114 SR-55 SB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.970
Loss Time (sec):       5               Average Delay (sec/veh):        23.2
Optimal Cycle:       165               Level Of Service:                  C
******************************************************************************
Street Name:          SR-55 SB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  1! 0  1    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    62    0    68     0  575  1032   425 1063     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    62    0    68     0  575  1032   425 1063     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    62    0    68     0  575  1032   425 1063     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    62    0    68     0  575  1032   425 1063     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    62    0    68     0  575  1032   425 1063     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.88 1.00  0.77  1.00 0.82  0.82  0.95 0.91  1.00
Lanes:       0.00 0.00  0.00  1.44 0.00  1.56  0.00 2.00  1.00  1.00 3.00  0.00
Final Sat.:     0    0     0  2415    0  2277     0 3126  1563  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.03 0.00  0.03  0.00 0.18  0.66  0.24 0.20  0.00
Crit Moves:                    ****                          ****  ****
Green/Cycle: 0.00 0.00  0.00  0.03 0.00  0.05  0.00 0.68  0.68  0.24 0.92  0.00
Volume/Cap:  0.00 0.00  0.00  0.86 0.00  0.58  0.00 0.27  0.97  0.97 0.22  0.00
Delay/Veh:    0.0  0.0   0.0  84.9  0.0  50.0   0.0  6.3  30.4  72.4  0.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  84.9  0.0  50.0   0.0  6.3  30.4  72.4  0.4   0.0
LOS by Move:    A    A     A     F    A     D     A    A     C     E    A     A
```

```
HCM2k85thQ:     0    0     0     5    0     4     0    6    54    27    2     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
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2020 NP AM Peak Hour       Thu Oct 22, 2020 13:51:11              Page 116-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #115 SR-55 NB Ramps and Irvine Boulevard
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.797
Loss Time (sec):       5               Average Delay (sec/veh):        19.8
Optimal Cycle:        54               Level Of Service:                  B
*******************************************************************************
Street Name:          SR-55 NB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted       Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    1  0  3  0  0    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     410    0   394     0    0     0   187  444     0     0 1079   750
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  410    0   394     0    0     0   187  444     0     0 1079   750
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   410    0   394     0    0     0   187  444     0     0 1079   750
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  410    0   394     0    0     0   187  444     0     0 1079   750
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  410    0   394     0    0     0   187  444     0     0 1079   750
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.75 1.00  0.74  1.00 1.00  1.00  0.95 0.91  1.00  1.00 0.85  0.85
Lanes:       1.51 0.00  1.49  0.00 0.00  0.00  1.00 3.00  0.00  0.00 2.00  1.00
Final Sat.:  2135    0  2095     0    0     0  1805 5187     0     0 3247  1624
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.19 0.00  0.19  0.00 0.00  0.00  0.10 0.09  0.00  0.00 0.33  0.46
Crit Moves:  ****                             ****                       ****
Green/Cycle: 0.24 0.00  0.48  0.00 0.00  0.00  0.13 0.71  0.00  0.00 0.58  0.58
Volume/Cap:  0.80 0.00  0.39  0.00 0.00  0.00  0.80 0.12  0.00  0.00 0.57  0.80
Delay/Veh:   40.3  0.0  16.7   0.0  0.0   0.0  59.3  4.6   0.0   0.0 13.5  18.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  40.3  0.0  16.7   0.0  0.0   0.0  59.3  4.6   0.0   0.0 13.5  18.5
LOS by Move:    D    A     B     A    A     A     E    A     A     A    B     B
HCM2k85thQ:    15    0     8     0    0     0    12    2     0     0   18    31
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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APPENDIX D.2

ANALYSIS WORKSHEETS –
2020 NP (PM Peak Hour)

Santa Ana Circulation Element

Scenario Report

Scenario:	2020 NP PM Peak Hour
Command:	Default Command
Volume:	2020 NP PM
Geometry:	NP
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2020 NP PM Peak Hour Thu Oct 22, 2020 13:56:05 Page 2-1

Santa Ana Circulation Element

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Euclid St and 1st St	D	xxxxx	0.865	D	xxxxx	0.865	+ 0.000 V/C
# 2 Euclid St and McFadden Ave	D	xxxxx	0.833	D	xxxxx	0.833	+ 0.000 V/C
# 3 Euclid St and Edinger Ave	C	xxxxx	0.787	C	xxxxx	0.787	+ 0.000 V/C
# 4 Newhope St and Hazard Ave	B	xxxxx	0.642	B	xxxxx	0.642	+ 0.000 V/C
# 5 Newhope St and McFadden Ave	D	xxxxx	0.838	D	xxxxx	0.838	+ 0.000 V/C
# 6 Harbor Blvd and SR-22 WB Off-R	C	23.6	0.703	C	23.6	0.703	+ 0.000 D/V
# 7 Trask Avenue and SR-22 EB On-R	B	12.4	0.448	B	12.4	0.448	+ 0.000 D/V
# 8 Harbor Blvd and Westminster Av	C	xxxxx	0.792	C	xxxxx	0.792	+ 0.000 V/C
# 9 Harbor Blvd and 1st St	D	xxxxx	0.833	D	xxxxx	0.833	+ 0.000 V/C
# 10 Harbor Blvd and McFadden Ave	D	xxxxx	0.809	D	xxxxx	0.809	+ 0.000 V/C
# 11 Harbor Blvd and Edinger Ave	B	xxxxx	0.697	B	xxxxx	0.697	+ 0.000 V/C
# 12 Harbor Blvd and Warner Ave	F	xxxxx	1.581	F	xxxxx	1.581	+ 0.000 V/C
# 13 Harbor Blvd and Segerstrom Ave	D	xxxxx	0.897	D	xxxxx	0.897	+ 0.000 V/C
# 14 MacArthur Blvd and Hyland Ave	E	xxxxx	0.917	E	xxxxx	0.917	+ 0.000 V/C
# 15 MacArthur Blvd and Harbor Blvd	D	xxxxx	0.819	D	xxxxx	0.819	+ 0.000 V/C
# 16 Harbor Blvd and Sunflower Ave	C	xxxxx	0.780	C	xxxxx	0.780	+ 0.000 V/C
# 17 Harbor Blvd and I-405 WB Off-R	C	22.9	0.812	C	22.9	0.812	+ 0.000 D/V
# 18 Harbor Blvd and I-405 EB Off-R	B	16.2	0.630	B	16.2	0.630	+ 0.000 D/V
# 19 Fairview St and Civic Center D	B	xxxxx	0.662	B	xxxxx	0.662	+ 0.000 V/C
# 20 Fairview St and 1st St	D	xxxxx	0.883	D	xxxxx	0.883	+ 0.000 V/C
# 21 Fairview St and McFadden Ave	C	xxxxx	0.798	C	xxxxx	0.798	+ 0.000 V/C
# 22 Fairview St and Edinger Ave	D	xxxxx	0.811	D	xxxxx	0.811	+ 0.000 V/C
# 23 Fairview St and Warner Ave	D	xxxxx	0.845	D	xxxxx	0.845	+ 0.000 V/C
# 24 Fairview St and MacArthur Blvd	D	xxxxx	0.826	D	xxxxx	0.826	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 25 Fairview Rd and Sunflower Ave	C	xxxxx	0.708	C	xxxxx	0.708	+ 0.000 V/C
# 26 Greenville St and Edinger Ave	A	xxxxx	0.586	A	xxxxx	0.586	+ 0.000 V/C
# 27 Greenville St and Segerstrom A	B	xxxxx	0.686	B	xxxxx	0.686	+ 0.000 V/C
# 28 Raitt St and McFadden Ave	C	xxxxx	0.722	C	xxxxx	0.722	+ 0.000 V/C
# 29 Raitt St and Edinger Ave	D	xxxxx	0.864	D	xxxxx	0.864	+ 0.000 V/C
# 30 Bear St and MacArthur Blvd	D	xxxxx	0.868	D	xxxxx	0.868	+ 0.000 V/C
# 31 Bristol St and 17th St	B	xxxxx	0.692	B	xxxxx	0.692	+ 0.000 V/C
# 32 Bristol St and Civic Center Dr	D	xxxxx	0.832	D	xxxxx	0.832	+ 0.000 V/C
# 33 Bristol St and Santa Ana Blvd	B	xxxxx	0.657	B	xxxxx	0.657	+ 0.000 V/C
# 34 Bristol St and 1st St	C	xxxxx	0.779	C	xxxxx	0.779	+ 0.000 V/C
# 35 Bristol St and McFadden Ave	C	xxxxx	0.752	C	xxxxx	0.752	+ 0.000 V/C
# 36 Bristol St and Warner Ave	C	xxxxx	0.790	C	xxxxx	0.790	+ 0.000 V/C
# 37 Bristol St and Segerstrom Ave	E	xxxxx	0.909	E	xxxxx	0.909	+ 0.000 V/C
# 38 Bristol St and Alton Ave	B	xxxxx	0.686	B	xxxxx	0.686	+ 0.000 V/C
# 39 Bristol St and MacArthur Blvd	D	xxxxx	0.812	D	xxxxx	0.812	+ 0.000 V/C
# 40 Bristol St and Sunflower Ave	B	xxxxx	0.689	B	xxxxx	0.689	+ 0.000 V/C
# 41 Bristol St and I-405 WB Ramps	C	28.2	0.829	C	28.2	0.829	+ 0.000 D/V
# 42 Bristol St and I-405 EB Ramps	B	18.4	0.595	B	18.4	0.595	+ 0.000 D/V
# 43 Flower St and Santa Ana Blvd	A	xxxxx	0.571	A	xxxxx	0.571	+ 0.000 V/C
# 44 Flower St and 1st St	C	xxxxx	0.752	C	xxxxx	0.752	+ 0.000 V/C
# 45 Flower St and McFadden Ave	E	xxxxx	0.920	E	xxxxx	0.920	+ 0.000 V/C
# 46 Flower St and Segerstrom Ave	D	xxxxx	0.897	D	xxxxx	0.897	+ 0.000 V/C
# 47 Flower St and MacArthur Blvd	E	xxxxx	0.906	E	xxxxx	0.906	+ 0.000 V/C
# 48 Main St and La Veta Ave	B	xxxxx	0.628	B	xxxxx	0.628	+ 0.000 V/C
# 49 Main St and Mainplace Dr / Mem	A	xxxxx	0.471	A	xxxxx	0.471	+ 0.000 V/C
# 50 Main St and 17th St	C	xxxxx	0.732	C	xxxxx	0.732	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 51 Main St and Civic Center Dr	D	xxxxx	0.801	D	xxxxx	0.801	+ 0.000 V/C
# 52 Main St and Santa Ana Blvd	B	xxxxx	0.607	B	xxxxx	0.607	+ 0.000 V/C
# 53 Main St and 4th St	A	xxxxx	0.537	A	xxxxx	0.537	+ 0.000 V/C
# 54 Main St and 1st St	C	xxxxx	0.799	C	xxxxx	0.799	+ 0.000 V/C
# 55 Main St and McFadden Ave	D	xxxxx	0.845	D	xxxxx	0.845	+ 0.000 V/C
# 56 Main St and Edinger Ave	D	xxxxx	0.847	D	xxxxx	0.847	+ 0.000 V/C
# 57 Main St and MacArthur Blvd	C	xxxxx	0.777	C	xxxxx	0.777	+ 0.000 V/C
# 58 Penn Wy and 17th St	C	20.7	0.770	C	20.7	0.770	+ 0.000 D/V
# 59 I-5 NB Off Ramps/17th Street	B	19.5	0.589	B	19.5	0.589	+ 0.000 D/V
# 60 Penn Wy and I-5 SB Ramps	C	22.0	0.423	C	22.0	0.423	+ 0.000 D/V
# 61 Santiago St and Civic Center D	C	17.1	0.674	C	17.1	0.674	+ 0.000 V/C
# 62 Santiago St and Santa Ana Blvd	A	xxxxx	0.569	A	xxxxx	0.569	+ 0.000 V/C
# 64 Standard Ave and 1st St	D	xxxxx	0.842	D	xxxxx	0.842	+ 0.000 V/C
# 65 Standard Ave and Mcfadden Ave	B	xxxxx	0.682	B	xxxxx	0.682	+ 0.000 V/C
# 66 Halladay St and Warner Ave	B	xxxxx	0.677	B	xxxxx	0.677	+ 0.000 V/C
# 67 Halladay St and Dyer Rd	C	xxxxx	0.784	C	xxxxx	0.784	+ 0.000 V/C
# 68 SR-55 SB Ramps and MacArthur B	B	17.3	0.569	B	17.3	0.569	+ 0.000 D/V
# 69 SR-55 NB Ramps and MacArthur B	B	14.8	0.497	B	14.8	0.497	+ 0.000 D/V
# 70 SR-55 SB Ramps and Dyer Rd	C	25.7	0.669	C	25.7	0.669	+ 0.000 D/V
# 71 Glassell St and La Veta Ave	B	xxxxx	0.620	B	xxxxx	0.620	+ 0.000 V/C
# 72 Glassell St and SR-22 WB Ramps	C	24.8	0.766	C	24.8	0.766	+ 0.000 D/V
# 73 Grand Ave / Glassell St and SR	C	26.5	0.812	C	26.5	0.812	+ 0.000 D/V
# 74 Grand Ave and Fairhaven Ave	B	xxxxx	0.675	B	xxxxx	0.675	+ 0.000 V/C
# 75 Grand Ave and Santa Clara Ave	C	xxxxx	0.748	C	xxxxx	0.748	+ 0.000 V/C
# 76 Grand Ave and 17th St	D	xxxxx	0.828	D	xxxxx	0.828	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 77 Grand Ave and I-5 NB Ramps	A	10.0	0.518	A	10.0	0.518	+ 0.000 D/V
# 78 Grand Ave and Santa Ana Blvd	C	21.1	0.605	C	21.1	0.605	+ 0.000 D/V
# 79 Grand Ave and 1st St	C	xxxxx	0.793	C	xxxxx	0.793	+ 0.000 V/C
# 80 Grand Ave and Chestnut Ave	B	xxxxx	0.615	B	xxxxx	0.615	+ 0.000 V/C
# 81 Grand Ave and McFadden Ave	C	xxxxx	0.759	C	xxxxx	0.759	+ 0.000 V/C
# 82 Grand Ave and Edinger Ave	E	xxxxx	0.909	E	xxxxx	0.909	+ 0.000 V/C
# 83 Grand Ave and Warner Ave	C	xxxxx	0.704	C	xxxxx	0.704	+ 0.000 V/C
# 84 SR-55 NB Ramps and Dyer Rd	A	5.7	0.376	A	5.7	0.376	+ 0.000 D/V
# 85 Cambridge St and La Veta Ave	B	12.5	0.459	B	12.5	0.459	+ 0.000 V/C
# 86 Cambridge St and Fairhaven Ave	A	xxxxx	0.488	A	xxxxx	0.488	+ 0.000 V/C
# 87 Mabury St and 1st Street	C	26.1	0.703	C	26.1	0.703	+ 0.000 D/V
# 88 Tustin St and La Veta Ave	A	xxxxx	0.444	A	xxxxx	0.444	+ 0.000 V/C
# 89 Tustin St and SR-22 WB On-Ramp	B	12.1	0.446	B	12.1	0.446	+ 0.000 D/V
# 90 Tustin St and SR-22 EB Off-Ram	C	23.7	0.719	C	23.7	0.719	+ 0.000 D/V
# 91 Tustin Ave and Fairhaven Ave	B	xxxxx	0.614	B	xxxxx	0.614	+ 0.000 V/C
# 92 Tustin Ave and Santa Clara Ave	B	xxxxx	0.647	B	xxxxx	0.647	+ 0.000 V/C
# 93 Tustin Ave and 17th St	C	xxxxx	0.717	C	xxxxx	0.717	+ 0.000 V/C
# 94 Tustin Ave and 4th St	B	xxxxx	0.692	B	xxxxx	0.692	+ 0.000 V/C
# 95 SR-55 SB Ramps / Auto Mall Dr	C	25.1	0.583	C	25.1	0.583	+ 0.000 D/V
# 96 SR-55 NB Ramps / Del Amo Ave a	C	27.4	0.525	C	27.4	0.525	+ 0.000 D/V
# 97 Red Hill Ave and Edinger Ave	B	xxxxx	0.667	B	xxxxx	0.667	+ 0.000 V/C
# 98 Red Hill Ave and Warner Ave	A	xxxxx	0.588	A	xxxxx	0.588	+ 0.000 V/C
# 99 Red Hill Ave and Dyer Rd / bar	A	xxxxx	0.563	A	xxxxx	0.563	+ 0.000 V/C
#100 Red Hill Ave and Alton Pkwy	B	xxxxx	0.671	B	xxxxx	0.671	+ 0.000 V/C
#101 Red Hill Ave and MacArthur Blv	B	xxxxx	0.657	B	xxxxx	0.657	+ 0.000 V/C
#102 Red Hill Ave and Main St	C	xxxxx	0.774	C	xxxxx	0.774	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
#103 I-5 SB Ramps and Santa Ana Blv	B	18.9	0.431	B	18.9	0.431	+ 0.000 D/V
#104 Tustin Ranch Rd and Warner Ave	B	xxxxx	0.606	B	xxxxx	0.606	+ 0.000 V/C
#105 Von Karman Ave and Barranca Pk	D	xxxxx	0.874	D	xxxxx	0.874	+ 0.000 V/C
#106 Red Hill Avenue and El Camino	B	xxxxx	0.624	B	xxxxx	0.624	+ 0.000 V/C
#107 Red Hill Avenue and I-5 NB Ram	C	23.3	0.626	C	23.3	0.626	+ 0.000 D/V
#108 Red Hill Avenue and I-5 SB Ram	C	22.8	0.708	C	22.8	0.708	+ 0.000 D/V
#109 Red Hill Avenue and Nisson Roa	C	xxxxx	0.702	C	xxxxx	0.702	+ 0.000 V/C
#110 Red Hill Avenue and Walnut Ave	C	xxxxx	0.785	C	xxxxx	0.785	+ 0.000 V/C
#111 Red Hill Avenue and Valencia A	A	xxxxx	0.549	A	xxxxx	0.549	+ 0.000 V/C
#112 Tustin Ranch Road and Warner A	C	xxxxx	0.757	C	xxxxx	0.757	+ 0.000 V/C
#113 Tustin Ranch Road and Walnut A	F	xxxxx	1.630	F	xxxxx	1.630	+ 0.000 V/C
#114 SR-55 SB Ramps and Irvine Boul	C	21.5	0.794	C	21.5	0.794	+ 0.000 D/V
#115 SR-55 NB Ramps and Irvine Boul	B	19.5	0.809	B	19.5	0.809	+ 0.000 D/V

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #1 Euclid St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.865
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	70	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			WideBypass			WideBypass		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	159	1477	119	185	1053	199	212	678	106	217	909	217
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	159	1477	119	185	1053	199	212	678	106	217	909	217
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	159	1477	119	185	1053	199	212	678	106	217	909	217
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	159	1477	119	185	1053	199	212	678	106	217	909	217
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	159	1477	119	185	1053	199	212	678	106	217	909	217
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	2.78	0.22	1.00	2.52	0.48	1.00	2.59	0.41	1.00	2.42	0.58
Final Sat.:	1600	4642	358	1600	4237	763	1600	4351	649	1600	4075	925
Capacity Analysis Module:												
Vol/Sat:	0.10	0.32	0.33	0.12	0.25	0.26	0.13	0.16	0.16	0.14	0.22	0.23
Crit Moves:			****	****			****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #2 Euclid St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.833
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	60	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	WideBypass			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	175	1426	92	110	1354	164	183	419	185	127	532	246
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	175	1426	92	110	1354	164	183	419	185	127	532	246
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	175	1426	92	110	1354	164	183	419	185	127	532	246
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	175	1426	92	110	1354	164	183	419	185	127	532	246
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	175	1426	92	110	1354	164	183	419	185	127	532	246
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	2.82	0.18	1.00	2.68	0.32	1.00	1.39	0.61	1.00	1.37	0.63
Final Sat.:	1600	4709	291	1600	4481	519	1600	2320	980	1600	2288	1012
Capacity Analysis Module:												
Vol/Sat:	0.11	0.30	0.32	0.07	0.30	0.32	0.11	0.18	0.19	0.08	0.23	0.24
Crit Moves:	****					****	****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #3 Euclid St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.787
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	49	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	2 1	0	1 0	2 0	1	1 0	2 0	1
Volume Module:												
Base Vol:	526	1572	112	122	803	204	161	622	186	91	840	136
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	526	1572	112	122	803	204	161	622	186	91	840	136
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	526	1572	112	122	803	204	161	622	186	91	840	136
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	526	1572	112	122	803	204	161	622	186	91	840	136
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	526	1572	112	122	803	204	161	622	186	91	840	136
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	2.80	0.20	2.00	2.39	0.61	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3200	4681	319	3200	4028	972	1600	3400	1600	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.16	0.34	0.35	0.04	0.20	0.21	0.10	0.18	0.12	0.06	0.25	0.09
Crit Moves:			****	****			****				****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #4 Newhope St and Hazard Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.642
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        32               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     116 1281    50    49 1038   124   108  214   131    32  202    58
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  116 1281    50    49 1038   124   108  214   131    32  202    58
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   116 1281    50    49 1038   124   108  214   131    32  202    58
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  116 1281    50    49 1038   124   108  214   131    32  202    58
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  116 1281    50    49 1038   124   108  214   131    32  202    58
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 1.92  0.08  1.00 1.79  0.21  1.00 1.24  0.76  1.00 1.55  0.45
Final Sat.:  1600 3180   120  1600 2959   341  1600 2085  1215  1600 2586   714
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.40  0.42  0.03 0.35  0.36  0.07 0.10  0.11  0.02 0.08  0.08
Crit Moves:             ****  ****            ****                   ****
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #5 Newhope St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.838
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        61               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     202 1084   190   164  733   142    81  496    72   107  589   168
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  202 1084   190   164  733   142    81  496    72   107  589   168
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   202 1084   190   164  733   142    81  496    72   107  589   168
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  202 1084   190   164  733   142    81  496    72   107  589   168
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  202 1084   190   164  733   142    81  496    72   107  589   168
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.70  0.30  1.00 1.68  0.32  1.00 1.75  0.25  1.00 1.56  0.44
Final Sat.:  1600 2823   477  1600 2781   519  1600 2894   406  1600 2590   710
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.38  0.40  0.10 0.26  0.27  0.05 0.17  0.18  0.07 0.23  0.24
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #6 Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.703
Loss Time (sec):       5                Average Delay (sec/veh):        23.6
Optimal Cycle:        39                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  2  1  0    0  0  1! 0  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      88 1992     0     0 1519    49    93    0    78   593   80   170
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   88 1992     0     0 1519    49    93    0    78   593   80   170
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    88 1992     0     0 1519    49    93    0    78   593   80   170
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   88 1992     0     0 1519    49    93    0    78   593   80   170
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   88 1992     0     0 1519    49    93    0    78   593   80   170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.91 1.00  0.91  0.96 0.96  0.85
Lanes:       1.00 3.00  0.00  0.00 2.91  0.09  0.54 0.00  0.46  1.76 0.24  1.00
Final Sat.:  1805 5187     0     0 5000   161   944    0   792  3208  433  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.38  0.00  0.00 0.30  0.30  0.10 0.00  0.10  0.18 0.18  0.11
Crit Moves:       ****        ****             ****             ****
Green/Cycle: 0.08 0.55  0.00  0.00 0.47  0.47  0.14 0.00  0.14  0.26 0.26  0.26
Volume/Cap:  0.64 0.70  0.00  0.00 0.64  0.64  0.70 0.00  0.70  0.70 0.70  0.40
Delay/Veh:   55.1 17.5   0.0   0.0 20.7  20.7  49.9  0.0  49.9  35.7 35.7  31.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  55.1 17.5   0.0   0.0 20.7  20.7  49.9  0.0  49.9  35.7 35.7  31.0
LOS by Move:    E    B     A     A    C     C     D    A     D     D    D     C
HCM2k85thQ:     6   25     0     0   21    21    10    0    10    16   16     7
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Trask Avenue and SR-22 EB On-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.448
Loss Time (sec):       5               Average Delay (sec/veh):        12.4
Optimal Cycle:        23               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  0  0  0    2  0  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0     0   838  628     0     0  606    57
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0     0   838  628     0     0  606    57
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     0    0     0   838  628     0     0  606    57
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0     0    0     0   838  628     0     0  606    57
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0     0    0     0   838  628     0     0  606    57
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  0.92 1.00  1.00  1.00 0.94  0.94
Lanes:       0.00 0.00  0.00  0.00 0.00  0.00  2.00 1.00  0.00  0.00 1.83  0.17
Final Sat.:     0    0     0     0    0     0  3502 1900     0     0 3257   306
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.00 0.00  0.00  0.24 0.33  0.00  0.00 0.19  0.19
Crit Moves:                                     ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.00 0.00  0.00  0.53 0.95  0.00  0.00 0.42  0.42
Volume/Cap:  0.00 0.00  0.00  0.00 0.00  0.00  0.45 0.35  0.00  0.00 0.45  0.45
Delay/Veh:    0.0  0.0   0.0   0.0  0.0   0.0  14.4  0.3   0.0   0.0 21.2  21.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0   0.0  0.0   0.0  14.4  0.3   0.0   0.0 21.2  21.2
LOS by Move:    A    A     A     A    A     A     B    A     A     A    C     C
HCM2k85thQ:     0    0     0     0    0     0    12    3     0     0   12    12
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #8 Harbor Blvd and Westminster Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.792
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  1  0    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     276 1374   325   207 1430   165   187  667    32   230  797   181
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  276 1374   325   207 1430   165   187  667    32   230  797   181
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   276 1374   325   207 1430   165   187  667    32   230  797   181
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  276 1374   325   207 1430   165   187  667    32   230  797   181
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  276 1374   325   207 1430   165   187  667    32   230  797   181
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.86  0.14  1.00 3.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 4780   220  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.27  0.20  0.13 0.28  0.10  0.12 0.14  0.15  0.14 0.16  0.11
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #9 Harbor Blvd and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.833
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        60               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     287 1480   164   278 1218   164   188  766   145   230 1073   175
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  287 1480   164   278 1218   164   188  766   145   230 1073   175
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   287 1480   164   278 1218   164   188  766   145   230 1073   175
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  287 1480   164   278 1218   164   188  766   145   230 1073   175
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  287 1480   164   278 1218   164   188  766   145   230 1073   175
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  2.00 2.52  0.48  2.00 2.58  0.42
Final Sat.:  1600 5100  1600  1600 5100  1600  3200 4236   764  3200 4327   673
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.29  0.10  0.17 0.24  0.10  0.06 0.18  0.19  0.07 0.25  0.26
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #10 Harbor Blvd and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.809
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     167 1716   125   298 1273   115   214  520    65   211  506   146
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  167 1716   125   298 1273   115   214  520    65   211  506   146
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   167 1716   125   298 1273   115   214  520    65   211  506   146
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  167 1716   125   298 1273   115   214  520    65   211  506   146
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  167 1716   125   298 1273   115   214  520    65   211  506   146
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       2.00 3.00  1.00  2.00 2.75  0.25  1.00 1.78  0.22  1.00 1.55  0.45
Final Sat.:  3200 5100  1600  3200 4602   398  1600 2944   356  1600 2583   717
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.34  0.08  0.09 0.28  0.29  0.13 0.18  0.18  0.13 0.20  0.20
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #11 Harbor Blvd and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.697
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	37	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	2 0	2 1	0	2 0	3 0	1
Volume Module:												
Base Vol:	282	1773	214	283	822	75	134	564	100	140	813	271
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	282	1773	214	283	822	75	134	564	100	140	813	271
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	282	1773	214	283	822	75	134	564	100	140	813	271
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	282	1773	214	283	822	75	134	564	100	140	813	271
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	282	1773	214	283	822	75	134	564	100	140	813	271
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.55	0.45	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	3200	4277	723	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.09	0.35	0.13	0.09	0.16	0.05	0.04	0.13	0.14	0.04	0.16	0.17
Crit Moves:	****			****			****					****

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #12 Harbor Blvd and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.581
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     774 3713   279   274 1525   182   241 1707   390   260 2700   862
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  774 3713   279   274 1525   182   241 1707   390   260 2700   862
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   774 3713   279   274 1525   182   241 1707   390   260 2700   862
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  774 3713   279   274 1525   182   241 1707   390   260 2700   862
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  774 3713   279   274 1525   182   241 1707   390   260 2700   862
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.79  0.21  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4665   335  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.80  0.83  0.09 0.30  0.11  0.08 0.33  0.24  0.08 0.53  0.54
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #13 Harbor Blvd and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.897
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        85               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     299 1881    60    91 1027    91   111  552   181    99 1074   390
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  299 1881    60    91 1027    91   111  552   181    99 1074   390
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   299 1881    60    91 1027    91   111  552   181    99 1074   390
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  299 1881    60    91 1027    91   111  552   181    99 1074   390
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  299 1881    60    91 1027    91   111  552   181    99 1074   390
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 2.91  0.09  1.00 2.76  0.24  1.00 1.51  0.49  1.00 2.00  1.00
Final Sat.:  3200 4852   148  1600 4609   391  1600 2510   790  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.39  0.40  0.06 0.22  0.23  0.07 0.22  0.23  0.06 0.32  0.24
Crit Moves:             ****  ****            ****                  ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #14 MacArthur Blvd and Hyland Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.917
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        98               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    1201    7    70    12    4    14    36  891   160    25 2350    12
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse: 1201    7    70    12    4    14    36  891   160    25 2350    12
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:  1201    7    70    12    4    14    36  891   160    25 2350    12
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 1201    7    70    12    4    14    36  891   160    25 2350    12
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume: 1201    7    70    12    4    14    36  891   160    25 2350    12
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 0.09  0.91  1.00 1.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200  145  1455  1600 1700  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.38 0.05  0.05  0.01 0.00  0.01  0.02 0.17  0.10  0.02 0.46  0.01
Crit Moves:  ****                      ****  ****                    ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #15 MacArthur Blvd and Harbor Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.819
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        56               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     588 1519    88   213 1073   176   140  489   181    87 1467   276
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  588 1519    88   213 1073   176   140  489   181    87 1467   276
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   588 1519    88   213 1073   176   140  489   181    87 1467   276
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  588 1519    88   213 1073   176   140  489   181    87 1467   276
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  588 1519    88   213 1073   176   140  489   181    87 1467   276
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.30  0.06  0.07 0.21  0.11  0.09 0.10  0.11  0.05 0.29  0.17
Crit Moves:  ****               ****        ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #16 Harbor Blvd and Sunflower Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.780
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	1 1	0	1 1	0 1	0
Volume Module:												
Base Vol:	178	1771	263	112	1393	42	67	182	189	254	533	199
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	178	1771	263	112	1393	42	67	182	189	254	533	199
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	178	1771	263	112	1393	42	67	182	189	254	533	199
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	178	1771	263	112	1393	42	67	182	189	254	533	199
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	178	1771	263	112	1393	42	67	182	189	254	533	199
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00	1.39	0.61
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	1700	1600	1600	2322	974
Capacity Analysis Module:												
Vol/Sat:	0.06	0.35	0.16	0.04	0.27	0.03	0.04	0.11	0.12	0.16	0.23	0.20
Crit Moves:		****			****				****		****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #17 Harbor Blvd and I-405 WB Off-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.812
Loss Time (sec):       5               Average Delay (sec/veh):        22.9
Optimal Cycle:        57               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  0    0  0  4  0  0    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1529     0     0 2475     0     0    0     0   701    0  1132
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1529     0     0 2475     0     0    0     0   701    0  1132
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1529     0     0 2475     0     0    0     0   701    0  1132
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1529     0     0 2475     0     0    0     0   701    0  1132
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1529     0     0 2475     0     0    0     0   701    0  1132
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  1.00 1.00  1.00  0.89 1.00  0.89
Lanes:       0.00 4.00  0.00  0.00 4.00  0.00  0.00 0.00  0.00  1.38 0.00  1.62
Final Sat.:     0 6916     0     0 6916     0     0    0     0  2337    0  2735
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.22  0.00  0.00 0.36  0.00  0.00 0.00  0.00  0.30 0.00  0.41
Crit Moves:  ****                 ****                                     ****
Green/Cycle: 0.00 0.44  0.00  0.00 0.44  0.00  0.00 0.00  0.00  0.51 0.00  0.51
Volume/Cap:  0.00 0.50  0.00  0.00 0.81  0.00  0.00 0.00  0.00  0.59 0.00  0.81
Delay/Veh:    0.0 20.2   0.0   0.0 26.1   0.0   0.0  0.0   0.0  17.5  0.0  22.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 20.2   0.0   0.0 26.1   0.0   0.0  0.0   0.0  17.5  0.0  22.9
LOS by Move:    A    C     A     A    C     A     A    A     A     B    A     C
HCM2k85thQ:     0   14     0     0   29     0     0    0     0    17    0    29
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #18 Harbor Blvd and I-405 EB Off-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.630
Loss Time (sec):       5               Average Delay (sec/veh):        16.2
Optimal Cycle:        32               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    0  0  4  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1861     0     0 2147     0   157    0   722     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1861     0     0 2147     0   157    0   722     0    0     0
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1861     0     0 2147     0   157    0   722     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1861     0     0 2147     0   157    0   722     0    0     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1861     0     0 2147     0   157    0   722     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  0.87 1.00  0.87  1.00 1.00  1.00
Lanes:       0.00 3.00  1.00  0.00 4.00  0.00  1.18 0.00  1.82  0.00 0.00  0.00
Final Sat.:     0 5187  1900     0 6916     0  1946    0  3008     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.36  0.00  0.00 0.31  0.00  0.08 0.00  0.24  0.00 0.00  0.00
Crit Moves:       ****        ****                     ****
Green/Cycle: 0.00 0.57  0.00  0.00 0.57  0.00  0.38 0.00  0.38  0.00 0.00  0.00
Volume/Cap:  0.00 0.63  0.00  0.00 0.55  0.00  0.21 0.00  0.63  0.00 0.00  0.00
Delay/Veh:    0.0 14.9   0.0   0.0 13.6   0.0  20.9  0.0  26.2   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 14.9   0.0   0.0 13.6   0.0  20.9  0.0  26.2   0.0  0.0   0.0
LOS by Move:    A    B     A     A    B     A     C    A     C     A    A     A
HCM2k85thQ:     0   21     0     0   17     0     4    0    16     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #19 Fairview St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.662
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    0  1  0  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       5 1430   402   144 1338     0     2    5     4   438    0   162
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5 1430   402   144 1338     0     2    5     4   438    0   162
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5 1430   402   144 1338     0     2    5     4   438    0   162
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    5 1430   402   144 1338     0     2    5     4   438    0   162
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    5 1430   402   144 1338     0     2    5     4   438    0   162
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.34  0.66  1.00 3.00  0.00  0.36 0.91  0.73  2.00 0.00  1.00
Final Sat.:  1600 3947  1053  1600 5000     0   582 1455  1164  3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.36  0.38  0.09 0.27  0.00  0.00 0.00  0.00  0.14 0.00  0.10
Crit Moves:             ****  ****                 ****        ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #20 Fairview St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.883
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	78	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			WideBypass			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	3 0	1	1 0	2 1	0	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	149	1094	99	203	1264	251	215	870	151	159	1204	186
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	149	1094	99	203	1264	251	215	870	151	159	1204	186
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	149	1094	99	203	1264	251	215	870	151	159	1204	186
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	149	1094	99	203	1264	251	215	870	151	159	1204	186
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	149	1094	99	203	1264	251	215	870	151	159	1204	186
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	3.00	1.00	1.00	2.50	0.50	1.00	2.56	0.44	1.00	2.60	0.40
Final Sat.:	1600	5100	1600	1600	4205	795	1600	4290	710	1600	4358	642
Capacity Analysis Module:												
Vol/Sat:	0.09	0.21	0.06	0.13	0.30	0.32	0.13	0.20	0.21	0.10	0.28	0.29
Crit Moves:	****					****	****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #21 Fairview St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.798
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	52	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	3 0	1	1 0	3 0	1	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	159	1462	127	155	1257	196	244	659	163	158	545	134
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	159	1462	127	155	1257	196	244	659	163	158	545	134
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	159	1462	127	155	1257	196	244	659	163	158	545	134
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	159	1462	127	155	1257	196	244	659	163	158	545	134
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	159	1462	127	155	1257	196	244	659	163	158	545	134
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.60	0.40	1.00	1.61	0.39
Final Sat.:	1600	5100	1600	1600	5100	1600	1600	2665	635	1600	2668	632
Capacity Analysis Module:												
Vol/Sat:	0.10	0.29	0.08	0.10	0.25	0.12	0.15	0.25	0.26	0.10	0.20	0.21
Crit Moves:		****			****			****				****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #22 Fairview St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.811
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	54	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	2 1	0	2 0	2 1	0	2 0	2 1	0
Volume Module:												
Base Vol:	188	1793	110	198	616	151	230	703	188	373	789	173
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	188	1793	110	198	616	151	230	703	188	373	789	173
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	188	1793	110	198	616	151	230	703	188	373	789	173
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	1793	110	198	616	151	230	703	188	373	789	173
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	1793	110	198	616	151	230	703	188	373	789	173
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	2.00	2.83	0.17	2.00	2.41	0.59	2.00	2.37	0.63	2.00	2.46	0.54
Final Sat.:	3200	4723	277	3200	4055	945	3200	3987	1013	3200	4137	863
Capacity Analysis Module:												
Vol/Sat:	0.06	0.38	0.40	0.06	0.15	0.16	0.07	0.18	0.19	0.12	0.19	0.20
Crit Moves:			****	****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #23 Fairview St and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.845
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	63	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0
Volume Module:												
Base Vol:	217	1728	161	188	951	96	197	955	148	188	1108	240
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	217	1728	161	188	951	96	197	955	148	188	1108	240
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	217	1728	161	188	951	96	197	955	148	188	1108	240
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	217	1728	161	188	951	96	197	955	148	188	1108	240
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	217	1728	161	188	951	96	197	955	148	188	1108	240
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	2.00	2.74	0.26	2.00	2.72	0.28	2.00	2.60	0.40	2.00	2.47	0.53
Final Sat.:	3200	4591	409	3200	4560	440	3200	4356	644	3200	4145	855
Capacity Analysis Module:												
Vol/Sat:	0.07	0.38	0.39	0.06	0.21	0.22	0.06	0.22	0.23	0.06	0.27	0.28
Crit Moves:			****	****			****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #24 Fairview St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.826
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     243 1672    91   171  955    88   280  731   246   179 1365   239
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  243 1672    91   171  955    88   280  731   246   179 1365   239
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   243 1672    91   171  955    88   280  731   246   179 1365   239
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  243 1672    91   171  955    88   280  731   246   179 1365   239
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  243 1672    91   171  955    88   280  731   246   179 1365   239
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.85  0.15  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4752   248  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.35  0.37  0.05 0.19  0.06  0.09 0.14  0.15  0.06 0.27  0.15
Crit Moves:             ****  ****            ****                  ****
******************************************************************************
```

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #25 Fairview Rd and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.708
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     201 1806   393   144 1196    83   203  430    95   265  664   173
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  201 1806   393   144 1196    83   203  430    95   265  664   173
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   201 1806   393   144 1196    83   203  430    95   265  664   173
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  201 1806   393   144 1196    83   203  430    95   265  664   173
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  201 1806   393   144 1196    83   203  430    95   265  664   173
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.81  0.19  2.00 1.64  0.36  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4689   311  3200 2721   579  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.35  0.25  0.05 0.26  0.27  0.06 0.16  0.16  0.08 0.20  0.11
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #26 Greenville St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.586
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        28               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  2  1  0    1  0  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     327    0   218     0    0     0     0  982   200    95 1128     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  327    0   218     0    0     0     0  982   200    95 1128     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   327    0   218     0    0     0     0  982   200    95 1128     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  327    0   218     0    0     0     0  982   200    95 1128     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  327    0   218     0    0     0     0  982   200    95 1128     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 0.00  1.00  0.00 0.00  0.00  0.00 2.49  0.51  1.00 2.00  0.00
Final Sat.:  1600    0  1600     0    0     0     0 4188   812  1600 3400     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.00  0.14  0.00 0.00  0.00  0.00 0.23  0.25  0.06 0.33  0.00
Crit Moves:  ****                              ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #27 Greenville St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.686
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include        WideBypass       WideBypass
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      57  476    36    61  200    61   108  823    47    27 1037   148
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   57  476    36    61  200    61   108  823    47    27 1037   148
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    57  476    36    61  200    61   108  823    47    27 1037   148
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   57  476    36    61  200    61   108  823    47    27 1037   148
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   57  476    36    61  200    61   108  823    47    27 1037   148
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 1.86  0.14  1.00 1.00  1.00  1.00 1.89  0.11  1.00 1.75  0.25
Final Sat.:  1600 3075   225  1600 1700  1600  1600 3127   173  1600 2900   400
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.15  0.16  0.04 0.12  0.04  0.07 0.26  0.27  0.02 0.36  0.37
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #28 Raitt St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.722
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      58  835   130    45  474    76   126  747    65    88  742   102
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   58  835   130    45  474    76   126  747    65    88  742   102
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    58  835   130    45  474    76   126  747    65    88  742   102
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   58  835   130    45  474    76   126  747    65    88  742   102
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   58  835   130    45  474    76   126  747    65    88  742   102
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 1.73  0.27  1.00 1.72  0.28  1.00 1.84  0.16  1.00 1.76  0.24
Final Sat.:  1600 2869   431  1600 2858   442  1600 3044   256  1600 2913   387
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.29  0.30  0.03 0.17  0.17  0.08 0.25  0.25  0.06 0.25  0.26
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #29 Raitt St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.864
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        70               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include        WideBypass         Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     190  816   229   111  384    96   139  961   137    86  972    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  190  816   229   111  384    96   139  961   137    86  972    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   190  816   229   111  384    96   139  961   137    86  972    87
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  190  816   229   111  384    96   139  961   137    86  972    87
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  190  816   229   111  384    96   139  961   137    86  972    87
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.03  1.00
Lanes:       1.00 1.56  0.44  1.00 1.60  0.40  1.00 1.75  0.25  1.00 1.84  0.16
Final Sat.:  1600 2599   701  1600 2660   640  1600 2901   399  1600 3037   263
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.31  0.33  0.07 0.14  0.15  0.09 0.33  0.34  0.05 0.32  0.33
Crit Moves:             ****  ****            ****                    ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #30 Bear St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.868
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        71               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     200  962   251   112  271    82    97  910    94    93 1673   266
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  200  962   251   112  271    82    97  910    94    93 1673   266
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   200  962   251   112  271    82    97  910    94    93 1673   266
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  200  962   251   112  271    82    97  910    94    93 1673   266
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  200  962   251   112  271    82    97  910    94    93 1673   266
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 2.72  0.28  1.00 2.59  0.41
Final Sat.:  1600 3400  1600  1600 3400  1600  1600 4551   449  1600 4342   658
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.28  0.16  0.07 0.08  0.05  0.06 0.20  0.21  0.06 0.39  0.40
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #31 Bristol St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.692
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     236 1148   191   243 1293   220   336  750   136   284 1069   362
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  236 1148   191   243 1293   220   336  750   136   284 1069   362
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   236 1148   191   243 1293   220   336  750   136   284 1069   362
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  236 1148   191   243 1293   220   336  750   136   284 1069   362
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  236 1148   191   243 1293   220   336  750   136   284 1069   362
OvlAdjVol:                                                              241
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.54  0.46  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4263   737  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.23  0.12  0.08 0.25  0.14  0.11 0.18  0.18  0.09 0.21  0.23
OvlAdjV/S:                                                              0.15
Crit Moves:  ****                 ****        ****                  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #32 Bristol St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.832
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        60               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     200 1399    73   136 1250   128   190  534    63   169  723    82
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  200 1399    73   136 1250   128   190  534    63   169  723    82
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   200 1399    73   136 1250   128   190  534    63   169  723    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  200 1399    73   136 1250   128   190  534    63   169  723    82
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  200 1399    73   136 1250   128   190  534    63   169  723    82
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.03  1.00  1.00 1.03  1.00
Lanes:       1.00 2.85  0.15  1.00 2.72  0.28  1.00 1.79  0.21  1.00 1.80  0.20
Final Sat.:  1600 4762   238  1600 4554   446  1600 2962   338  1600 2974   326
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.29  0.31  0.09 0.27  0.29  0.12 0.18  0.19  0.11 0.24  0.25
Crit Moves:  ****                      ****  ****                      ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #33 Bristol St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.657
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      75 1524    87   105 1402    53    59  163    38   233  371   100
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   75 1524    87   105 1402    53    59  163    38   233  371   100
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    75 1524    87   105 1402    53    59  163    38   233  371   100
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   75 1524    87   105 1402    53    59  163    38   233  371   100
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   75 1524    87   105 1402    53    59  163    38   233  371   100
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.84  0.16  1.00 2.89  0.11  1.00 1.62  0.38  1.00 1.58  0.42
Final Sat.:  1600 4741   259  1600 4825   175  1600 2695   605  1600 2621   679
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.32  0.34  0.07 0.29  0.30  0.04 0.06  0.06  0.15 0.14  0.15
Crit Moves:             ****  ****                 ****        ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #34 Bristol St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.779
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	286	1235	182	206	1115	252	189	1062	136	217	1330	126
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	286	1235	182	206	1115	252	189	1062	136	217	1330	126
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	286	1235	182	206	1115	252	189	1062	136	217	1330	126
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	286	1235	182	206	1115	252	189	1062	136	217	1330	126
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	286	1235	182	206	1115	252	189	1062	136	217	1330	126
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	2.66	0.34	1.00	2.74	0.26
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	4455	545	1600	4585	415
Capacity Analysis Module:												
Vol/Sat:	0.09	0.24	0.11	0.06	0.22	0.16	0.12	0.24	0.25	0.14	0.29	0.30
Crit Moves:	****			****			****					****

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #35 Bristol St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.752
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     213 1566    85    84 1171   270   262  512   102    97  504    59
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  213 1566    85    84 1171   270   262  512   102    97  504    59
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   213 1566    85    84 1171   270   262  512   102    97  504    59
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  213 1566    85    84 1171   270   262  512   102    97  504    59
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  213 1566    85    84 1171   270   262  512   102    97  504    59
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.03  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 1.67  0.33  1.00 1.79  0.21
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 2768   532  1600 2965   335
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.31  0.05  0.05 0.23  0.17  0.16 0.18  0.19  0.06 0.17  0.18
Crit Moves:  ****               ****        ****                        ****
******************************************************************************
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                         Santa Ana Circulation Element
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                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #36 Bristol St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.790
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  1  0    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     309 1157   211   251  838   163   193  868   153   173 1021   299
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  309 1157   211   251  838   163   193  868   153   173 1021   299
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   309 1157   211   251  838   163   193  868   153   173 1021   299
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  309 1157   211   251  838   163   193  868   153   173 1021   299
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  309 1157   211   251  838   163   193  868   153   173 1021   299
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.00  1.00  2.00 2.51  0.49  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 3400  1600  3200 4218   782  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.34  0.13  0.08 0.20  0.21  0.12 0.17  0.10  0.11 0.20  0.19
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #37 Bristol St and Segerstrom Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.909
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	92	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	WideBypass			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	179	1322	233	92	843	176	200	716	57	119	1074	54
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	179	1322	233	92	843	176	200	716	57	119	1074	54
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	179	1322	233	92	843	176	200	716	57	119	1074	54
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	179	1322	233	92	843	176	200	716	57	119	1074	54
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	179	1322	233	92	843	176	200	716	57	119	1074	54
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.03	1.00	1.00	1.03	1.00
Lanes:	1.00	2.55	0.45	1.00	2.48	0.52	1.00	1.85	0.15	1.00	1.90	0.10
Final Sat.:	1600	4281	719	1600	4171	829	1600	3064	236	1600	3147	153
Capacity Analysis Module:												
Vol/Sat:	0.11	0.31	0.32	0.06	0.20	0.21	0.13	0.23	0.24	0.07	0.34	0.35
Crit Moves:			****	****			****					****

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #38 Bristol St and Alton Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.686
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:         WideBypass         Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  3  0  1    1  0  1  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      43 1681   158   119  896    56    75  105   195    91  150    29
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   43 1681   158   119  896    56    75  105   195    91  150    29
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    43 1681   158   119  896    56    75  105   195    91  150    29
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   43 1681   158   119  896    56    75  105   195    91  150    29
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   43 1681   158   119  896    56    75  105   195    91  150    29
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.74  0.26  1.00 3.00  1.00  1.00 1.00  1.00  1.00 0.84  0.16
Final Sat.:  1600 4588   412  1600 5100  1600  1600 1700  1600  1600 1341   259
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.37  0.38  0.07 0.18  0.04  0.05 0.06  0.12  0.06 0.11  0.11
Crit Moves:             ****  ****                          ****  ****
******************************************************************************
```

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #39 Bristol St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.812
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        55               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     335 1428   260   223  821   129   357  796   169   265 1536   290
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  335 1428   260   223  821   129   357  796   169   265 1536   290
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   335 1428   260   223  821   129   357  796   169   265 1536   290
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  335 1428   260   223  821   129   357  796   169   265 1536   290
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  335 1428   260   223  821   129   357  796   169   265 1536   290
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.59  0.41  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 4348   652  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.28  0.16  0.07 0.19  0.20  0.11 0.16  0.11  0.08 0.30  0.18
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #40 Bristol St and Sunflower Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.689
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	36	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 1	2 0	3	0 1	2 0	2	1 1	2 0	3	0 1
Volume Module:												
Base Vol:	645	1363	220	201	750	215	293	573	222	263	1012	322
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	645	1363	220	201	750	215	293	573	222	263	1012	322
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	645	1363	220	201	750	215	293	573	222	263	1012	322
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	645	1363	220	201	750	215	293	573	222	263	1012	322
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	645	1363	220	201	750	215	293	573	222	263	1012	322
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.88	1.12	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	3200	4813	1787	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.20	0.27	0.14	0.06	0.15	0.13	0.09	0.12	0.12	0.08	0.20	0.20
Crit Moves:	****				****		****				****	

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------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #41 Bristol St and I-405 WB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.829
Loss Time (sec):       5               Average Delay (sec/veh):        28.2
Optimal Cycle:        61               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    0  0  4  1  0    0  0  0  0  2    1  1  1  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 2094   183     0 2148    20     0    0   194   357  306  1184
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 2094   183     0 2148    20     0    0   194   357  306  1184
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 2094     0     0 2148    20     0    0   194   357  306  1184
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 2094     0     0 2148    20     0    0   194   357  306  1184
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 2094     0     0 2148    20     0    0   194   357  306  1184
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  0.91  1.00 1.00  0.75  0.93 0.93  0.75
Lanes:       0.00 4.00  1.00  0.00 4.95  0.05  0.00 0.00  2.00  1.62 1.38  2.00
Final Sat.:     0 6916  1900     0 8557    80     0    0  2842  2840 2434  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.30  0.00  0.00 0.25  0.25  0.00 0.00  0.07  0.13 0.13  0.42
Crit Moves:       ****        ****                         ****            ****
Green/Cycle: 0.00 0.37  0.00  0.00 0.37  0.37  0.00 0.00  0.08  0.50 0.50  0.50
Volume/Cap:  0.00 0.83  0.00  0.00 0.69  0.69  0.00 0.00  0.83  0.25 0.25  0.83
Delay/Veh:    0.0 31.3   0.0   0.0 27.5  27.5   0.0  0.0  66.4  14.2 14.2  25.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 31.3   0.0   0.0 27.5  27.5   0.0  0.0  66.4  14.2 14.2  25.4
LOS by Move:    A    C     A     A    C     C     A    A     E     B    B     C
HCM2k85thQ:     0   27     0     0   20    20     0    0     9     6    6    29
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #42 Bristol St and I-405 EB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.595
Loss Time (sec):       5               Average Delay (sec/veh):        18.4
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Ignore           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  4  0  0    0  0  2  1  1    3  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     127 1555     0     0 1506   880   740    0   331     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  127 1555     0     0 1506   880   740    0   331     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   127 1555     0     0 1506     0   740    0   331     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  127 1555     0     0 1506     0   740    0   331     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  127 1555     0     0 1506     0   740    0   331     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.92 1.00  0.85  1.00 1.00  1.00
Lanes:       1.00 4.00  0.00  0.00 3.00  1.00  3.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:  1805 6916     0     0 5187  1729  5253    0  1615     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.22  0.00  0.00 0.29  0.00  0.14 0.00  0.20  0.00 0.00  0.00
Crit Moves:  ****                 ****                    ****
Green/Cycle: 0.12 0.61  0.00  0.00 0.49  0.00  0.34 0.00  0.34  0.00 0.00  0.00
Volume/Cap:  0.60 0.37  0.00  0.00 0.60  0.00  0.41 0.00  0.60  0.00 0.00  0.00
Delay/Veh:   46.3 10.1   0.0   0.0 18.9   0.0  25.2  0.0  28.8   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  46.3 10.1   0.0   0.0 18.9   0.0  25.2  0.0  28.8   0.0  0.0   0.0
LOS by Move:    D    B     A     A    B     A     C    A     C     A    A     A
HCM2k85thQ:     7   10     0     0   19     0     9    0    14     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #43 Flower St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.571
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	27	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	3 0	1	1 0	2 0	1
Volume Module:												
Base Vol:	124	754	62	104	530	48	134	386	63	146	510	151
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	124	754	62	104	530	48	134	386	63	146	510	151
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	124	754	62	104	530	48	134	386	63	146	510	151
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	124	754	62	104	530	48	134	386	63	146	510	151
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	124	754	62	104	530	48	134	386	63	146	510	151
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	3.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	3400	1600	1600	3400	1600	1600	5100	1600	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.08	0.22	0.04	0.07	0.16	0.03	0.08	0.08	0.04	0.09	0.15	0.09
Crit Moves:		****			****			****			****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #44 Flower St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.752
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     132  625   149   170  466   135   139 1217   101   210 1415   147
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  132  625   149   170  466   135   139 1217   101   210 1415   147
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   132  625   149   170  466   135   139 1217   101   210 1415   147
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  132  625   149   170  466   135   139 1217   101   210 1415   147
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  132  625   149   170  466   135   139 1217   101   210 1415   147
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 1.55  0.45  1.00 2.77  0.23  1.00 2.72  0.28
Final Sat.:  1600 3400  1600  1600 2581   719  1600 4632   368  1600 4548   452
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.18  0.09  0.11 0.18  0.19  0.09 0.26  0.27  0.13 0.31  0.33
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #45 Flower St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.920
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       100               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      42  567    35    46  352    57    64  478    19    48  595    85
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   42  567    35    46  352    57    64  478    19    48  595    85
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    42  567    35    46  352    57    64  478    19    48  595    85
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   42  567    35    46  352    57    64  478    19    48  595    85
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   42  567    35    46  352    57    64  478    19    48  595    85
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.94  0.06  1.00 0.86  0.14  1.00 0.96  0.04  1.00 0.88  0.12
Final Sat.:  1600 1507    93  1600 1377   223  1600 1539    61  1600 1400   200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.38  0.38  0.03 0.26  0.26  0.04 0.31  0.31  0.03 0.43  0.43
Crit Moves:        ****        ****             ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #46 Flower St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.897
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        85               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     120  843    80    66  369   106   158  786    83    75 1258    81
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  120  843    80    66  369   106   158  786    83    75 1258    81
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   120  843    80    66  369   106   158  786    83    75 1258    81
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  120  843    80    66  369   106   158  786    83    75 1258    81
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  120  843    80    66  369   106   158  786    83    75 1258    81
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.03  1.00
Lanes:       1.00 1.83  0.17  1.00 1.55  0.45  1.00 1.81  0.19  1.00 1.88  0.12
Final Sat.:  1600 3023   277  1600 2586   714  1600 2994   306  1600 3106   194
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.28  0.29  0.04 0.14  0.15  0.10 0.26  0.27  0.05 0.40  0.42
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #47 Flower St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.906
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        90               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     133  634    74    85  205   197   209  994    63    62 1989   177
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  133  634    74    85  205   197   209  994    63    62 1989   177
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   133  634    74    85  205   197   209  994    63    62 1989   177
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  133  634    74    85  205   197   209  994    63    62 1989   177
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  133  634    74    85  205   197   209  994    63    62 1989   177
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 1.79  0.21  1.00 1.02  0.98  1.00 2.82  0.18  1.00 2.75  0.25
Final Sat.:  1600 2966   334  1600 1732  1568  1600 4714   286  1600 4608   392
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.21  0.22  0.05 0.12  0.13  0.13 0.21  0.22  0.04 0.43  0.45
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #48 Main St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.628
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        31               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     307  938   439   145  911   235   296  422   189   257  513   206
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  307  938   439   145  911   235   296  422   189   257  513   206
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   307  938   439   145  911   235   296  422   189   257  513   206
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  307  938   439   145  911   235   296  422   189   257  513   206
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  307  938   439   145  911   235   296  422   189   257  513   206
OvlAdjVol:                310                                              134
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.38  0.62  2.00 2.07  0.93  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4016   984  3200 3515  1485  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.18  0.27  0.05 0.23  0.24  0.09 0.12  0.13  0.08 0.15  0.13
OvlAdjV/S:                0.19                                              0.08
Crit Moves:  ****                        ****  ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #49 Main St and Mainplace Dr / Memory Ln

Cycle (sec):	100	Critical Vol./Cap.(X):	0.471
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	22	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0 2	1 0		2 0 2	1 0		2 0 2	1 0		2 0 2	0 1	
Volume Module:												
Base Vol:	90	945	179	51	1055	139	293	325	87	185	151	73
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	945	179	51	1055	139	293	325	87	185	151	73
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	945	179	51	1055	139	293	325	87	185	151	73
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	945	179	51	1055	139	293	325	87	185	151	73
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	90	945	179	51	1055	139	293	325	87	185	151	73
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	2.00	2.52	0.48	2.00	2.65	0.35	2.00	2.37	0.63	2.00	2.00	1.00
Final Sat.:	3200	4236	764	3200	4441	559	3200	3986	1014	3200	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.03	0.22	0.23	0.02	0.24	0.25	0.09	0.08	0.09	0.06	0.04	0.05
Crit Moves:	****					****			****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #50 Main St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.732
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  1  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     197 1019   222   173  757   117   221 1237    73   178 1089    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  197 1019   222   173  757   117   221 1237    73   178 1089    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   197 1019   222   173  757   117   221 1237    73   178 1089    72
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  197 1019   222   173  757   117   221 1237    73   178 1089    72
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  197 1019   222   173  757   117   221 1237    73   178 1089    72
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 1.73  0.27  2.00 2.83  0.17  2.00 2.81  0.19
Final Sat.:  3200 3400  1600  3200 2872   428  3200 4733   267  3200 4702   298
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.30  0.14  0.05 0.26  0.27  0.07 0.26  0.27  0.06 0.23  0.24
Crit Moves:       ****        ****                          ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #51 Main St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.801
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        52               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      89 1126    94    61  995    63   159  881   105    38  384    39
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   89 1126    94    61  995    63   159  881   105    38  384    39
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    89 1126    94    61  995    63   159  881   105    38  384    39
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   89 1126    94    61  995    63   159  881   105    38  384    39
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   89 1126    94    61  995    63   159  881   105    38  384    39
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.03  1.00
Lanes:       1.00 1.85  0.15  1.00 1.88  0.12  1.00 1.79  0.21  1.00 1.82  0.18
Final Sat.:  1600 3053   247  1600 3109   191  1600 2959   341  1600 3005   295
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.37  0.38  0.04 0.32  0.33  0.10 0.30  0.31  0.02 0.13  0.13
Crit Moves:             ****  ****                           ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #52 Main St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.607
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  1  1  0    0  0  0  0  0    0  1  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      54 1229     0     0 1083    53     0    0     0    65  656    85
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   54 1229     0     0 1083    53     0    0     0    65  656    85
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    54 1229     0     0 1083    53     0    0     0    65  656    85
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   54 1229     0     0 1083    53     0    0     0    65  656    85
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   54 1229     0     0 1083    53     0    0     0    65  656    85
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.03  1.00
Lanes:       1.00 2.00  0.00  0.00 1.91  0.09  0.00 0.00  0.00  0.24 2.44  0.32
Final Sat.:  1600 3400     0     0 3151   149     0    0     0   387 4007   506
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.36  0.00  0.00 0.34  0.36  0.00 0.00  0.00  0.04 0.16  0.17
Crit Moves:  ****                     ****                                 ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #53 Main St and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.537
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1  1  0    0  0  1  1  0    0  0  0  1  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1055    50     0 1037    47     0   98    55     0  181    46
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1055    50     0 1037    47     0   98    55     0  181    46
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1055    50     0 1037    47     0   98    55     0  181    46
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1055    50     0 1037    47     0   98    55     0  181    46
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1055    50     0 1037    47     0   98    55     0  181    46
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.00 1.91  0.09  0.00 1.91  0.09  0.00 0.64  0.36  0.00 0.80  0.20
Final Sat.:     0 3155   145     0 3161   139     0 1025   575     0 1276   324
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.33  0.35  0.00 0.33  0.34  0.00 0.10  0.10  0.00 0.14  0.14
Crit Moves:             ****  ****            ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #54 Main St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.799
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        52               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     169  826    72   175  671   143   120 1214    90   114 1275    89
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  169  826    72   175  671   143   120 1214    90   114 1275    89
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   169  826    72   175  671   143   120 1214    90   114 1275    89
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  169  826    72   175  671   143   120 1214    90   114 1275    89
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  169  826    72   175  671   143   120 1214    90   114 1275    89
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.84  0.16  1.00 2.00  1.00  1.00 2.79  0.21  1.00 2.80  0.20
Final Sat.:  1600 3043   257  1600 3400  1600  1600 4669   331  1600 4687   313
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.27  0.28  0.11 0.20  0.09  0.08 0.26  0.27  0.07 0.27  0.28
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #55 Main St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.845
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        64               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     146 1147    71   134  908    66    78  345    42    85  480   216
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  146 1147    71   134  908    66    78  345    42    85  480   216
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   146 1147    71   134  908    66    78  345    42    85  480   216
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  146 1147    71   134  908    66    78  345    42    85  480   216
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  146 1147    71   134  908    66    78  345    42    85  480   216
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 1.88  0.12  1.00 1.86  0.14  1.00 0.89  0.11  1.00 1.00  1.00
Final Sat.:  1600 3113   187  1600 3083   217  1600 1426   174  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.37  0.38  0.08 0.29  0.30  0.05 0.24  0.24  0.05 0.28  0.14
Crit Moves:             ****  ****            ****                   ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #56 Main St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.847
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        64               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  0  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      99 1050    48   122  609    83   127  752    84    97 1296   134
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   99 1050    48   122  609    83   127  752    84    97 1296   134
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    99 1050    48   122  609    83   127  752    84    97 1296   134
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   99 1050    48   122  609    83   127  752    84    97 1296   134
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   99 1050    48   122  609    83   127  752    84    97 1296   134
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       1.00 1.91  0.09  1.00 1.76  0.24  1.00 2.00  1.00  1.00 2.72  0.28
Final Sat.:  1600 3160   140  1600 2916   384  1600 3400  1600  1600 4550   450
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.33  0.34  0.08 0.21  0.22  0.08 0.22  0.05  0.06 0.28  0.30
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #57 Main St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.777
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        48               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     488 1169   321   283  368   278   298  613    59   198 1570   456
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  488 1169   321   283  368   278   298  613    59   198 1570   456
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   488 1169   321   283  368   278   298  613    59   198 1570   456
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  488 1169   321   283  368   278   298  613    59   198 1570   456
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  488 1169   321   283  368   278   298  613    59   198 1570   456
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.23  0.20  0.09 0.07  0.17  0.09 0.12  0.04  0.06 0.31  0.28
Crit Moves:  ****                     ****  ****                    ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #58 Penn Wy and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.770
Loss Time (sec):       5               Average Delay (sec/veh):        20.7
Optimal Cycle:        48               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  2    0  0  0  0  0    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     848    0   414     0    0     0     0 1590   513   123 1440     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  848    0   414     0    0     0     0 1590   513   123 1440     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   848    0   414     0    0     0     0 1590   513   123 1440     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  848    0   414     0    0     0     0 1590   513   123 1440     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  848    0   414     0    0     0     0 1590   513   123 1440     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.75  1.00 1.00  1.00  1.00 0.88  0.88  0.95 0.91  1.00
Lanes:       2.00 0.00  2.00  0.00 0.00  0.00  0.00 2.27  0.73  1.00 3.00  0.00
Final Sat.:  3502    0  2842     0    0     0     0 3777  1218  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.00  0.15  0.00 0.00  0.00  0.00 0.42  0.42  0.07 0.28  0.00
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.31 0.00  0.31  0.00 0.00  0.00  0.00 0.55  0.55  0.09 0.64  0.00
Volume/Cap:  0.77 0.00  0.46  0.00 0.00  0.00  0.00 0.77  0.77  0.77 0.44  0.00
Delay/Veh:   34.4  0.0  27.9   0.0  0.0   0.0   0.0 19.1  19.1  64.7  9.3   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  34.4  0.0  27.9   0.0  0.0   0.0   0.0 19.1  19.1  64.7  9.3   0.0
LOS by Move:    C    A     C     A    A     A     A    B     B     E    A     A
HCM2k85thQ:    21    0     9     0    0     0     0   29    29     9   12     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #59 I-5 NB Off Ramps/17th Street
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.589
Loss Time (sec):       5               Average Delay (sec/veh):        19.5
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Street Name:         I-5 NB Off Ramps                    17th Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected         Permitted
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  1    1  0  0  0  1    1  0  3  0  1    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     345   46    18    51    0   133   120 1099   722     0 1525    41
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  345   46    18    51    0   133   120 1099   722     0 1525    41
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   345   46    18    51    0   133   120 1099     0     0 1525    41
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  345   46    18    51    0   133   120 1099     0     0 1525    41
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  345   46    18    51    0   133   120 1099     0     0 1525    41
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.85  0.95 1.00  0.85  0.95 0.91  1.00  1.00 0.91  0.91
Lanes:       1.76 0.24  1.00  1.00 0.00  1.00  1.00 3.00  1.00  0.00 2.92  0.08
Final Sat.:  3212  428  1615  1805    0  1615  1805 5187  1900     0 5031   135
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11  0.01  0.03 0.00  0.08  0.07 0.21  0.00  0.00 0.30  0.30
Crit Moves:       ****                     ****  ****                 ****
Green/Cycle: 0.18 0.18  0.18  0.14 0.00  0.14  0.11 0.63  0.00  0.00 0.51  0.51
Volume/Cap:  0.59 0.59  0.06  0.20 0.00  0.59  0.59 0.34  0.00  0.00 0.59  0.59
Delay/Veh:   38.8 38.8  33.9  38.5  0.0  44.3  46.6  8.9   0.0   0.0 17.2  17.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  38.8 38.8  33.9  38.5  0.0  44.3  46.6  8.9   0.0   0.0 17.2  17.2
LOS by Move:    D    D     C     D    A     D     D    A     A     A    B     B
HCM2k85thQ:    10   10     1     2    0     7     7    9     0     0   19    19
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #60 Penn Wy and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.423
Loss Time (sec):       5               Average Delay (sec/veh):        22.0
Optimal Cycle:        22               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    2  0  2  0  0    0  0  0  0  0    1  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  363   238   550  127     0     0    0     0   175    0   150
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  363   238   550  127     0     0    0     0   175    0   150
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  363   238   550  127     0     0    0     0   175    0   150
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  363   238   550  127     0     0    0     0   175    0   150
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  363   238   550  127     0     0    0     0   175    0   150
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.92 0.95  1.00  1.00 1.00  1.00  0.95 1.00  0.75
Lanes:       0.00 2.00  1.00  2.00 2.00  0.00  0.00 0.00  0.00  1.00 0.00  2.00
Final Sat.:     0 3610  1615  3502 3610     0     0    0     0  1805    0  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.10  0.15  0.16 0.04  0.00  0.00 0.00  0.00  0.10 0.00  0.05
Crit Moves:             ****  ****                               ****
Green/Cycle: 0.00 0.35  0.35  0.37 0.72  0.00  0.00 0.00  0.00  0.23 0.00  0.60
Volume/Cap:  0.00 0.29  0.42  0.42 0.05  0.00  0.00 0.00  0.00  0.42 0.00  0.09
Delay/Veh:    0.0 23.7  25.4  23.6  4.1   0.0   0.0  0.0   0.0  33.6  0.0   8.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 23.7  25.4  23.6  4.1   0.0   0.0  0.0   0.0  33.6  0.0   8.4
LOS by Move:    A    C     C     C    A     A     A    A     A     C    A     A
HCM2k85thQ:     0    7     9    10    1     0     0    0     0     8    0     2
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #61 Santiago St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.674
Loss Time (sec):       5               Average Delay (sec/veh):        17.1
Optimal Cycle:         0               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      97  299    30    13  187    48   266   76   269    14   19    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   97  299    30    13  187    48   266   76   269    14   19    18
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    97  299    30    13  187    48   266   76   269    14   19    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   97  299    30    13  187    48   266   76   269    14   19    18
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   97  299    30    13  187    48   266   76   269    14   19    18
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.91  0.09  1.00 0.80  0.20  0.78 0.22  1.00  0.27 0.38  0.35
Final Sat.:   481  478    48   458  401   103   395  113   597   122  166   157
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.63  0.63  0.03 0.47  0.47  0.67 0.67  0.45  0.11 0.11  0.11
Crit Moves:       ****                    ****       ****            ****
Delay/Veh:   11.7 19.4  19.4  10.4 15.1  15.1  22.2 22.2  13.1  11.2 11.2  11.2
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  11.7 19.4  19.4  10.4 15.1  15.1  22.2 22.2  13.1  11.2 11.2  11.2
LOS by Move:    B    C     C     B    C     C     C    C     B     B    B     B
ApproachDel:       17.6             14.8             18.2             11.2
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:        17.6             14.8             18.2             11.2
LOS by Appr:          C                B                C                B
AllWayAvgQ:   0.2  1.5   1.5   0.0  0.8   0.8   1.8  1.8   0.7   0.1  0.1   0.1
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #62 Santiago St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.569
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	27	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1 0	1	1 0	1 0	1	1 0	1 1	0	1 0	2 0	1
Volume Module:												
Base Vol:	36	133	84	297	120	61	71	649	20	73	492	187
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	36	133	84	297	120	61	71	649	20	73	492	187
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	36	133	84	297	120	61	71	649	20	73	492	187
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	36	133	84	297	120	61	71	649	20	73	492	187
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	36	133	84	297	120	61	71	649	20	73	492	187
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.03	1.00	1.00	1.06	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.94	0.06	1.00	2.00	1.00
Final Sat.:	1600	1700	1600	1600	1700	1600	1600	3204	96	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.02	0.08	0.05	0.19	0.07	0.04	0.04	0.20	0.21	0.05	0.14	0.12
Crit Moves:		****		****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #64 Standard Ave and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.842
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	62	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	0	0	1! 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	185	367	119	19	189	23	177	1218	129	91	1148	21
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	185	367	119	19	189	23	177	1218	129	91	1148	21
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	185	367	119	19	189	23	177	1218	129	91	1148	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	185	367	119	19	189	23	177	1218	129	91	1148	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	185	367	119	19	189	23	177	1218	129	91	1148	21
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.00	1.00	1.03	1.00
Lanes:	1.00	0.76	0.24	0.08	0.82	0.10	1.00	1.81	0.19	1.00	1.96	0.04
Final Sat.:	1600	1208	392	132	1309	159	1600	2994	306	1600	3243	57
Capacity Analysis Module:												
Vol/Sat:	0.12	0.30	0.30	0.01	0.14	0.14	0.11	0.41	0.42	0.06	0.35	0.37
Crit Moves:		****			****			****				****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #65 Standard Ave and Mcfadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.682
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     169  667    82   137  300    52    53  351    60   117  712   206
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  169  667    82   137  300    52    53  351    60   117  712   206
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   169  667    82   137  300    52    53  351    60   117  712   206
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  169  667    82   137  300    52    53  351    60   117  712   206
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  169  667    82   137  300    52    53  351    60   117  712   206
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.78  0.22  1.00 1.70  0.30  1.00 1.71  0.29  1.00 1.55  0.45
Final Sat.:  1600 2950   350  1600 2827   473  1600 2833   467  1600 2582   718
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.23  0.23  0.09 0.11  0.11  0.03 0.12  0.13  0.07 0.28  0.29
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #66 Halladay St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.677
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  1  0  1  0    0  1  1  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     169    0   352     0    0     0     2  926    93   141 1121     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  169    0   352     0    0     0     2  926    93   141 1121     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   169    0   352     0    0     0     2  926    93   141 1121     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  169    0   352     0    0     0     2  926    93   141 1121     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  169    0   352     0    0     0     2  926    93   141 1121     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00  1.00 1.04  1.00
Lanes:       1.00 0.00  1.00  0.00 0.00  0.00  0.01 1.81  0.18  0.22 1.78  0.00
Final Sat.:  1600    0  1600     0    0     0     6 2902   291   358 2942     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.00  0.22  0.00 0.00  0.00  0.00 0.32  0.32  0.09 0.38  0.00
Crit Moves:             ****                          ****        ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #67 Halladay St and Dyer Rd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.784
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      41  180   208   114   15    32   150 1298     9    45 1451   116
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   41  180   208   114   15    32   150 1298     9    45 1451   116
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    41  180   208   114   15    32   150 1298     9    45 1451   116
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   41  180   208   114   15    32   150 1298     9    45 1451   116
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   41  180   208   114   15    32   150 1298     9    45 1451   116
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 0.46  0.54  1.00 0.32  0.68  1.00 2.98  0.02  1.00 2.78  0.22
Final Sat.:  1600  742   858  1600  511  1089  1600 4967    33  1600 4645   355
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.24  0.24  0.07 0.03  0.03  0.09 0.26  0.27  0.03 0.31  0.33
Crit Moves:       ****        ****             ****                       ****
******************************************************************************

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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #68 SR-55 SB Ramps and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.569
Loss Time (sec):	5	Average Delay (sec/veh):	17.3
Optimal Cycle:	28	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	2	0	0	0	2	0	0	2	1	1	0	0	3	0	1
Volume Module:												
Base Vol:	0	0	0	288	0	697	0	1167	1040	0	1532	602
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	288	0	697	0	1167	1040	0	1532	602
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Volume:	0	0	0	288	0	697	0	1167	0	0	1532	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	288	0	697	0	1167	0	0	1532	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	0	0	0	288	0	697	0	1167	0	0	1532	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.92	1.00	0.75	1.00	0.91	0.91	1.00	0.91	1.00
Lanes:	0.00	0.00	0.00	2.00	0.00	2.00	0.00	3.00	1.00	0.00	3.00	1.00
Final Sat.:	0	0	0	3502	0	2842	0	5187	1729	0	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.25	0.00	0.22	0.00	0.00	0.30	0.00
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.43	0.00	0.43	0.00	0.52	0.00	0.00	0.52	0.00
Volume/Cap:	0.00	0.00	0.00	0.19	0.00	0.57	0.00	0.43	0.00	0.00	0.57	0.00
Delay/Veh:	0.0	0.0	0.0	17.7	0.0	22.1	0.0	15.0	0.0	0.0	16.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	17.7	0.0	22.1	0.0	15.0	0.0	0.0	16.7	0.0
LOS by Move:	A	A	A	B	A	C	A	B	A	A	B	A
HCM2k85thQ:	0	0	0	4	0	15	0	12	0	0	18	0

Note: Queue reported is the number of cars per lane.

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2020 NP PM Peak Hour       Thu Oct 22, 2020 13:56:52                Page 70-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #69 SR-55 NB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.497
Loss Time (sec):       5               Average Delay (sec/veh):        14.8
Optimal Cycle:        25               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Ignore           Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  2  0  2    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     641    0   426     0    0     0     0  711   731     0 1501  1081
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  641    0   426     0    0     0     0  711   731     0 1501  1081
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   641    0     0     0    0     0     0  711     0     0 1501     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  641    0     0     0    0     0     0  711     0     0 1501     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  641    0     0     0    0     0     0  711     0     0 1501     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.88  1.00 0.91  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  2.00  0.00 3.00  1.00
Final Sat.:  3502    0  1900     0    0     0     0 3610  3344     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.00  0.00  0.00 0.00  0.00  0.00 0.20  0.00  0.00 0.29  0.00
Crit Moves:  ****                              ****                   ****
Green/Cycle: 0.37 0.00  0.00  0.00 0.00  0.00  0.00 0.58  0.00  0.00 0.58  0.00
Volume/Cap:  0.50 0.00  0.00  0.00 0.00  0.00  0.00 0.34  0.00  0.00 0.50  0.00
Delay/Veh:   24.7  0.0   0.0   0.0  0.0   0.0   0.0 11.0   0.0   0.0 12.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  24.7  0.0   0.0   0.0  0.0   0.0   0.0 11.0   0.0   0.0 12.4   0.0
LOS by Move:    C    A     A     A    A     A     A    B     A     A    B     A
HCM2k85thQ:    12    0     0     0    0     0     0    9     0     0   15     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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2020 NP PM Peak Hour       Thu Oct 22, 2020 13:56:52                Page 71-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #70 SR-55 SB Ramps and Dyer Rd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.669
Loss Time (sec):       5               Average Delay (sec/veh):        25.7
Optimal Cycle:        36               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:            Ovl              Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    0  1  1  0  1    1  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     319   10   240   103  226   110    65 1523   207   556  991    64
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  319   10   240   103  226   110    65 1523   207   556  991    64
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   319   10   240   103  226   110    65 1523   207   556  991    64
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  319   10   240   103  226   110    65 1523   207   556  991    64
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  319   10   240   103  226   110    65 1523   207   556  991    64
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.75  0.94 0.94  0.85  0.95 0.91  0.85  0.92 0.91  0.85
Lanes:       1.94 0.06  2.00  0.63 1.37  1.00  1.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3515  110  2842  1113 2443  1615  1805 5187  1615  3502 5187  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.09  0.08  0.09 0.09  0.07  0.04 0.29  0.13  0.16 0.19  0.04
Crit Moves:  ****              ****              ****              ****
Green/Cycle: 0.14 0.14  0.37  0.14 0.14  0.14  0.11 0.44  0.44  0.24 0.57  0.57
Volume/Cap:  0.67 0.67  0.23  0.67 0.67  0.49  0.34 0.67  0.29  0.67 0.34  0.07
Delay/Veh:   44.6 44.6  21.6  44.5 44.5  41.6  42.4 23.1  18.3  36.7 11.6   9.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  44.6 44.6  21.6  44.5 44.5  41.6  42.4 23.1  18.3  36.7 11.6   9.7
LOS by Move:    D    D     C     D    D     D     D    C     B     D    B     A
HCM2k85thQ:     9    9     5    10   10     6     3   21     6    14    9     1
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #71 Glassell St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.620
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Ovl              Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  1  1  0    1  0  1  0  1    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     472  490   160    15  499    37    82  268   461   155  280    11
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  472  490   160    15  499    37    82  268   461   155  280    11
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   472  490   160    15  499    37    82  268   461   155  280    11
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  472  490   160    15  499    37    82  268   461   155  280    11
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  472  490   160    15  499    37    82  268   461   155  280    11
OvlAdjVol:                 5                                  225
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.03  1.00
Lanes:       2.00 1.00  1.00  1.00 1.86  0.14  1.00 1.00  1.00  1.00 1.92  0.08
Final Sat.:  3200 1700  1600  1600 3079   221  1600 1700  1600  1600 3179   121
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.29  0.10  0.01 0.16  0.17  0.05 0.16  0.29  0.10 0.09  0.09
OvlAdjV/S:              0.00                                 0.14
Crit Moves:  ****                       ****       ****       ****
******************************************************************************
```

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------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #72 Glassell St and SR-22 WB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.766
Loss Time (sec):       5               Average Delay (sec/veh):        24.8
Optimal Cycle:        48               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted      Split Phase      Split Phase
Rights:           Include           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  2  0  1    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     557  910     0     0  878   255     0    0     0   201    7   357
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  557  910     0     0  878   255     0    0     0   201    7   357
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   557  910     0     0  878   255     0    0     0   201    7   357
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  557  910     0     0  878   255     0    0     0   201    7   357
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  557  910     0     0  878   255     0    0     0   201    7   357
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  1.00  1.00 0.95  0.85  1.00 1.00  1.00  0.86 0.86  0.86
Lanes:       1.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  1.35 0.02  1.63
Final Sat.:  1805 3610     0     0 3610  1615     0    0     0  2201   40  2645
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.31 0.25  0.00  0.00 0.24  0.16  0.00 0.00  0.00  0.09 0.18  0.13
Crit Moves:  ****                 ****                                 ****
Green/Cycle: 0.40 0.72  0.00  0.00 0.32  0.32  0.00 0.00  0.00  0.23 0.23  0.23
Volume/Cap:  0.77 0.35  0.00  0.00 0.77  0.50  0.00 0.00  0.00  0.40 0.77  0.59
Delay/Veh:   30.7  5.3   0.0   0.0 33.9  28.4   0.0  0.0   0.0  32.9 40.8  35.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  30.7  5.3   0.0   0.0 33.9  28.4   0.0  0.0   0.0  32.9 40.8  35.3
LOS by Move:    C    A     A     A    C     C     A    A     A     C    D     D
HCM2k85thQ:    24    9     0     0   21    10     0    0     0     6   15    10
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2020 NP PM Peak Hour       Thu Oct 22, 2020 13:56:54                Page 74-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #73 Grand Ave / Glassell St and SR-22 EB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.812
Loss Time (sec):       5               Average Delay (sec/veh):        26.5
Optimal Cycle:        57               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted       Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  2  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1202   307   381  681     0   229    4   503     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1202   307   381  681     0   229    4   503     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1202   307   381  681     0   229    4   503     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1202   307   381  681     0   229    4   503     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1202   307   381  681     0   229    4   503     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.95 0.95  1.00  0.86 0.86  0.86  1.00 1.00  1.00
Lanes:       0.00 2.00  1.00  1.00 2.00  0.00  1.31 0.01  1.68  0.00 0.00  0.00
Final Sat.:     0 3610  1615  1805 3610     0  2129   18  2731     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.33  0.19  0.21 0.19  0.00  0.11 0.23  0.18  0.00 0.00  0.00
Crit Moves:       ****        ****                ****
Green/Cycle: 0.00 0.41  0.41  0.26 0.67  0.00  0.28 0.28  0.28  0.00 0.00  0.00
Volume/Cap:  0.00 0.81  0.46  0.81 0.28  0.00  0.38 0.81  0.66  0.00 0.00  0.00
Delay/Veh:    0.0 29.6  22.0  45.1  6.8   0.0  29.2 39.2  33.2   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 29.6  22.0  45.1  6.8   0.0  29.2 39.2  33.2   0.0  0.0   0.0
LOS by Move:    A    C     C     D    A     A     C    D     C     A    A     A
HCM2k85thQ:     0   28    11    20    7     0     7   19    14     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2020 NP PM Peak Hour       Thu Oct 22, 2020 13:56:55                Page 75-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #74 Grand Ave and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.675
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  1    1  0  1  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      46 1214   243   222  894    82    79   45    33   255   48   181
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   46 1214   243   222  894    82    79   45    33   255   48   181
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    46 1214   243   222  894    82    79   45    33   255   48   181
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   46 1214   243   222  894    82    79   45    33   255   48   181
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   46 1214   243   222  894    82    79   45    33   255   48   181
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 2.50  0.50  1.00 2.00  1.00  1.00 1.15  0.85  1.00 1.00  1.00
Final Sat.:  1600 4199   801  1600 3400  1600  1600 1946  1354  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.29  0.30  0.14 0.26  0.05  0.05 0.02  0.02  0.16 0.03  0.11
Crit Moves:             ****  ****                ****        ****
******************************************************************************
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #75 Grand Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.748
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        43               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include        WideBypass          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  1  1  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      88 1185   246   220  868   220   159  194    36   136  244   260
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   88 1185   246   220  868   220   159  194    36   136  244   260
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    88 1185   246   220  868   220   159  194    36   136  244   260
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   88 1185   246   220  868   220   159  194    36   136  244   260
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   88 1185   246   220  868   220   159  194    36   136  244   260
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.48  0.52  1.00 1.60  0.40  1.00 0.84  0.16  1.00 1.00  1.00
Final Sat.:  1600 4175   825  1600 2653   647  1600 1350   250  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.28  0.30  0.14 0.33  0.34  0.10 0.14  0.14  0.09 0.14  0.16
Crit Moves:             ****  ****            ****                     ****
*******************************************************************************
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #76 Grand Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.828
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        59               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     246  877   221   270  582   128   346  886   149   300 1107   201
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  246  877   221   270  582   128   346  886   149   300 1107   201
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   246  877   221   270  582   128   346  886   149   300 1107   201
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  246  877   221   270  582   128   346  886   149   300 1107   201
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  246  877   221   270  582   128   346  886   149   300 1107   201
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.40  0.60  1.00 2.00  1.00  2.00 2.57  0.43  2.00 2.54  0.46
Final Sat.:  1600 4034   966  1600 3400  1600  3200 4309   691  3200 4262   738
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.22  0.23  0.17 0.17  0.08  0.11 0.21  0.22  0.09 0.26  0.27
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #77 Grand Ave and I-5 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.518
Loss Time (sec):       5               Average Delay (sec/veh):        10.0
Optimal Cycle:        26               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  3  0  0    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1297  1001    48 1164     0     0    0     0   143    0   172
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1297  1001    48 1164     0     0    0     0   143    0   172
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1297     0    48 1164     0     0    0     0   143    0   172
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1297     0    48 1164     0     0    0     0   143    0   172
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1297     0    48 1164     0     0    0     0   143    0   172
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  1.00  0.95 0.91  1.00  1.00 1.00  1.00  0.92 1.00  0.85
Lanes:       0.00 2.00  1.00  1.00 3.00  0.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:     0 3610  1900  1805 5187     0     0    0     0  3502    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.36  0.00  0.03 0.22  0.00  0.00 0.00  0.00  0.04 0.00  0.11
Crit Moves:       ****        ****                                       ****
Green/Cycle: 0.00 0.69  0.00  0.05 0.74  0.00  0.00 0.00  0.00  0.21 0.00  0.21
Volume/Cap:  0.00 0.52  0.00  0.52 0.30  0.00  0.00 0.00  0.00  0.20 0.00  0.52
Delay/Veh:    0.0  7.5   0.0  51.3  4.3   0.0   0.0  0.0   0.0  33.0  0.0  36.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  7.5   0.0  51.3  4.3   0.0   0.0  0.0   0.0  33.0  0.0  36.8
LOS by Move:    A    A     A     D    A     A     A    A     A     C    A     D
HCM2k85thQ:     0   15     0     4    7     0     0    0     0     3    0     8
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #78 Grand Ave and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.605
Loss Time (sec):       5                Average Delay (sec/veh):        21.1
Optimal Cycle:        31                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  2    2  0  1  0  2    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     167 1888    31    34  750   532   328  200   316    20  134    97
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  167 1888    31    34  750   532   328  200   316    20  134    97
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   167 1888    31    34  750   532   328  200   316    20  134    97
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  167 1888    31    34  750   532   328  200   316    20  134    97
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  167 1888    31    34  750   532   328  200   316    20  134    97
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  0.91  0.95 0.95  0.75  0.92 1.00  0.75  0.89 0.89  0.89
Lanes:       1.00 2.95  0.05  1.00 2.00  2.00  2.00 1.00  2.00  0.16 1.07  0.77
Final Sat.:  1805 5093    84  1805 3610  2842  3502 1900  2842   270 1808  1309
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.37  0.37  0.02 0.21  0.19  0.09 0.11  0.11  0.07 0.07  0.07
Crit Moves:       ****        ****                          ****  ****
Green/Cycle: 0.20 0.61  0.61  0.03 0.45  0.63  0.18 0.18  0.18  0.12 0.12  0.12
Volume/Cap:  0.47 0.61  0.61  0.61 0.47  0.30  0.51 0.57  0.61  0.61 0.61  0.61
Delay/Veh:   36.4 12.3  12.3  65.2 19.6   8.6  37.4 39.5  39.5  44.1 44.1  44.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  36.4 12.3  12.3  65.2 19.6   8.6  37.4 39.5  39.5  44.1 44.1  44.1
LOS by Move:    D    B     B     E    B     A     D    D     D     D    D     D
HCM2k85thQ:     8   20    20     3   13     7     8   10     9     8    8     8
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #79 Grand Ave and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.793
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  2  1  0    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     165 1261    38   120  706   282   277  918    91   151  941   173
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  165 1261    38   120  706   282   277  918    91   151  941   173
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   165 1261    38   120  706   282   277  918    91   151  941   173
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  165 1261    38   120  706   282   277  918    91   151  941   173
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  165 1261    38   120  706   282   277  918    91   151  941   173
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       2.00 2.91  0.09  2.00 3.00  1.00  2.00 2.73  0.27  2.00 1.69  0.31
Final Sat.:  3200 4860   140  3200 5100  1600  3200 4567   433  3200 2803   497
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.26  0.27  0.04 0.14  0.18  0.09 0.20  0.21  0.05 0.34  0.35
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #80 Grand Ave and Chestnut Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.615
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     140 1050   182   149  664   112    93  285    62   107  333   194
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  140 1050   182   149  664   112    93  285    62   107  333   194
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   140 1050   182   149  664   112    93  285    62   107  333   194
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  140 1050   182   149  664   112    93  285    62   107  333   194
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  140 1050   182   149  664   112    93  285    62   107  333   194
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 2.56  0.44  1.00 2.57  0.43  1.00 1.64  0.36  1.00 1.26  0.74
Final Sat.:  1600 4291   709  1600 4307   693  1600 2728   572  1600 2122  1178
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.24  0.26  0.09 0.15  0.16  0.06 0.10  0.11  0.07 0.16  0.16
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #81 Grand Ave and McFadden Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.759
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        45               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     202 1150   198   138  626   168   128  476    83    86  686   151
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  202 1150   198   138  626   168   128  476    83    86  686   151
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   202 1150   198   138  626   168   128  476    83    86  686   151
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  202 1150   198   138  626   168   128  476    83    86  686   151
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  202 1150   198   138  626   168   128  476    83    86  686   151
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.56  0.44  1.00 2.37  0.63  1.00 1.70  0.30  1.00 1.64  0.36
Final Sat.:  1600 4295   705  1600 3984  1016  1600 2825   475  1600 2723   577
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.27  0.28  0.09 0.16  0.17  0.08 0.17  0.17  0.05 0.25  0.26
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #82 Grand Ave and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.909
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        92               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     242 1397   121   165  408   229   201  868    70    74 1333   173
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  242 1397   121   165  408   229   201  868    70    74 1333   173
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   242 1397   121   165  408   229   201  868    70    74 1333   173
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  242 1397   121   165  408   229   201  868    70    74 1333   173
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  242 1397   121   165  408   229   201  868    70    74 1333   173
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.76  0.24  1.00 2.00  1.00  1.00 2.78  0.22  1.00 2.66  0.34
Final Sat.:  1600 4617   383  1600 3400  1600  1600 4642   358  1600 4449   551
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.30  0.32  0.10 0.12  0.14  0.13 0.19  0.20  0.05 0.30  0.31
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #83 Grand Ave and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.704
Loss Time (sec):       0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        77               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  3  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     242  873   193   146  471   217   342  656   142   151  964   316
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  242  873   193   146  471   217   342  656   142   151  964   316
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   242  873   193   146  471   217   342  656   142   151  964   316
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  242  873   193   146  471   217   342  656   142   151  964   316
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  242  873   193   146  471   217   342  656   142   151  964   316
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.46  0.54  1.00 2.05  0.95  2.00 3.00  1.00  2.00 2.00  1.00
Final Sat.:  1600 4131   869  1600 3486  1514  3200 5100  1600  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.21  0.22  0.09 0.14  0.14  0.11 0.13  0.09  0.05 0.28  0.20
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #84 SR-55 NB Ramps and Dyer Rd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.376
Loss Time (sec):       5               Average Delay (sec/veh):         5.7
Optimal Cycle:        20               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    0  0  3  0  1    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     188    0    51     0    0     0     0 1339   681     0 1545   965
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  188    0    51     0    0     0     0 1339   681     0 1545   965
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   188    0    51     0    0     0     0 1339     0     0 1545     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  188    0    51     0    0     0     0 1339     0     0 1545     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  188    0    51     0    0     0     0 1339     0     0 1545     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.93 1.00  0.93  1.00 1.00  1.00  1.00 0.91  1.00  1.00 0.91  0.91
Lanes:       1.79 0.00  1.21  0.00 0.00  0.00  0.00 3.00  1.00  0.00 3.00  0.00
Final Sat.:  3161    0  2147     0    0     0     0 5187  1900     0 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.00  0.02  0.00 0.00  0.00  0.00 0.26  0.00  0.00 0.30  0.00
Crit Moves:  ****                             ****                   ****
Green/Cycle: 0.16 0.00  0.16  0.00 0.00  0.00  0.00 0.79  0.00  0.00 0.79  0.00
Volume/Cap:  0.38 0.00  0.15  0.00 0.00  0.00  0.00 0.33  0.00  0.00 0.38  0.00
Delay/Veh:   38.1  0.0  36.3   0.0  0.0   0.0   0.0  3.0   0.0   0.0  3.1   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  38.1  0.0  36.3   0.0  0.0   0.0   0.0  3.0   0.0   0.0  3.1   0.0
LOS by Move:    D    A     D     A    A     A     A    A     A     A    A     A
HCM2k85thQ:     5    0     2     0    0     0     0    7     0     0    8     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #85 Cambridge St and La Veta Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.459
Loss Time (sec):       5                Average Delay (sec/veh):        12.5
Optimal Cycle:         0                Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0    0  0  1  0  1    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     191  266     0     0  196   181   219    0   144     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  191  266     0     0  196   181   219    0   144     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   191  266     0     0  196   181   219    0   144     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  191  266     0     0  196   181   219    0   144     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  191  266     0     0  196   181   219    0   144     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:   535  579     0     0  563   631   500    0   595     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.36 0.46  xxxx  xxxx 0.35  0.29  0.44 xxxx  0.24  xxxx xxxx  xxxx
Crit Moves:       ****             ****        ****
Delay/Veh:   12.7 13.6   0.0   0.0 12.0  10.3  14.7  0.0  10.2   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  12.7 13.6   0.0   0.0 12.0  10.3  14.7  0.0  10.2   0.0  0.0   0.0
LOS by Move:    B    B     *     *    B     B     B    *     B     *    *     *
ApproachDel:       13.3             11.2             12.9           xxxxxx
Delay Adj:         1.00             1.00             1.00            xxxxx
ApprAdjDel:        13.3             11.2             12.9           xxxxxx
LOS by Appr:          B                B                B                *
AllWayAvgQ:   0.5  0.8   0.0   0.0  0.5   0.4   0.7  0.0   0.3   0.0  0.0   0.0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #86 Cambridge St and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.488
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        23               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:            Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   219    0    76   141  246     0     0  273   340
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   219    0    76   141  246     0     0  273   340
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   219    0    76   141  246     0     0  273   340
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   219    0    76   141  246     0     0  273   340
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   219    0    76   141  246     0     0  273   340
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  1.00 2.00  0.00  0.00 1.00  1.00
Final Sat.:     0    0     0  1600    0  1600  1600 3400     0     0 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.14 0.00  0.05  0.09 0.07  0.00  0.00 0.16  0.21
Crit Moves:                   ****             ****                     ****
******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #87 Mabury St and 1st Street
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.703
Loss Time (sec):       0               Average Delay (sec/veh):        26.1
Optimal Cycle:        77               Level Of Service:                  C
*******************************************************************************
Street Name:              Mabury                          1st Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    1  0  1! 0  1    0  0  2  1  0    1  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:      25    0   256   207   88   390     0 1512    24    40  549     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25    0   256   207   88   390     0 1512    24    40  549     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25    0   256   207   88   390     0 1512    24    40  549     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   25    0   256   207   88   390     0 1512    24    40  549     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   25    0   256   207   88   390     0 1512    24    40  549     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 1.00  0.85  0.90 0.90  0.90  1.00 0.91  0.91  0.95 0.91  0.91
Lanes:       1.00 0.00  1.00  1.27 0.23  1.50  0.00 2.95  0.05  1.00 3.00  0.00
Final Sat.:  1805    0  1615  2171  390  2576     0 5096    81  1805 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.00  0.16  0.10 0.23  0.15  0.00 0.30  0.30  0.02 0.11  0.00
Crit Moves:             ****        ****              ****        ****
Green/Cycle: 0.23 0.00  0.23  0.32 0.32  0.32  0.00 0.42  0.42  0.03 0.45  0.00
Volume/Cap:  0.06 0.00  0.70  0.30 0.70  0.47  0.00 0.70  0.70  0.70 0.23  0.00
Delay/Veh:   30.5  0.0  41.7  25.6 32.1  27.4   0.0 24.8  24.8  80.7 16.7   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  30.5  0.0  41.7  25.6 32.1  27.4   0.0 24.8  24.8  80.7 16.7   0.0
LOS by Move:    C    A     D     C    C     C     A    C     C     F    B     A
HCM2k85thQ:     1    0    13     6   17    10     0   22    22     4    6     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #88 Tustin St and La Veta Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.444
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        21               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      46 1033   245    90  801    15    13    5    20   183    5   112
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   46 1033   245    90  801    15    13    5    20   183    5   112
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    46 1033   245    90  801    15    13    5    20   183    5   112
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   46 1033   245    90  801    15    13    5    20   183    5   112
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   46 1033   245    90  801    15    13    5    20   183    5   112
OvlAdjVol:                                                                  22
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.42  0.58  1.00 2.94  0.06  1.00 1.00  1.00  1.95 0.05  1.00
Final Sat.:  1600 4080   920  1600 4912    88  1600 1700  1600  3115   85  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.25  0.27  0.06 0.16  0.17  0.01 0.00  0.01  0.06 0.06  0.07
OvlAdjV/S:                                                                  0.01
Crit Moves:             ****  ****                          ****       ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #89 Tustin St and SR-22 WB On-Ramp
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.446
Loss Time (sec):       5                Average Delay (sec/veh):        12.1
Optimal Cycle:        36                Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include           Include         Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  0    0  0  2  1  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     532 1529     0     0  711   365     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  532 1529     0     0  711   365     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   532 1529     0     0  711   365     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  532 1529     0     0  711   365     0    0     0     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  532 1529     0     0  711   365     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  1.00  1.00 0.86  0.86  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  0.00 0.00  0.00
Final Sat.:  3502 3610     0     0 3282  1641     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.42  0.00  0.00 0.22  0.22  0.00 0.00  0.00  0.00 0.00  0.00
Crit Moves:       ****
Green/Cycle: 0.63 0.95  0.00  0.00 0.32  0.32  0.00 0.00  0.00  0.00 0.00  0.00
Volume/Cap:  0.24 0.45  0.00  0.00 0.67  0.69  0.00 0.00  0.00  0.00 0.00  0.00
Delay/Veh:    8.2  0.3   0.0   0.0 30.5  31.0   0.0  0.0   0.0   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   8.2  0.3   0.0   0.0 30.5  31.0   0.0  0.0   0.0   0.0  0.0   0.0
LOS by Move:    A    A     A     A    C     C     A    A     A     A    A     A
HCM2k85thQ:     6    4     0     0   17    18     0    0     0     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #90 Tustin St and SR-22 EB Off-Ramp / Seba Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.719
Loss Time (sec):       5                Average Delay (sec/veh):        23.7
Optimal Cycle:        41                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  1  0    1  0  3  0  0    1  0  1! 0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1547     4    52  707     0   458   41   581    28    0    67
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1547     4    52  707     0   458   41   581    28    0    67
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1547     4    52  707     0   458   41   581    28    0    67
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1547     4    52  707     0   458   41   581    28    0    67
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1547     4    52  707     0   458   41   581    28    0    67
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.91  0.10 0.91  1.00  0.90 0.90  0.90  0.89 1.00  0.89
Lanes:       0.00 2.99  0.01  1.00 3.00  0.00  1.41 0.07  1.52  0.29 0.00  0.71
Final Sat.:     0 5174    13   182 5187     0  2408  125  2595   499    0  1195
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.30  0.30  0.29 0.14  0.00  0.19 0.33  0.22  0.06 0.00  0.06
Crit Moves:       ****                          ****        ****
Green/Cycle: 0.00 0.42  0.42  0.42 0.42  0.00  0.46 0.46  0.46  0.08 0.00  0.08
Volume/Cap:  0.00 0.72  0.72  0.69 0.33  0.00  0.42 0.72  0.49  0.72 0.00  0.72
Delay/Veh:    0.0 25.5  25.5  46.8 19.8   0.0  18.4 23.7  19.2  62.4  0.0  62.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 25.5  25.5  46.8 19.8   0.0  18.4 23.7  19.2  62.4  0.0  62.4
LOS by Move:    A    C     C     D    B     A     B    C     B     E    A     E
HCM2k85thQ:     0   23    23     4    8     0    10   22    13     7    0     7
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
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2020 NP PM Peak Hour       Thu Oct 22, 2020 13:57:04                Page 92-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #91 Tustin Ave and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.614
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     239 1275   113   327  862    99    80  180   147    94  208   196
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  239 1275   113   327  862    99    80  180   147    94  208   196
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   239 1275   113   327  862    99    80  180   147    94  208   196
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  239 1275   113   327  862    99    80  180   147    94  208   196
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  239 1275   113   327  862    99    80  180   147    94  208   196
OvlAdjVol:                                                                  32
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.76  0.24  2.00 2.69  0.31  1.00 1.10  0.90  1.00 1.00  1.00
Final Sat.:  3200 4609   391  3200 4506   494  1600 1861  1439  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.28  0.29  0.10 0.19  0.20  0.05 0.10  0.10  0.06 0.12  0.12
OvlAdjV/S:                                                                0.02
Crit Moves:             ****  ****            ****                 ****
******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #92 Tustin Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.647
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        32               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     163  789   121   183 1444   100    61  192   113   125  157   148
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  163  789   121   183 1444   100    61  192   113   125  157   148
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   163  789   121   183 1444   100    61  192   113   125  157   148
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  163  789   121   183 1444   100    61  192   113   125  157   148
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  163  789   121   183 1444   100    61  192   113   125  157   148
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 2.60  0.40  2.00 2.81  0.19  1.00 1.26  0.74  1.00 1.03  0.97
Final Sat.:  1600 4362   638  3200 4689   311  1600 2114  1186  1600 1747  1553
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.18  0.19  0.06 0.31  0.32  0.04 0.09  0.10  0.08 0.09  0.10
Crit Moves:  ****                         ****             ****  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #93 Tustin Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.717
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        39               Level Of Service:                   C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     216  926   476   346  371    37   444  872   118   229  753   419
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  216  926   476   346  371    37   444  872   118   229  753   419
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   216  926   476   346  371    37   444  872   118   229  753   419
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  216  926   476   346  371    37   444  872   118   229  753   419
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  216  926   476   346  371    37   444  872   118   229  753   419
OvlAdjVol:                362                                              246
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.00  1.00  2.00 2.73  0.27  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 3400  1600  3200 4565   435  3200 5100  1600  3200 5100  1600
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.27  0.30  0.11 0.08  0.08  0.14 0.17  0.07  0.07 0.15  0.26
OvlAdjV/S:                0.23                                             0.15
Crit Moves:       ****         ****              ****                 ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #94 Tustin Ave and 4th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.692
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       55  598   194   459  339   124   180  642    33    88  596   367
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    55  598   194   459  339   124   180  642    33    88  596   367
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     55  598   194   459  339   124   180  642    33    88  596   367
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    55  598   194   459  339   124   180  642    33    88  596   367
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    55  598   194   459  339   124   180  642    33    88  596   367
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       1.00 2.27  0.73  2.00 2.00  1.00  1.00 2.85  0.15  1.00 2.00  1.00
Final Sat.:  1600 3824  1176  3200 3400  1600  1600 4765   235  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.16  0.16  0.14 0.10  0.08  0.11 0.13  0.14  0.06 0.18  0.23
Crit Moves:       ****        ****             ****                       ****
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #95 SR-55 SB Ramps / Auto Mall Dr and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.583
Loss Time (sec):       5               Average Delay (sec/veh):        25.1
Optimal Cycle:        29               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    1  0  1  0  1    1  0  3  0  1    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     377   30   398   110   50    37    35 1258   354   385 1003   120
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  377   30   398   110   50    37    35 1258   354   385 1003   120
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   377   30   398   110   50    37    35 1258     0   385 1003   120
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  377   30   398   110   50    37    35 1258     0   385 1003   120
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  377   30   398   110   50    37    35 1258     0   385 1003   120
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.75  0.95 1.00  0.85  0.95 0.91  1.00  0.92 0.90  0.90
Lanes:       1.85 0.15  2.00  1.00 1.00  1.00  1.00 3.00  1.00  2.00 2.68  0.32
Final Sat.:  3365  268  2842  1805 1900  1615  1805 5187  1900  3502 4559   545
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11  0.14  0.06 0.03  0.02  0.02 0.24  0.00  0.11 0.22  0.22
Crit Moves:             ****  ****                   ****        ****
Green/Cycle: 0.24 0.24  0.24  0.10 0.10  0.10  0.05 0.42  0.00  0.19 0.56  0.56
Volume/Cap:  0.47 0.47  0.58  0.58 0.25  0.22  0.40 0.58  0.00  0.58 0.40  0.40
Delay/Veh:   32.9 32.9  34.8  47.3 41.8  41.7  49.0 22.9   0.0  38.3 12.7  12.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  32.9 32.9  34.8  47.3 41.8  41.7  49.0 22.9   0.0  38.3 12.7  12.7
LOS by Move:    C    C     C     D    D     D     D    C     A     D    B     B
HCM2k85thQ:     9    9    11     6    3     2     2   17     0    10   11    11
*******************************************************************************
```

Note: Queue reported is the number of cars per lane.
****

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #96 SR-55 NB Ramps / Del Amo Ave and Newport Avenue
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.525
Loss Time (sec):       5                Average Delay (sec/veh):        27.4
Optimal Cycle:        26                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  3  0  1    2  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     583  174    34     8   97   373   104   36    21    23  348    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  583  174    34     8   97   373   104   36    21    23  348    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   583  174    34     8   97   373   104   36    21    23  348    16
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  583  174    34     8   97   373   104   36    21    23  348    16
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  583  174    34     8   97   373   104   36    21    23  348    16
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.89  0.89  0.95 0.91  0.85  0.92 0.90  0.90  0.95 0.94  0.94
Lanes:       2.00 2.51  0.49  1.00 3.00  1.00  2.00 1.26  0.74  1.00 1.91  0.09
Final Sat.:  3502 4235   828  1805 5187  1615  3502 2155  1257  1805 3427   158
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.04  0.04  0.00 0.02  0.23  0.03 0.02  0.02  0.01 0.10  0.10
Crit Moves:  ****                      ****  ****                   ****
Green/Cycle: 0.32 0.63  0.63  0.07 0.38  0.44  0.06 0.14  0.14  0.11 0.19  0.19
Volume/Cap:  0.53 0.07  0.07  0.07 0.05  0.53  0.53 0.12  0.12  0.12 0.53  0.53
Delay/Veh:   28.5  7.1   7.1  43.8 19.4  21.1  48.5 37.6  37.6  40.6 37.0  37.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  28.5  7.1   7.1  43.8 19.4  21.1  48.5 37.6  37.6  40.6 37.0  37.0
LOS by Move:    C    A     A     D    B     C     D    D     D     D    D     D
HCM2k85thQ:    12    1     1     0    1    13     4    1     1     1    9     9
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #97 Red Hill Ave and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.667
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Ovl            Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     159 1146   182   145  289   234   327  838   102    62  803   392
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  159 1146   182   145  289   234   327  838   102    62  803   392
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   159 1146   182   145  289   234   327  838   102    62  803   392
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  159 1146   182   145  289   234   327  838   102    62  803   392
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  159 1146   182   145  289   234   327  838   102    62  803   392
OvlAdjVol:                                 70                22
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.22  0.11  0.05 0.06  0.15  0.10 0.16  0.06  0.02 0.16  0.25
OvlAdjV/S:                                 0.04              0.01
Crit Moves:       ****        ****              ****                        ****
******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #98 Red Hill Ave and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.588
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        28               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  1  0    2  0  2  1  0    1  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     382 1308   150    58  223   283   222  603    94    25  525    69
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  382 1308   150    58  223   283   222  603    94    25  525    69
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   382 1308   150    58  223   283   222  603    94    25  525    69
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  382 1308   150    58  223   283   222  603    94    25  525    69
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  382 1308   150    58  223   283   222  603    94    25  525    69
OvlAdjVol:                                                                  40
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.59  0.41  2.00 2.00  1.00  1.00 2.60  0.40  2.00 3.00  1.00
Final Sat.:  3200 6042   658  3200 3400  1600  1600 4353   647  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.22  0.23  0.02 0.07  0.18  0.14 0.14  0.15  0.01 0.10  0.04
OvlAdjV/S:                                                                  0.03
Crit Moves:  ****                      ****  ****                 ****
*******************************************************************************
```

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2020 NP PM Peak Hour       Thu Oct 22, 2020 13:57:09              Page 100-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #99 Red Hill Ave and Dyer Rd / barranca Pkwy
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.563
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  4  0  1    2  0  4  0  1    2  0  3  1  0    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     356 1339   345   185  313   147   203  753    99   127  966   282
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  356 1339   345   185  313   147   203  753    99   127  966   282
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   356 1339   345   185  313   147   203  753    99   127  966   282
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  356 1339   345   185  313   147   203  753    99   127  966   282
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  356 1339   345   185  313   147   203  753    99   127  966   282
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 4.00  1.00  2.00 4.00  1.00  2.00 3.54  0.46  2.00 4.00  1.00
Final Sat.:  3200 6800  1600  3200 6800  1600  3200 5956   744  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.20  0.22  0.06 0.05  0.09  0.06 0.13  0.13  0.04 0.14  0.18
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #100 Red Hill Ave and Alton Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.671
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      27 1499   217   124  528     4   132  324   166   433   74   267
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   27 1499   217   124  528     4   132  324   166   433   74   267
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    27 1499   217   124  528     4   132  324   166   433   74   267
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   27 1499   217   124  528     4   132  324   166   433   74   267
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   27 1499   217   124  528     4   132  324   166   433   74   267
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 3400  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.29  0.14  0.08 0.10  0.00  0.08 0.10  0.10  0.14 0.04  0.17
Crit Moves:       ****        ****             ****                       ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #101 Red Hill Ave and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.657
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ignore           Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     125  809    10   286  594  1042   597  275    42    39  818   574
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  125  809    10   286  594  1042   597  275    42    39  818   574
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Volume:   125  809    10   286  594     0   597  275    42    39  818     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  125  809    10   286  594     0   597  275    42    39  818     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  125  809    10   286  594     0   597  275    42    39  818     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.96  0.04  2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 4941    59  3200 5100  1600  3200 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.16  0.17  0.09 0.12  0.00  0.19 0.05  0.03  0.02 0.16  0.00
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #102 Red Hill Ave and Main St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.774
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        47               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     416  897   242    74  538   292   198  705   191   279 1589    89
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  416  897   242    74  538   292   198  705   191   279 1589    89
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   416  897   242    74  538   292   198  705   191   279 1589    89
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  416  897   242    74  538   292   198  705   191   279 1589    89
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  416  897   242    74  538   292   198  705   191   279 1589    89
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.36  0.64  2.00 2.84  0.16
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 3977  1023  3200 4745   255
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.26  0.15  0.02 0.16  0.18  0.06 0.18  0.19  0.09 0.33  0.35
Crit Moves:  ****                     ****  ****                     ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #103 I-5 SB Ramps and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.431
Loss Time (sec):       5               Average Delay (sec/veh):        18.9
Optimal Cycle:        22               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   278    0    61   561  634     0     0  668   183
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   278    0    61   561  634     0     0  668   183
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   278    0    61   561  634     0     0  668   183
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   278    0    61   561  634     0     0  668   183
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   278    0    61   561  634     0     0  668   183
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.85  0.92 0.91  1.00  1.00 0.88  0.88
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 2.35  0.65
Final Sat.:     0    0     0  3502    0  1615  3502 5187     0     0 3941  1080
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.08 0.00  0.04  0.16 0.12  0.00  0.00 0.17  0.17
Crit Moves:                   ****             ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.18 0.00  0.56  0.37 0.77  0.00  0.00 0.39  0.39
Volume/Cap:  0.00 0.00  0.00  0.43 0.00  0.07  0.43 0.16  0.00  0.00 0.43  0.43
Delay/Veh:    0.0  0.0   0.0  36.6  0.0  10.3  23.7  3.1   0.0   0.0 22.3  22.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

```
AdjDel/Veh:   0.0  0.0   0.0  36.6  0.0  10.3  23.7  3.1   0.0   0.0 22.3  22.3
LOS by Move:    A    A     A     D    A     B     C    A     A     A    C     C
HCM2k85thQ:     0    0     0     7    0     1    10    3     0     0   11    11
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #104 Tustin Ranch Rd and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.606
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   653    0    45    54 1795     0     0  548   236
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   653    0    45    54 1795     0     0  548   236
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   653    0    45    54 1795     0     0  548   236
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   653    0    45    54 1795     0     0  548   236
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   653    0    45    54 1795     0     0  548   236
OvlAdjVol:                                                                   0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3200    0  1600  3200 5100     0     0 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.20 0.00  0.03  0.02 0.35  0.00  0.00 0.11  0.15
OvlAdjV/S:                                                                0.00
Crit Moves:                    ****                 ****        ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #105 Von Karman Ave and Barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.874
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        74               Level Of Service:                    D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  1  0    2  0  2  0  2    2  0  3  0  1    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     224 1290   281    67  343   236   560 1023   143   204  646   220
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  224 1290   281    67  343   236   560 1023   143   204  646   220
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   224 1290   281    67  343   236   560 1023   143   204  646   220
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  224 1290   281    67  343   236   560 1023   143   204  646   220
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  224 1290   281    67  343   236   560 1023   143   204  646   220
OvlAdjVol:                                 0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 1.64  0.36  2.00 2.00  2.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 2728   572  3200 3400  3200  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.47  0.49  0.02 0.10  0.07  0.17 0.20  0.09  0.06 0.10  0.14
OvlAdjV/S:                                 0.00
Crit Moves:             ****  ****             ****                       ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #106 Red Hill Avenue and El Camino Real
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.624
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        31               Level Of Service:                  B
******************************************************************************
Street Name:         Red Hill Avenue                   El Camino Real
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    1  0  2  1  0    1  0  1  0  1    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     415 1315   242    20  728    96    70  153   201   199  329    38
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  415 1315   242    20  728    96    70  153   201   199  329    38
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   415 1315   242    20  728    96    70  153   201   199  329    38
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  415 1315   242    20  728    96    70  153   201   199  329    38
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  415 1315   242    20  728    96    70  153   201   199  329    38
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       2.00 3.00  1.00  1.00 2.65  0.35  1.00 1.00  1.00  1.00 0.90  0.10
Final Sat.:  3200 5100  1600  1600 4441   559  1600 1700  1600  1600 1434   166
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.26  0.15  0.01 0.16  0.17  0.04 0.09  0.13  0.12 0.23  0.23
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #107 Red Hill Avenue and I-5 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.626
Loss Time (sec):       5               Average Delay (sec/veh):        23.3
Optimal Cycle:        32               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 NB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  3  0  1    0  0  0  0  0    1  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     272 1557     0     0  939   190     0    0     0   256   96   415
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  272 1557     0     0  939   190     0    0     0   256   96   415
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   272 1557     0     0  939   190     0    0     0   256   96   415
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  272 1557     0     0  939   190     0    0     0   256   96   415
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  272 1557     0     0  939   190     0    0     0   256   96   415
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.85  1.00 1.00  1.00  0.83 0.83  0.83
Lanes:       1.00 3.00  0.00  0.00 3.00  1.00  0.00 0.00  0.00  1.45 0.55  1.00
Final Sat.:  1805 5187     0     0 5187  1615     0    0     0  2292  860  1576
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.30  0.00  0.00 0.18  0.12  0.00 0.00  0.00  0.11 0.11  0.26
Crit Moves:  ****                  ****                                    ****
Green/Cycle: 0.24 0.53  0.00  0.00 0.29  0.29  0.00 0.00  0.00  0.42 0.42  0.42
Volume/Cap:  0.63 0.57  0.00  0.00 0.63  0.41  0.00 0.00  0.00  0.27 0.27  0.63
Delay/Veh:   36.8 16.1   0.0   0.0 31.7  29.2   0.0  0.0   0.0  19.0 19.0  23.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

```
AdjDel/Veh:  36.8 16.1   0.0   0.0 31.7  29.2   0.0  0.0   0.0  19.0 19.0  23.8
LOS by Move:    D    B     A     A    C     C     A    A     A     B    B     C
HCM2k85thQ:    13   18     0     0   15     8     0    0     0     6    6    17
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
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------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #108 Red Hill Avenue and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.708
Loss Time (sec):       5               Average Delay (sec/veh):        22.8
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 SB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    1  0  3  0  0    0  1  0  0  1    0  0  0  0  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       0 1521   483   352  846     0   309    3   277     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1521   483   352  846     0   309    3   277     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1521   483   352  846     0   309    3   277     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1521   483   352  846     0   309    3   277     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1521   483   352  846     0   309    3   277     0    0     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  0.95 0.91  1.00  0.92 0.92  0.85  1.00 1.00  1.00
Lanes:       0.00 4.00  1.00  1.00 3.00  0.00  0.99 0.01  1.00  0.00 0.00  0.00
Final Sat.:     0 6916  1615  1805 5187     0  1733   17  1615     0    0     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.22  0.30  0.20 0.16  0.00  0.18 0.18  0.17  0.00 0.00  0.00
Crit Moves:             ****  ****                 ****
Green/Cycle: 0.00 0.42  0.42  0.28 0.70  0.00  0.25 0.25  0.25  0.00 0.00  0.00
Volume/Cap:  0.00 0.52  0.71  0.71 0.23  0.00  0.71 0.71  0.68  0.00 0.00  0.00
Delay/Veh:    0.0 21.5  27.2  37.3  5.5   0.0  39.3 39.3  38.4   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 21.5  27.2  37.3  5.5   0.0  39.3 39.3  38.4   0.0  0.0   0.0
LOS by Move:    A    C     C     D    A     A     D    D     D     A    A     A
HCM2k85thQ:     0   15    20    17    5     0    15   15    13     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #109 Red Hill Avenue and Nisson Road
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.702
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        37               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    Nisson Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30 1583    32   168  865    87   247   90    40    48   83   141
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30 1583    32   168  865    87   247   90    40    48   83   141
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    30 1583    32   168  865    87   247   90    40    48   83   141
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   30 1583    32   168  865    87   247   90    40    48   83   141
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   30 1583    32   168  865    87   247   90    40    48   83   141
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.92  0.08  1.00 2.73  0.27  1.00 0.69  0.31  1.00 0.37  0.63
Final Sat.:  1600 6573   127  1600 4561   439  1600 1108   492  1600  593  1007
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.24  0.25  0.11 0.19  0.20  0.15 0.08  0.08  0.03 0.14  0.14
Crit Moves:             ****  ****             ****                   ****
******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #110 Red Hill Avenue and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.785
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        49               Level Of Service:                    C
*******************************************************************************
Street Name:         Red Hill Avenue                   Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     287 1395   100   136  422   176   112  269   111   205  682   178
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  287 1395   100   136  422   176   112  269   111   205  682   178
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   287 1395   100   136  422   176   112  269   111   205  682   178
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  287 1395   100   136  422   176   112  269   111   205  682   178
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  287 1395   100   136  422   176   112  269   111   205  682   178
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.80  0.20  1.00 2.12  0.88  1.00 1.42  0.58  2.00 1.59  0.41
Final Sat.:  1600 4679   321  1600 3587  1413  1600 2365   935  3200 2638   662
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.30  0.31  0.09 0.12  0.12  0.07 0.11  0.12  0.06 0.26  0.27
Crit Moves:             ****  ****             ****                    ****
*******************************************************************************
```

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--------------------------------------------------------------------------------
                          Santa Ana Circulation Element
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #111 Red Hill Avenue and Valencia Avenue
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.549
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        26               Level Of Service:                    A
********************************************************************************
Street Name:         Red Hill Avenue                 Valencia Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  1  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     220 1637   270   109  438    49    70  189    83   118  171   113
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  220 1637   270   109  438    49    70  189    83   118  171   113
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   220 1637   270   109  438    49    70  189    83   118  171   113
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  220 1637   270   109  438    49    70  189    83   118  171   113
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  220 1637   270   109  438    49    70  189    83   118  171   113
OvlAdjVol:               237                                                 4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.43  0.57  1.00 2.70  0.30  1.00 1.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5794   906  1600 4517   483  1600 1700  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.28  0.30  0.07 0.10  0.10  0.04 0.11  0.05  0.04 0.10  0.07
OvlAdjV/S:               0.26                                                0.00
Crit Moves:       ****        ****                 ****        ****
********************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #112 Tustin Ranch Road and Warner Avenue North
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.757
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Street Name:        Tustin Ranch Road               Warner Avenue North
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:            Ovl            Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    2  0  3  0  0    0  0  0  0  0    3  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1623   956   351  516     0     0    0     0   479    0   433
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1623   956   351  516     0     0    0     0   479    0   433
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1623   956   351  516     0     0    0     0   479    0   433
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1623   956   351  516     0     0    0     0   479    0   433
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1623   956   351  516     0     0    0     0   479    0   433
OvlAdjVol:              796                                                82
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 3.00  1.00  2.00 3.00  0.00  0.00 0.00  0.00  3.00 0.00  2.00
Final Sat.:     0 5100  1600  3200 5100     0     0    0     0  4800    0  3200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.32  0.60  0.11 0.10  0.00  0.00 0.00  0.00  0.10 0.00  0.14
OvlAdjV/S:              0.50                                                0.03
Crit Moves:             ****  ****                          ****
******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #113 Tustin Ranch Road and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.630
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Street Name:        Tustin Ranch Road                 Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     762 3319   349   454 1206   782   365  447   255   287 1646  1304
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  762 3319   349   454 1206   782   365  447   255   287 1646  1304
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   762 3319   349   454 1206   782   365  447   255   287 1646  1304
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  762 3319   349   454 1206   782   365  447   255   287 1646  1304
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  762 3319   349   454 1206   782   365  447   255   287 1646  1304
OvlAdjVol:               206              600                              1077
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 1.27  0.73  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 2138  1162  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.65  0.22  0.14 0.24  0.49  0.11 0.21  0.22  0.09 0.48  0.82
OvlAdjV/S:               0.13              0.37                              0.67
Crit Moves:       ****         ****              ****                        ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #114 SR-55 SB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.794
Loss Time (sec):       5               Average Delay (sec/veh):        21.5
Optimal Cycle:        53               Level Of Service:                  C
******************************************************************************
Street Name:          SR-55 SB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  1! 0  1    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   434    0   259     0  862   581   372 1069     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   434    0   259     0  862   581   372 1069     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   434    0   259     0  862   581   372 1069     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   434    0   259     0  862   581   372 1069     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   434    0   259     0  862   581   372 1069     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.74 1.00  0.73  1.00 0.86  0.86  0.95 0.91  1.00
Lanes:       0.00 0.00  0.00  1.62 0.00  1.38  0.00 2.00  1.00  1.00 3.00  0.00
Final Sat.:     0    0     0  2276    0  1912     0 3251  1625  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.19 0.00  0.14  0.00 0.27  0.36  0.21 0.21  0.00
Crit Moves:                   ****                          ****  ****
Green/Cycle: 0.00 0.00  0.00  0.24 0.00  0.48  0.00 0.45  0.45  0.26 0.71  0.00
Volume/Cap:  0.00 0.00  0.00  0.79 0.00  0.28  0.00 0.59  0.79  0.79 0.29  0.00
Delay/Veh:    0.0  0.0   0.0  40.8  0.0  15.7   0.0 20.9  26.0  43.6  5.3   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  40.8  0.0  15.7   0.0 20.9  26.0  43.6  5.3   0.0
LOS by Move:    A    A     A     D    A     B     A    C     C     D    A     A
```

```
HCM2k85thQ:     0    0     0    15    0     6     0   17    27    19    7     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
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2020 NP PM Peak Hour       Thu Oct 22, 2020 13:57:17              Page 116-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #115 SR-55 NB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.809
Loss Time (sec):       5               Average Delay (sec/veh):        19.5
Optimal Cycle:        56               Level Of Service:                  B
******************************************************************************
Street Name:          SR-55 NB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:         Permitted       Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    1  0  3  0  0    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     328   16   298     0    0     0   229 1048     0     0 1132   716
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  328   16   298     0    0     0   229 1048     0     0 1132   716
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   328   16   298     0    0     0   229 1048     0     0 1132   716
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  328   16   298     0    0     0   229 1048     0     0 1132   716
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  328   16   298     0    0     0   229 1048     0     0 1132   716
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.86  0.86  1.00 1.00  1.00  0.95 0.91  1.00  1.00 0.86  0.86
Lanes:       1.50 0.05  1.45  0.00 0.00  0.00  1.00 3.00  0.00  0.00 2.00  1.00
Final Sat.:  2444   79  2370     0    0     0  1805 5187     0     0 3257  1629
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.20  0.13  0.00 0.00  0.00  0.13 0.20  0.00  0.00 0.35  0.44
Crit Moves:       ****                          ****                     ****
Green/Cycle: 0.25 0.25  0.25  0.00 0.00  0.00  0.16 0.70  0.00  0.00 0.54  0.54
Volume/Cap:  0.54 0.81  0.50  0.00 0.00  0.00  0.81 0.29  0.00  0.00 0.64  0.81
Delay/Veh:   33.0 41.5  32.5   0.0  0.0   0.0  56.5  5.7   0.0   0.0 16.4  20.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  33.0 41.5  32.5   0.0  0.0   0.0  56.5  5.7   0.0   0.0 16.4  20.8
LOS by Move:    C    D     C     A    A     A     E    A     A     A    B     C
HCM2k85thQ:    10   18     9     0    0     0    14    7     0     0   21    31
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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APPENDIX D.3

ANALYSIS WORKSHEETS –
2045 NP (AM Peak Hour)

Santa Ana Circulation Element

Scenario Report

Scenario:	2045 NP AM Peak Hour
Command:	Default Command
Volume:	2045 NP AM
Geometry:	MPAH
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2045 NP AM Peak Hour Thu Oct 22, 2020 14:09:46 Page 2-1

Santa Ana Circulation Element

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 1 Euclid St and 1st St	D	xxxxx	0.858	D	xxxxx	0.858	+ 0.000 V/C
# 2 Euclid St and McFadden Ave	E	xxxxx	0.975	E	xxxxx	0.975	+ 0.000 V/C
# 3 Euclid St and Edinger Ave	E	xxxxx	0.991	E	xxxxx	0.991	+ 0.000 V/C
# 4 Newhope St and Hazard Ave	C	xxxxx	0.777	C	xxxxx	0.777	+ 0.000 V/C
# 5 Newhope St and McFadden Ave	D	xxxxx	0.827	D	xxxxx	0.827	+ 0.000 V/C
# 6 Harbor Blvd and SR-22 WB Off-R	C	28.4	0.738	C	28.4	0.738	+ 0.000 D/V
# 7 Trask Avenue and SR-22 EB On-R	B	12.0	0.516	B	12.0	0.516	+ 0.000 D/V
# 8 Harbor Blvd and Westminster Av	E	xxxxx	0.985	E	xxxxx	0.985	+ 0.000 V/C
# 9 Harbor Blvd and 1st St	C	xxxxx	0.789	C	xxxxx	0.789	+ 0.000 V/C
# 10 Harbor Blvd and McFadden Ave	C	xxxxx	0.788	C	xxxxx	0.788	+ 0.000 V/C
# 11 Harbor Blvd and Edinger Ave	D	xxxxx	0.836	D	xxxxx	0.836	+ 0.000 V/C
# 12 Harbor Blvd and Warner Ave	C	xxxxx	0.789	C	xxxxx	0.789	+ 0.000 V/C
# 13 Harbor Blvd and Segerstrom Ave	E	xxxxx	0.965	E	xxxxx	0.965	+ 0.000 V/C
# 14 MacArthur Blvd and Hyland Ave	B	xxxxx	0.611	B	xxxxx	0.611	+ 0.000 V/C
# 15 MacArthur Blvd and Harbor Blvd	C	xxxxx	0.736	C	xxxxx	0.736	+ 0.000 V/C
# 16 Harbor Blvd and Sunflower Ave	C	xxxxx	0.704	C	xxxxx	0.704	+ 0.000 V/C
# 17 Harbor Blvd and I-405 NB Off-R	B	18.0	0.569	B	18.0	0.569	+ 0.000 D/V
# 18 Harbor Blvd and I-405 SB Off-R	B	15.0	0.612	B	15.0	0.612	+ 0.000 D/V
# 19 Fairview St and Civic Center D	C	xxxxx	0.741	C	xxxxx	0.741	+ 0.000 V/C
# 20 Fairview St and 1st St	D	xxxxx	0.859	D	xxxxx	0.859	+ 0.000 V/C
# 21 Fairview St and McFadden Ave	C	xxxxx	0.799	C	xxxxx	0.799	+ 0.000 V/C
# 22 Fairview St and Edinger Ave	D	xxxxx	0.861	D	xxxxx	0.861	+ 0.000 V/C
# 23 Fairview St and Warner Ave	D	xxxxx	0.816	D	xxxxx	0.816	+ 0.000 V/C
# 24 Fairview St and MacArthur Blvd	B	xxxxx	0.684	B	xxxxx	0.684	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 25 Fairview Rd and Sunflower Ave	B	xxxxx	0.697	B	xxxxx	0.697	+ 0.000 V/C
# 26 Greenville St and Edinger Ave	C	xxxxx	0.774	C	xxxxx	0.774	+ 0.000 V/C
# 27 Greenville St and Segerstrom A	D	xxxxx	0.843	D	xxxxx	0.843	+ 0.000 V/C
# 28 Raitt St and McFadden Ave	C	xxxxx	0.778	C	xxxxx	0.778	+ 0.000 V/C
# 29 Raitt St and Edinger Ave	E	xxxxx	0.990	E	xxxxx	0.990	+ 0.000 V/C
# 30 Bear St and MacArthur Blvd	C	xxxxx	0.707	C	xxxxx	0.707	+ 0.000 V/C
# 31 Bristol St and 17th St	D	xxxxx	0.869	D	xxxxx	0.869	+ 0.000 V/C
# 32 Bristol St and Civic Center Dr	E	xxxxx	0.942	E	xxxxx	0.942	+ 0.000 V/C
# 33 Bristol St and Santa Ana Blvd	D	xxxxx	0.806	D	xxxxx	0.806	+ 0.000 V/C
# 34 Bristol St and 1st St	C	xxxxx	0.767	C	xxxxx	0.767	+ 0.000 V/C
# 35 Bristol St and McFadden Ave	E	xxxxx	0.956	E	xxxxx	0.956	+ 0.000 V/C
# 36 Bristol St and Warner Ave	E	xxxxx	0.915	E	xxxxx	0.915	+ 0.000 V/C
# 37 Bristol St and Segerstrom Ave	D	xxxxx	0.811	D	xxxxx	0.811	+ 0.000 V/C
# 38 Bristol St and Alton Ave	A	xxxxx	0.545	A	xxxxx	0.545	+ 0.000 V/C
# 39 Bristol St and MacArthur Blvd	B	xxxxx	0.697	B	xxxxx	0.697	+ 0.000 V/C
# 40 Bristol St and Sunflower Ave	B	xxxxx	0.649	B	xxxxx	0.649	+ 0.000 V/C
# 41 Bristol St and I-405 NB Ramps	C	20.8	0.557	C	20.8	0.557	+ 0.000 D/V
# 42 Bristol St and I-405 SB Ramps	C	23.9	0.696	C	23.9	0.696	+ 0.000 D/V
# 43 Flower St and Santa Ana Blvd	D	xxxxx	0.806	D	xxxxx	0.806	+ 0.000 V/C
# 44 Flower St and 1st St	E	xxxxx	0.926	E	xxxxx	0.926	+ 0.000 V/C
# 45 Flower St and McFadden Ave	E	xxxxx	0.900	E	xxxxx	0.900	+ 0.000 V/C
# 46 Flower St and Segerstrom Ave	C	xxxxx	0.784	C	xxxxx	0.784	+ 0.000 V/C
# 47 Flower St and MacArthur Blvd	B	xxxxx	0.675	B	xxxxx	0.675	+ 0.000 V/C
# 48 Main St and La Veta Ave	A	xxxxx	0.586	A	xxxxx	0.586	+ 0.000 V/C
# 49 Main St and Mainplace Dr / Mem	A	xxxxx	0.512	A	xxxxx	0.512	+ 0.000 V/C
# 50 Main St and 17th St	D	xxxxx	0.884	D	xxxxx	0.884	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 51 Main St and Civic Center Dr	C	xxxxx	0.783	C	xxxxx	0.783	+ 0.000 V/C
# 52 Main St and Santa Ana Blvd	E	xxxxx	0.926	E	xxxxx	0.926	+ 0.000 V/C
# 53 Main St and 4th St	A	xxxxx	0.410	A	xxxxx	0.410	+ 0.000 V/C
# 54 Main St and 1st St	B	xxxxx	0.681	B	xxxxx	0.681	+ 0.000 V/C
# 55 Main St and McFadden Ave	D	xxxxx	0.894	D	xxxxx	0.894	+ 0.000 V/C
# 56 Main St and Edinger Ave	C	xxxxx	0.795	C	xxxxx	0.795	+ 0.000 V/C
# 57 Main St and MacArthur Blvd	B	xxxxx	0.680	B	xxxxx	0.680	+ 0.000 V/C
# 58 Penn Wy and 17th St	B	12.2	0.660	B	12.2	0.660	+ 0.000 D/V
# 59 I-5 NB Off Ramps/17th Street	C	30.0	0.710	C	30.0	0.710	+ 0.000 D/V
# 60 Penn Wy and I-5 SB Ramps	C	21.2	0.550	C	21.2	0.550	+ 0.000 D/V
# 61 Santiago St and Civic Center D	F	159.2	1.769	F	159.2	1.769	+ 0.000 V/C
# 62 Santiago St and Santa Ana Blvd	F	xxxxx	1.037	F	xxxxx	1.037	+ 0.000 V/C
# 63 Standard Ave and 4th St	E	xxxxx	0.939	E	xxxxx	0.939	+ 0.000 V/C
# 64 Standard Ave and 1st St	E	xxxxx	0.976	E	xxxxx	0.976	+ 0.000 V/C
# 65 Standard Ave and Mcfadden Ave	D	xxxxx	0.854	D	xxxxx	0.854	+ 0.000 V/C
# 66 Halladay St and Warner Ave	C	xxxxx	0.775	C	xxxxx	0.775	+ 0.000 V/C
# 67 Halladay St and Dyer Rd	C	xxxxx	0.774	C	xxxxx	0.774	+ 0.000 V/C
# 68 SR-55 SB Ramps and MacArthur B	B	19.9	0.608	B	19.9	0.608	+ 0.000 D/V
# 69 SR-55 NB Ramps and MacArthur B	B	19.3	0.712	B	19.3	0.712	+ 0.000 D/V
# 70 SR-55 SB Ramps and Dyer Rd	C	25.7	0.617	C	25.7	0.617	+ 0.000 D/V
# 71 Glassell St and La Veta Ave	D	xxxxx	0.800	D	xxxxx	0.800	+ 0.000 V/C
# 72 Glassell St and SR-22 WB Ramps	C	32.6	0.871	C	32.6	0.871	+ 0.000 D/V
# 73 Grand Ave / Glassell St and SR	C	30.6	0.860	C	30.6	0.860	+ 0.000 D/V
# 74 Grand Ave and Fairhaven Ave	B	xxxxx	0.611	B	xxxxx	0.611	+ 0.000 V/C
# 75 Grand Ave and Santa Clara Ave	D	xxxxx	0.843	D	xxxxx	0.843	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 76 Grand Ave and 17th St	C	xxxxx	0.794	C	xxxxx	0.794	+ 0.000 V/C
# 77 Grand Ave and I-5 NB Ramps	B	13.2	0.740	B	13.2	0.740	+ 0.000 D/V
# 78 Grand Ave and Santa Ana Blvd	C	26.0	0.832	C	26.0	0.832	+ 0.000 D/V
# 79 Grand Ave and 1st St	C	xxxxx	0.742	C	xxxxx	0.742	+ 0.000 V/C
# 80 Grand Ave and Chestnut Ave	C	xxxxx	0.704	C	xxxxx	0.704	+ 0.000 V/C
# 81 Grand Ave and McFadden Ave	D	xxxxx	0.892	D	xxxxx	0.892	+ 0.000 V/C
# 82 Grand Ave and Edinger Ave	D	xxxxx	0.838	D	xxxxx	0.838	+ 0.000 V/C
# 83 Grand Ave and Warner Ave	B	xxxxx	0.613	B	xxxxx	0.613	+ 0.000 V/C
# 84 SR-55 NB Ramps and Dyer Rd	B	17.1	0.569	B	17.1	0.569	+ 0.000 D/V
# 85 Cambridge St and La Veta Ave	D	31.6	0.971	D	31.6	0.971	+ 0.000 V/C
# 86 Cambridge St and Fairhaven Ave	A	xxxxx	0.563	A	xxxxx	0.563	+ 0.000 V/C
# 87 Mabury St and 1st Street	C	27.4	0.714	C	27.4	0.714	+ 0.000 D/V
# 88 Tustin St and La Veta Ave	A	xxxxx	0.446	A	xxxxx	0.446	+ 0.000 V/C
# 89 Tustin St and SR-22 WB On-Ramp	B	12.2	0.635	B	12.2	0.635	+ 0.000 D/V
# 90 Tustin St and SR-22 EB Off-Ram	C	25.0	0.723	C	25.0	0.723	+ 0.000 D/V
# 91 Tustin Ave and Fairhaven Ave	F	xxxxx	1.195	F	xxxxx	1.195	+ 0.000 V/C
# 92 Tustin Ave and Santa Clara Ave	F	xxxxx	1.037	F	xxxxx	1.037	+ 0.000 V/C
# 93 Tustin Ave and 17th St	E	xxxxx	0.911	E	xxxxx	0.911	+ 0.000 V/C
# 94 Tustin Ave and 4th St	D	xxxxx	0.830	D	xxxxx	0.830	+ 0.000 V/C
# 95 SR-55 SB Ramps / Auto Mall Dr	C	25.2	0.672	C	25.2	0.672	+ 0.000 D/V
# 96 SR-55 NB Ramps / Del Amo Ave a	C	25.4	0.673	C	25.4	0.673	+ 0.000 D/V
# 97 Red Hill Ave and Edinger Ave	B	xxxxx	0.610	B	xxxxx	0.610	+ 0.000 V/C
# 98 Red Hill Ave and Warner Ave	A	xxxxx	0.560	A	xxxxx	0.560	+ 0.000 V/C
# 99 Red Hill Ave and Dyer Rd / bar	A	xxxxx	0.548	A	xxxxx	0.548	+ 0.000 V/C
#100 Red Hill Ave and Alton Pkwy	D	xxxxx	0.855	D	xxxxx	0.855	+ 0.000 V/C
#101 Red Hill Ave and MacArthur Blv	B	xxxxx	0.686	B	xxxxx	0.686	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
#102 Red Hill Ave and Main St	C	xxxxx	0.722	C	xxxxx	0.722	+ 0.000 V/C
#103 I-5 SB Ramps and Santa Ana Blv	B	17.4	0.559	B	17.4	0.559	+ 0.000 D/V
#104 Tustin Ranch Rd and Warner Ave	A	xxxxx	0.520	A	xxxxx	0.520	+ 0.000 V/C
#105 Von Karman Ave and Barranca Pk	E	xxxxx	0.929	E	xxxxx	0.929	+ 0.000 V/C
#106 Red Hill Avenue and El Camino	B	xxxxx	0.650	B	xxxxx	0.650	+ 0.000 V/C
#107 Red Hill Avenue and I-5 NB Ram	C	20.8	0.627	C	20.8	0.627	+ 0.000 D/V
#108 Red Hill Avenue and I-5 SB Ram	C	23.7	0.799	C	23.7	0.799	+ 0.000 D/V
#109 Red Hill Avenue and Nisson Roa	B	xxxxx	0.651	B	xxxxx	0.651	+ 0.000 V/C
#110 Red Hill Avenue and Walnut Ave	B	xxxxx	0.636	B	xxxxx	0.636	+ 0.000 V/C
#111 Red Hill Avenue and Valencia A	B	xxxxx	0.652	B	xxxxx	0.652	+ 0.000 V/C
#112 Tustin Ranch Road and Warner A	A	xxxxx	0.449	A	xxxxx	0.449	+ 0.000 V/C
#113 Tustin Ranch Road and Walnut A	F	xxxxx	1.273	F	xxxxx	1.273	+ 0.000 V/C
#114 SR-55 SB Ramps and Irvine Boul	D	41.0	1.099	D	41.0	1.099	+ 0.000 D/V
#115 SR-55 NB Ramps and Irvine Boul	C	23.5	0.906	C	23.5	0.906	+ 0.000 D/V

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #1 Euclid St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.858
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	68	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			WideBypass			WideBypass		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	103	870	149	200	1785	101	252	937	177	190	606	194
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	103	870	149	200	1785	101	252	937	177	190	606	194
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	103	870	149	200	1785	101	252	937	177	190	606	194
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	103	870	149	200	1785	101	252	937	177	190	606	194
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	103	870	149	200	1785	101	252	937	177	190	606	194
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	1.00	2.56	0.44	1.00	2.84	0.16	1.00	2.52	0.48	1.00	2.27	0.73
Final Sat.:	1600	4298	702	1600	4743	257	1600	4237	763	1600	3836	1164
Capacity Analysis Module:												
Vol/Sat:	0.06	0.20	0.21	0.13	0.38	0.39	0.16	0.22	0.23	0.12	0.16	0.17
Crit Moves:	****					****			****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #2 Euclid St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.975
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	172	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	WideBypass			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	162	1227	146	148	2062	171	255	521	323	151	335	127
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	162	1227	146	148	2062	171	255	521	323	151	335	127
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	162	1227	146	148	2062	171	255	521	323	151	335	127
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	162	1227	146	148	2062	171	255	521	323	151	335	127
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	162	1227	146	148	2062	171	255	521	323	151	335	127
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.04	1.00
Lanes:	1.00	2.68	0.32	1.00	2.77	0.23	1.00	1.23	0.77	1.00	1.45	0.55
Final Sat.:	1600	4490	510	1600	4632	368	1600	2075	1225	1600	2420	880
Capacity Analysis Module:												
Vol/Sat:	0.10	0.27	0.29	0.09	0.45	0.47	0.16	0.25	0.26	0.09	0.14	0.14
Crit Moves:	****					****			****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #3 Euclid St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.991
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     127  801    68   168 2442   224   160  700   428   125  761   139
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  127  801    68   168 2442   224   160  700   428   125  761   139
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   127  801    68   168 2442   224   160  700   428   125  761   139
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  127  801    68   168 2442   224   160  700   428   125  761   139
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  127  801    68   168 2442   224   160  700   428   125  761   139
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.77  0.23  2.00 2.75  0.25  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3200 4624   376  3200 4597   403  1600 3400  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.05 0.53  0.56  0.10 0.21  0.27  0.08 0.22  0.09
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:50                 Page 6-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #4 Newhope St and Hazard Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.777
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        48               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      78  590    84    88 1302   119   108  276   204   119  397   159
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   78  590    84    88 1302   119   108  276   204   119  397   159
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    78  590    84    88 1302   119   108  276   204   119  397   159
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   78  590    84    88 1302   119   108  276   204   119  397   159
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   78  590    84    88 1302   119   108  276   204   119  397   159
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 1.75  0.25  1.00 1.83  0.17  1.00 1.15  0.85  1.00 1.43  0.57
Final Sat.:  1600 2901   399  1600 3032   268  1600 1940  1360  1600 2385   915
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.20  0.21  0.06 0.43  0.44  0.07 0.14  0.15  0.07 0.17  0.17
Crit Moves:  ****                ****  ****                ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:50                 Page 7-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #5 Newhope St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.827
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      77  342   120   122 1213   113   135  492   160   190  484   108
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   77  342   120   122 1213   113   135  492   160   190  484   108
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    77  342   120   122 1213   113   135  492   160   190  484   108
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   77  342   120   122 1213   113   135  492   160   190  484   108
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   77  342   120   122 1213   113   135  492   160   190  484   108
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.48  0.52  1.00 1.83  0.17  1.00 1.51  0.49  1.00 1.64  0.36
Final Sat.:  1600 2469   831  1600 3027   273  1600 2515   785  1600 2716   584
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.14  0.14  0.08 0.40  0.41  0.08 0.20  0.20  0.12 0.18  0.19
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:51                 Page 8-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #6 Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.738
Loss Time (sec):       5               Average Delay (sec/veh):        28.4
Optimal Cycle:        43               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  2  1  0    0  0  1! 0  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      84 1534     0     0 1465    19    81    0   133   836   44   117
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   84 1534     0     0 1465    19    81    0   133   836   44   117
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    84 1534     0     0 1465    19    81    0   133   836   44   117
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   84 1534     0     0 1465    19    81    0   133   836   44   117
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   84 1534     0     0 1465    19    81    0   133   836   44   117
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.90 1.00  0.90  0.96 0.96  0.85
Lanes:       1.00 3.00  0.00  0.00 2.96  0.04  0.38 0.00  0.62  1.90 0.10  1.00
Final Sat.:  1805 5187     0     0 5110    66   646    0  1061  3448  181  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.30  0.00  0.00 0.29  0.29  0.13 0.00  0.13  0.24 0.24  0.07
Crit Moves:  ****                 ****        ****                 ****
Green/Cycle: 0.06 0.45  0.00  0.00 0.39  0.39  0.17 0.00  0.17  0.33 0.33  0.33
Volume/Cap:  0.74 0.65  0.00  0.00 0.74  0.74  0.74 0.00  0.74  0.74 0.74  0.22
Delay/Veh:   68.3 22.0   0.0   0.0 27.7  27.7  49.0  0.0  49.0  32.2 32.2  24.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  68.3 22.0   0.0   0.0 27.7  27.7  49.0  0.0  49.0  32.2 32.2  24.5
LOS by Move:    E    C     A     A    C     C     D    A     D     C    C     C
HCM2k85thQ:     7   21     0     0   23    23    12    0    12    20   20     4
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #7 Trask Avenue and SR-22 EB On-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.516
Loss Time (sec):       5               Average Delay (sec/veh):        12.0
Optimal Cycle:        26               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  0  0  0    2  0  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0     0   713  893     0     0  852   159
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0     0   713  893     0     0  852   159
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     0    0     0   713  893     0     0  852   159
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0     0    0     0   713  893     0     0  852   159
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0     0    0     0   713  893     0     0  852   159
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  0.92 1.00  1.00  1.00 0.93  0.93
Lanes:       0.00 0.00  0.00  0.00 0.00  0.00  2.00 1.00  0.00  0.00 1.69  0.31
Final Sat.:     0    0     0     0    0     0  3502 1900     0     0 2969   554
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.00 0.00  0.00  0.20 0.47  0.00  0.00 0.29  0.29
Crit Moves:                                     ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.00 0.00  0.00  0.39 0.95  0.00  0.00 0.56  0.56
Volume/Cap:  0.00 0.00  0.00  0.00 0.00  0.00  0.52 0.49  0.00  0.00 0.52  0.52
Delay/Veh:    0.0  0.0   0.0   0.0  0.0   0.0  23.4  0.5   0.0   0.0 14.1  14.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0   0.0  0.0   0.0  23.4  0.5   0.0   0.0 14.1  14.1
LOS by Move:    A    A     A     A    A     A     C    A     A     A    B     B
HCM2k85thQ:     0    0     0     0    0     0    13    5     0     0   16    16
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:53                Page 10-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #8 Harbor Blvd and Westminster Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.985
Loss Time (sec):       0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  1  0    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     178 1173   251   258 2021   115   192 1010    36   415 1124   306
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  178 1173   251   258 2021   115   192 1010    36   415 1124   306
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   178 1173   251   258 2021   115   192 1010    36   415 1124   306
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  178 1173   251   258 2021   115   192 1010    36   415 1124   306
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  178 1173   251   258 2021   115   192 1010    36   415 1124   306
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.90  0.10  1.00 3.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 4835   165  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.23  0.16  0.16 0.40  0.07  0.12 0.21  0.22  0.26 0.22  0.19
Crit Moves:  ****               ****                    ****  ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:53                Page 11-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #9 Harbor Blvd and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.789
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95  756   163   236 1989   129   138  919   178   196  497   116
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95  756   163   236 1989   129   138  919   178   196  497   116
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    95  756   163   236 1989   129   138  919   178   196  497   116
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   95  756   163   236 1989   129   138  919   178   196  497   116
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   95  756   163   236 1989   129   138  919   178   196  497   116
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  2.00 2.51  0.49  2.00 2.43  0.57
Final Sat.:  1600 5100  1600  1600 5100  1600  3200 4221   779  3200 4092   908
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.15  0.10  0.15 0.39  0.08  0.04 0.22  0.23  0.06 0.12  0.13
Crit Moves:  ****               ****                   ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:54                Page 12-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #10 Harbor Blvd and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.788
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     104 1059   101   190 2004    67   177  462   138   138  311    89
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  104 1059   101   190 2004    67   177  462   138   138  311    89
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   104 1059   101   190 2004    67   177  462   138   138  311    89
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  104 1059   101   190 2004    67   177  462   138   138  311    89
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  104 1059   101   190 2004    67   177  462   138   138  311    89
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       2.00 3.00  1.00  2.00 2.90  0.10  1.00 1.54  0.46  1.00 1.56  0.44
Final Sat.:  3200 5100  1600  3200 4845   155  1600 2564   736  1600 2588   712
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.21  0.06  0.06 0.41  0.43  0.11 0.18  0.19  0.09 0.12  0.13
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:54                Page 13-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #11 Harbor Blvd and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.836
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        61               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     103  772   146   204 2349    68   123  743   373   191  424   176
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103  772   146   204 2349    68   123  743   373   191  424   176
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   103  772   146   204 2349    68   123  743   373   191  424   176
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103  772   146   204 2349    68   123  743   373   191  424   176
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103  772   146   204 2349    68   123  743   373   191  424   176
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 3400  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.15  0.09  0.06 0.46  0.04  0.04 0.22  0.23  0.06 0.08  0.11
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #12 Harbor Blvd and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.789
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	50	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1
Volume Module:												
Base Vol:	109	665	169	429	1933	116	101	1440	379	138	723	122
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	109	665	169	429	1933	116	101	1440	379	138	723	122
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	109	665	169	429	1933	116	101	1440	379	138	723	122
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	109	665	169	429	1933	116	101	1440	379	138	723	122
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	109	665	169	429	1933	116	101	1440	379	138	723	122
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	2.39	0.61	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	4027	973	3200	5100	1600	3200	5100	1600	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.03	0.17	0.17	0.13	0.38	0.07	0.03	0.28	0.24	0.04	0.14	0.08
Crit Moves:	****			****			****			****		

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--------------------------------------------------------------------------------
                          Santa Ana Circulation Element
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #13 Harbor Blvd and Segerstrom Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.965
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       152               Level Of Service:                  E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     107  759    48   169 2274    85    82  689   278   140  434    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  107  759    48   169 2274    85    82  689   278   140  434    98
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   107  759    48   169 2274    85    82  689   278   140  434    98
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  107  759    48   169 2274    85    82  689   278   140  434    98
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  107  759    48   169 2274    85    82  689   278   140  434    98
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 2.82  0.18  1.00 2.89  0.11  1.00 1.43  0.57  1.00 2.00  1.00
Final Sat.:  3200 4714   286  1600 4827   173  1600 2380   920  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.16  0.17  0.11 0.47  0.49  0.05 0.29  0.30  0.09 0.13  0.06
Crit Moves:  ****                ****             ****  ****
********************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #14 MacArthur Blvd and Hyland Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.611
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      86    4    24     8    2    19     7 1934   767    68  517    21
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   86    4    24     8    2    19     7 1934   767    68  517    21
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    86    4    24     8    2    19     7 1934   767    68  517    21
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   86    4    24     8    2    19     7 1934   767    68  517    21
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   86    4    24     8    2    19     7 1934   767    68  517    21
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 0.14  0.86  1.00 1.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200  229  1371  1600 1700  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.02  0.02  0.01 0.00  0.01  0.00 0.38  0.48  0.04 0.10  0.01
Crit Moves:  ****                      ****              ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #15 MacArthur Blvd and Harbor Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.736
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     131  920    94   295 1701   118   131 1183   357   128  427   127
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  131  920    94   295 1701   118   131 1183   357   128  427   127
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   131  920    94   295 1701   118   131 1183   357   128  427   127
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  131  920    94   295 1701   118   131 1183   357   128  427   127
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  131  920    94   295 1701   118   131 1183   357   128  427   127
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.18  0.06  0.09 0.33  0.07  0.08 0.23  0.22  0.08 0.08  0.08
Crit Moves:  ****               ****             ****        ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:57                Page 18-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #16 Harbor Blvd and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.704
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  1  1  0    1  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     221 1128   209   233 2204    54    13  153    59   139  178   101
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  221 1128   209   233 2204    54    13  153    59   139  178   101
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   221 1128   209   233 2204    54    13  153    59   139  178   101
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  221 1128   209   233 2204    54    13  153    59   139  178   101
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  221 1128   209   233 2204    54    13  153    59   139  178   101
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 1.44  0.56  1.00 1.28  0.72
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 2409   891  1601 2146  1153
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.22  0.13  0.07 0.43  0.03  0.01 0.06  0.07  0.09 0.08  0.09
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:09:58                Page 19-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #17 Harbor Blvd and I-405 NB Off-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.569
Loss Time (sec):       5               Average Delay (sec/veh):        18.0
Optimal Cycle:        28               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  0    0  0  4  0  0    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1915     0     0 1978     0     0    0     0   399    0   702
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1915     0     0 1978     0     0    0     0   399    0   702
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1915     0     0 1978     0     0    0     0   399    0   702
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1915     0     0 1978     0     0    0     0   399    0   702
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1915     0     0 1978     0     0    0     0   399    0   702
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  1.00 1.00  1.00  0.89 1.00  0.89
Lanes:       0.00 4.00  0.00  0.00 4.00  0.00  0.00 0.00  0.00  1.36 0.00  1.64
Final Sat.:     0 6916     0     0 6916     0     0    0     0  2298    0  2762
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.28  0.00  0.00 0.29  0.00  0.00 0.00  0.00  0.17 0.00  0.25
Crit Moves:  ****                 ****                                     ****
Green/Cycle: 0.00 0.50  0.00  0.00 0.50  0.00  0.00 0.00  0.00  0.45 0.00  0.45
Volume/Cap:  0.00 0.55  0.00  0.00 0.57  0.00  0.00 0.00  0.00  0.39 0.00  0.57
Delay/Veh:    0.0 17.3   0.0   0.0 17.5   0.0   0.0  0.0   0.0  18.6  0.0  20.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 17.3   0.0   0.0 17.5   0.0   0.0  0.0   0.0  18.6  0.0  20.9
LOS by Move:    A    B     A     A    B     A     A    A     A     B    A     C
HCM2k85thQ:     0   17     0     0   18     0     0    0     0     9    0    15
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:00                Page 20-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #18 Harbor Blvd and I-405 SB Off-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.612
Loss Time (sec):       5               Average Delay (sec/veh):        15.0
Optimal Cycle:        31               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    0  0  4  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1963     0     0 1253     0   475    0   529     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1963     0     0 1253     0   475    0   529     0    0     0
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1963     0     0 1253     0   475    0   529     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1963     0     0 1253     0   475    0   529     0    0     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1963     0     0 1253     0   475    0   529     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  0.90 1.00  0.90  1.00 1.00  1.00
Lanes:       0.00 3.00  1.00  0.00 4.00  0.00  1.47 0.00  1.53  0.00 0.00  0.00
Final Sat.:     0 5187  1900     0 6916     0  2519    0  2610     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.38  0.00  0.00 0.18  0.00  0.19 0.00  0.20  0.00 0.00  0.00
Crit Moves:       ****        ****                     ****
Green/Cycle: 0.00 0.62  0.00  0.00 0.62  0.00  0.33 0.00  0.33  0.00 0.00  0.00
Volume/Cap:  0.00 0.61  0.00  0.00 0.29  0.00  0.57 0.00  0.61  0.00 0.00  0.00
Delay/Veh:    0.0 12.0   0.0   0.0  8.9   0.0  28.0  0.0  28.7   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 12.0   0.0   0.0  8.9   0.0  28.0  0.0  28.7   0.0  0.0   0.0
LOS by Move:    A    B     A     A    A     A     C    A     C     A    A     A
HCM2k85thQ:     0   21     0     0    8     0    13    0    15     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:01                Page 21-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #19 Fairview St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.741
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    0  1  0  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       7 1569   508   332 1915     8     7   25    25   100    3    52
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    7 1569   508   332 1915     8     7   25    25   100    3    52
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     7 1569   508   332 1915     8     7   25    25   100    3    52
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    7 1569   508   332 1915     8     7   25    25   100    3    52
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    7 1569   508   332 1915     8     7   25    25   100    3    52
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.27  0.73  1.00 2.99  0.01  0.24 0.88  0.88  1.94 0.06  1.00
Final Sat.:  1600 3826  1174  1600 4980    20   393 1404  1404  3107   93  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.41  0.43  0.21 0.38  0.40  0.02 0.02  0.02  0.03 0.03  0.03
Crit Moves:             ****  ****                ****                     ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:01                Page 22-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #20 Fairview St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.859
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        68               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     200 1538   289   245 1426   164   200 1153   179   120  539   181
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  200 1538   289   245 1426   164   200 1153   179   120  539   181
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   200 1538   289   245 1426   164   200 1153   179   120  539   181
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  200 1538   289   245 1426   164   200 1153   179   120  539   181
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  200 1538   289   245 1426   164   200 1153   179   120  539   181
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 2.69  0.31  1.00 2.60  0.40  1.00 2.25  0.75
Final Sat.:  1600 5100  1600  1600 4505   495  1600 4355   645  1600 3793  1207
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.30  0.18  0.15 0.32  0.33  0.13 0.26  0.28  0.08 0.14  0.15
Crit Moves:  ****                ****              ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #21 Fairview St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.799
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	52	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	3 0	1	1 0	3 0	1	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	141	1510	202	154	1878	136	221	522	120	147	380	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	141	1510	202	154	1878	136	221	522	120	147	380	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	141	1510	202	154	1878	136	221	522	120	147	380	30
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	141	1510	202	154	1878	136	221	522	120	147	380	30
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	141	1510	202	154	1878	136	221	522	120	147	380	30
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.03	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.63	0.37	1.00	1.85	0.15
Final Sat.:	1600	5100	1600	1600	5100	1600	1600	2702	598	1600	3066	234
Capacity Analysis Module:												
Vol/Sat:	0.09	0.30	0.13	0.10	0.37	0.09	0.14	0.19	0.20	0.09	0.12	0.13
Crit Moves:	****			****					****	****		

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:02                Page 24-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #22 Fairview St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.861
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        69               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     200  883   123   223 1558   132   361 1002   268   421  553   110
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  200  883   123   223 1558   132   361 1002   268   421  553   110
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   200  883   123   223 1558   132   361 1002   268   421  553   110
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  200  883   123   223 1558   132   361 1002   268   421  553   110
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  200  883   123   223 1558   132   361 1002   268   421  553   110
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 2.63  0.37  2.00 2.77  0.23  2.00 2.37  0.63  2.00 2.50  0.50
Final Sat.:  3200 4413   587  3200 4625   375  3200 3987  1013  3200 4204   796
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.20  0.21  0.07 0.34  0.35  0.11 0.25  0.26  0.13 0.13  0.14
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:03                Page 25-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #23 Fairview St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.816
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        55               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     222  981   129   194 1543   113    68  991   295   267  807   261
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  222  981   129   194 1543   113    68  991   295   267  807   261
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   222  981   129   194 1543   113    68  991   295   267  807   261
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  222  981   129   194 1543   113    68  991   295   267  807   261
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  222  981   129   194 1543   113    68  991   295   267  807   261
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 2.65  0.35  2.00 2.80  0.20  2.00 2.31  0.69  2.00 2.27  0.73
Final Sat.:  3200 4442   558  3200 4672   328  3200 3899  1101  3200 3827  1173
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.22  0.23  0.06 0.33  0.35  0.02 0.25  0.27  0.08 0.21  0.22
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:03                Page 26-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #24 Fairview St and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.684
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     261  811    94   290 1460   163   121  984   145   235  494   140
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  261  811    94   290 1460   163   121  984   145   235  494   140
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   261  811    94   290 1460   163   121  984   145   235  494   140
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  261  811    94   290 1460   163   121  984   145   235  494   140
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  261  811    94   290 1460   163   121  984   145   235  494   140
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.69  0.31  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4501   499  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.18  0.19  0.09 0.29  0.10  0.04 0.19  0.09  0.07 0.10  0.09
Crit Moves:  ****                ****             ****             ****
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:04                Page 27-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #25 Fairview Rd and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.697
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        37               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     185 1071   163   191 1627   104    49  322    65   357  299   154
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  185 1071   163   191 1627   104    49  322    65   357  299   154
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   185 1071   163   191 1627   104    49  322    65   357  299   154
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  185 1071   163   191 1627   104    49  322    65   357  299   154
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  185 1071   163   191 1627   104    49  322    65   357  299   154
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.82  0.18  2.00 1.66  0.34  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4712   288  3200 2763   537  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.21  0.10  0.06 0.35  0.36  0.02 0.12  0.12  0.11 0.09  0.10
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:05                Page 28-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #26 Greenville St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.774
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        47               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     186    0   251     0    0     0     0 1821   444   153  813     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  186    0   251     0    0     0     0 1821   444   153  813     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   186    0   251     0    0     0     0 1821   444   153  813     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  186    0   251     0    0     0     0 1821   444   153  813     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  186    0   251     0    0     0     0 1821   444   153  813     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 0.00  1.00  0.00 0.00  0.00  0.00 2.41  0.59  1.00 3.00  0.00
Final Sat.:  1600    0  1600     0    0     0     0 4059   941  1600 5100     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.00  0.16  0.00 0.00  0.00  0.00 0.45  0.47  0.10 0.16  0.00
Crit Moves:             ****                                 ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #27 Greenville St and Segerstrom Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.843
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	63	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	47	193	78	154	472	160	46	1035	165	190	768	88
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	47	193	78	154	472	160	46	1035	165	190	768	88
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	47	193	78	154	472	160	46	1035	165	190	768	88
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	193	78	154	472	160	46	1035	165	190	768	88
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	47	193	78	154	472	160	46	1035	165	190	768	88
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	0.71	0.29	1.00	0.75	0.25	1.00	2.59	0.41	1.00	2.69	0.31
Final Sat.:	1600	1139	461	1600	1195	405	1600	4340	660	1600	4507	493
Capacity Analysis Module:												
Vol/Sat:	0.03	0.17	0.17	0.10	0.39	0.40	0.03	0.24	0.25	0.12	0.17	0.18
Crit Moves:	****					****			****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #28 Raitt St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.778
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	67	618	98	123	938	128	122	743	95	146	461	82
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	67	618	98	123	938	128	122	743	95	146	461	82
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	67	618	98	123	938	128	122	743	95	146	461	82
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	67	618	98	123	938	128	122	743	95	146	461	82
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	67	618	98	123	938	128	122	743	95	146	461	82
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	1.73	0.27	1.00	1.76	0.24	1.00	1.77	0.23	1.00	1.70	0.30
Final Sat.:	1600	2862	438	1600	2916	384	1600	2937	363	1600	2817	483
Capacity Analysis Module:												
Vol/Sat:	0.04	0.22	0.22	0.08	0.32	0.33	0.08	0.25	0.26	0.09	0.16	0.17
Crit Moves:	****					****			****	****		

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:06                Page 31-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #29 Raitt St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.990
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     197  524   189   163  770    91   324 1980   285   122  954    56
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  197  524   189   163  770    91   324 1980   285   122  954    56
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   197  524   189   163  770    91   324 1980   285   122  954    56
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  197  524   189   163  770    91   324 1980   285   122  954    56
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  197  524   189   163  770    91   324 1980   285   122  954    56
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 1.47  0.53  1.00 1.79  0.21  1.00 2.62  0.38  1.00 2.83  0.17
Final Sat.:  1600 2452   848  1600 2962   338  1600 4396   604  1600 4734   266
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.21  0.22  0.10 0.26  0.27  0.20 0.45  0.47  0.08 0.20  0.21
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #30 Bear St and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.707
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	38	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	71	245	104	199	756	300	92	1581	108	62	1041	88
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	71	245	104	199	756	300	92	1581	108	62	1041	88
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	71	245	104	199	756	300	92	1581	108	62	1041	88
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	71	245	104	199	756	300	92	1581	108	62	1041	88
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	71	245	104	199	756	300	92	1581	108	62	1041	88
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.05	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.81	0.19	1.00	2.77	0.23
Final Sat.:	1600	3400	1600	1600	3400	1600	1600	4693	307	1600	4626	374
Capacity Analysis Module:												
Vol/Sat:	0.04	0.07	0.07	0.12	0.22	0.19	0.06	0.34	0.35	0.04	0.23	0.24
Crit Moves:	****			****					****	****		

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:08                Page 33-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #31 Bristol St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.869
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        72               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     251 1292   218   487 2001   263   324  963   156   368  845   280
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  251 1292   218   487 2001   263   324  963   156   368  845   280
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   251 1292   218   487 2001   263   324  963   156   368  845   280
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  251 1292   218   487 2001   263   324  963   156   368  845   280
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  251 1292   218   487 2001   263   324  963   156   368  845   280
OvlAdjVol:                                                                  36
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.58  0.42  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4331   669  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.25  0.14  0.15 0.39  0.16  0.10 0.22  0.23  0.12 0.17  0.17
OvlAdjV/S:                                                                  0.02
Crit Moves:  ****                ****                    ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #32 Bristol St and Civic Center Dr

Cycle (sec):	100	Critical Vol./Cap.(X):	0.942
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	120	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	133	1178	104	403	1628	101	165	836	103	127	421	87
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	133	1178	104	403	1628	101	165	836	103	127	421	87
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	133	1178	104	403	1628	101	165	836	103	127	421	87
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	133	1178	104	403	1628	101	165	836	103	127	421	87
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	133	1178	104	403	1628	101	165	836	103	127	421	87
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	2.76	0.24	1.00	2.82	0.18	1.00	1.78	0.22	1.00	1.66	0.34
Final Sat.:	1600	4611	389	1600	4720	280	1600	2949	351	1600	2752	548
Capacity Analysis Module:												
Vol/Sat:	0.08	0.26	0.27	0.25	0.34	0.36	0.10	0.28	0.29	0.08	0.15	0.16
Crit Moves:			****	****					****	****		

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:09                Page 35-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #33 Bristol St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.806
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      69 1502   209   153 1684    46   171  831    72   185  462    79
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   69 1502   209   153 1684    46   171  831    72   185  462    79
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    69 1502   209   153 1684    46   171  831    72   185  462    79
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   69 1502   209   153 1684    46   171  831    72   185  462    79
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   69 1502   209   153 1684    46   171  831    72   185  462    79
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.63  0.37  1.00 2.92  0.08  1.00 2.76  0.24  1.00 2.56  0.44
Final Sat.:  1600 4414   586  1600 4872   128  1600 4617   383  1600 4299   701
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.34  0.36  0.10 0.35  0.36  0.11 0.18  0.19  0.12 0.11  0.11
Crit Moves:             ****  ****                          ****  ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:10                Page 36-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #34 Bristol St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.767
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     205 1430   181   315 1298   183   200 1231   124    90  678    99
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  205 1430   181   315 1298   183   200 1231   124    90  678    99
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   205 1430   181   315 1298   183   200 1231   124    90  678    99
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  205 1430   181   315 1298   183   200 1231   124    90  678    99
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  205 1430   181   315 1298   183   200 1231   124    90  678    99
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 2.73  0.27  1.00 2.62  0.38
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 4561   439  1600 4388   612
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.28  0.11  0.10 0.25  0.11  0.13 0.27  0.28  0.06 0.15  0.16
Crit Moves:       ****        ****                     ****  ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:10                Page 37-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #35 Bristol St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.956
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       139               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     125 1117    56   204 1986   205   309  531   261   262  729    84
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  125 1117    56   204 1986   205   309  531   261   262  729    84
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   125 1117    56   204 1986   205   309  531   261   262  729    84
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  125 1117    56   204 1986   205   309  531   261   262  729    84
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  125 1117    56   204 1986   205   309  531   261   262  729    84
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.03  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 1.34  0.66  1.00 1.79  0.21
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 2245  1055  1600 2969   331
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.22  0.04  0.13 0.39  0.13  0.19 0.24  0.25  0.16 0.25  0.25
Crit Moves:  ****               ****        ****                   ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:11                Page 38-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #36 Bristol St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.915
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        96               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     221  993   183   600 2033   230   165  919   229   231 1058   180
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  221  993   183   600 2033   230   165  919   229   231 1058   180
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   221  993   183   600 2033   230   165  919   229   231 1058   180
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  221  993   183   600 2033   230   165  919   229   231 1058   180
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  221  993   183   600 2033   230   165  919   229   231 1058   180
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.53  0.47  2.00 2.70  0.30  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 4253   747  3200 4512   488  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.23  0.24  0.19 0.45  0.47  0.10 0.18  0.14  0.14 0.21  0.11
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:11                Page 39-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #37 Bristol St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.811
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70  778   146   283 1011   119   280 1354   125   134  607    78
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   70  778   146   283 1011   119   280 1354   125   134  607    78
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    70  778   146   283 1011   119   280 1354   125   134  607    78
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   70  778   146   283 1011   119   280 1354   125   134  607    78
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   70  778   146   283 1011   119   280 1354   125   134  607    78
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.53  0.47  1.00 2.68  0.32  1.00 2.75  0.25  1.00 2.66  0.34
Final Sat.:  1600 4242   758  1600 4495   505  1600 4594   406  1600 4453   547
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.18  0.19  0.18 0.22  0.24  0.17 0.29  0.31  0.08 0.14  0.14
Crit Moves:             ****  ****                           ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:12                Page 40-1
--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #38 Bristol St and Alton Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.545
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        26               Level Of Service:                  A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  3  0  1    1  0  1  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11  739    55   230 1591    36   164  101   211    41   87    31
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   11  739    55   230 1591    36   164  101   211    41   87    31
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    11  739    55   230 1591    36   164  101   211    41   87    31
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   11  739    55   230 1591    36   164  101   211    41   87    31
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   11  739    55   230 1591    36   164  101   211    41   87    31
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.79  0.21  1.00 3.00  1.00  1.00 1.00  1.00  1.00 0.74  0.26
Final Sat.:  1600 4668   332  1600 5100  1600  1600 1700  1600  1600 1180   420
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.16  0.17  0.14 0.31  0.02  0.10 0.06  0.13  0.03 0.07  0.07
Crit Moves:  ****                ****        ****                   ****
********************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #39 Bristol St and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.697
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	37	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	2 1	0	2 0	3 0	1	2 0	3 0	1
Volume Module:												
Base Vol:	102	531	133	329	1434	150	166	1203	244	159	758	110
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	102	531	133	329	1434	150	166	1203	244	159	758	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	102	531	133	329	1434	150	166	1203	244	159	758	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	102	531	133	329	1434	150	166	1203	244	159	758	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	102	531	133	329	1434	150	166	1203	244	159	758	110
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	2.72	0.28	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	4545	455	3200	5100	1600	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.03	0.10	0.08	0.10	0.32	0.33	0.05	0.24	0.15	0.05	0.15	0.07
Crit Moves:	****					****		****		****		

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:14                Page 42-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #40 Bristol St and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.649
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        32               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  1    2  0  3  0  1    2  0  2  1  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     111  546   161   242 1370   103   112  926   375   295  480   166
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  111  546   161   242 1370   103   112  926   375   295  480   166
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   111  546   161   242 1370   103   112  926   375   295  480   166
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  111  546   161   242 1370   103   112  926   375   295  480   166
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  111  546   161   242 1370   103   112  926   375   295  480   166
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.85  1.15  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4755  1845  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.11  0.10  0.08 0.27  0.06  0.04 0.19  0.20  0.09 0.09  0.10
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:14                Page 43-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #41 Bristol St and I-405 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.557
Loss Time (sec):       5               Average Delay (sec/veh):        20.8
Optimal Cycle:        28               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    0  0  4  1  0    0  0  0  0  2    1  1  1  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1638   210     0 1918     8     0    0    36   145   87   796
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1638   210     0 1918     8     0    0    36   145   87   796
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1638   210     0 1918     8     0    0    36   145   87   796
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1638   210     0 1918     8     0    0    36   145   87   796
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1638   210     0 1918     8     0    0    36   145   87   796
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  1.00 0.91  0.91  1.00 1.00  0.75  0.92 0.92  0.75
Lanes:       0.00 4.00  1.00  0.00 4.98  0.02  0.00 0.00  2.00  1.88 1.12  2.00
Final Sat.:     0 6916  1615     0 8600    36     0    0  2842  3283 1970  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.24  0.13  0.00 0.22  0.22  0.00 0.00  0.01  0.04 0.04  0.28
Crit Moves:       ****        ****                          ****            ****
Green/Cycle: 0.00 0.42  0.42  0.00 0.42  0.42  0.00 0.00  0.02  0.50 0.50  0.50
Volume/Cap:  0.00 0.56  0.31  0.00 0.52  0.52  0.00 0.00  0.56  0.09 0.09  0.56
Delay/Veh:    0.0 21.9  19.3   0.0 21.4  21.4   0.0  0.0  58.8  13.0 13.0  17.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 21.9  19.3   0.0 21.4  21.4   0.0  0.0  58.8  13.0 13.0  17.7
LOS by Move:    A    C     B     A    C     C     A    A     E     B    B     B
HCM2k85thQ:     0   16     7     0   15    15     0    0     2     2    2    15
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:15                Page 44-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #42 Bristol St and I-405 SB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.696
Loss Time (sec):       5               Average Delay (sec/veh):        23.9
Optimal Cycle:        38               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Ignore           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  4  0  0    0  0  2  1  1    3  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     125 1225     0     0 1030   886   696    0   636     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  125 1225     0     0 1030   886   696    0   636     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   125 1225     0     0 1030     0   696    0   636     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  125 1225     0     0 1030     0   696    0   636     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  125 1225     0     0 1030     0   696    0   636     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.92 1.00  0.85  1.00 1.00  1.00
Lanes:       1.00 4.00  0.00  0.00 3.00  1.00  3.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:  1805 6916     0     0 5187  1729  5253    0  1615     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.18  0.00  0.00 0.20  0.00  0.13 0.00  0.39  0.00 0.00  0.00
Crit Moves:  ****                 ****                    ****
Green/Cycle: 0.10 0.38  0.00  0.00 0.29  0.00  0.57 0.00  0.57  0.00 0.00  0.00
Volume/Cap:  0.70 0.46  0.00  0.00 0.70  0.00  0.23 0.00  0.70  0.00 0.00  0.00
Delay/Veh:   54.9 23.1   0.0   0.0 33.4   0.0  10.9  0.0  18.0   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.9 23.1   0.0   0.0 33.4   0.0  10.9  0.0  18.0   0.0  0.0   0.0
LOS by Move:    D    C     A     A    C     A     B    A     B     A    A     A
HCM2k85thQ:     8   12     0     0   17     0     6    0    22     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:16                Page 45-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #43 Flower St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.806
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit      Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  3  0  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     100  936   136   214  723    97   211 1315   150   143  458   191
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  100  936   136   214  723    97   211 1315   150   143  458   191
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   100  936   136   214  723    97   211 1315   150   143  458   191
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  100  936   136   214  723    97   211 1315   150   143  458   191
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  100  936   136   214  723    97   211 1315   150   143  458   191
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 3.00  1.00  1.00 2.12  0.88
Final Sat.:  1600 3400  1600  1600 3400  1600  1600 5100  1600  1600 3587  1413
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.28  0.09  0.13 0.21  0.06  0.13 0.26  0.09  0.09 0.13  0.14
Crit Moves:       ****        ****                ****        ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:16                Page 46-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #44 Flower St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.926
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       105               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     139  602   159   334 1058   111   148 1355    54   209  861   123
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  139  602   159   334 1058   111   148 1355    54   209  861   123
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   139  602   159   334 1058   111   148 1355    54   209  861   123
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  139  602   159   334 1058   111   148 1355    54   209  861   123
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  139  602   159   334 1058   111   148 1355    54   209  861   123
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 1.81  0.19  1.00 2.89  0.11  1.00 2.62  0.38
Final Sat.:  1600 3400  1600  1600 2996   304  1600 4816   184  1600 4400   600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.18  0.10  0.21 0.35  0.37  0.09 0.28  0.29  0.13 0.20  0.21
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:17                Page 47-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #45 Flower St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.900
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        87               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  1  0  1  0    0  1  0  1  0    0  1  0  1  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70  511    44   118  655    95   112 1278    97   113  764   103
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   70  511    44   118  655    95   112 1278    97   113  764   103
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    70  511    44   118  655    95   112 1278    97   113  764   103
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   70  511    44   118  655    95   112 1278    97   113  764   103
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   70  511    44   118  655    95   112 1278    97   113  764   103
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.22 1.64  0.14  0.27 1.51  0.22  0.15 1.72  0.13  0.23 1.56  0.21
Final Sat.:   358 2616   225   435 2415   350   241 2750   209   369 2495   336
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.20  0.20  0.07 0.27  0.27  0.07 0.46  0.46  0.07 0.31  0.31
Crit Moves:  ****               ****             ****             ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:17                Page 48-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #46 Flower St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.784
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      86  451   100    98  544   120   223 1531   427   104  764    84
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   86  451   100    98  544   120   223 1531   427   104  764    84
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    86  451   100    98  544   120   223 1531   427   104  764    84
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   86  451   100    98  544   120   223 1531   427   104  764    84
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   86  451   100    98  544   120   223 1531   427   104  764    84
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 1.64  0.36  1.00 1.64  0.36  1.00 2.35  0.65  1.00 2.70  0.30
Final Sat.:  1600 2719   581  1600 2722   578  1600 3953  1047  1600 4525   475
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.17  0.17  0.06 0.20  0.21  0.14 0.39  0.41  0.07 0.17  0.18
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:18                Page 49-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #47 Flower St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.675
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      26  170    88   167  361   270   151 1716    73    62 1049    67
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   26  170    88   167  361   270   151 1716    73    62 1049    67
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    26  170    88   167  361   270   151 1716    73    62 1049    67
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   26  170    88   167  361   270   151 1716    73    62 1049    67
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   26  170    88   167  361   270   151 1716    73    62 1049    67
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.32  0.68  1.00 1.14  0.86  1.00 2.88  0.12  1.00 2.82  0.18
Final Sat.:  1600 2209  1091  1600 1931  1369  1600 4804   196  1600 4712   288
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.08  0.08  0.10 0.19  0.20  0.09 0.36  0.37  0.04 0.22  0.23
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:19                Page 50-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #48 Main St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.586
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        28               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     105  724   375   198 1034   173   361  510   222   316  276   230
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  105  724   375   198 1034   173   361  510   222   316  276   230
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   105  724   375   198 1034   173   361  510   222   316  276   230
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  105  724   375   198 1034   173   361  510   222   316  276   230
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  105  724   375   198 1034   173   361  510   222   316  276   230
OvlAdjVol:                217                                              131
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.57  0.43  2.00 2.09  0.91  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4312   688  3200 3544  1456  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.14  0.23  0.06 0.24  0.25  0.11 0.14  0.15  0.10 0.08  0.14
OvlAdjV/S:                0.14                                             0.08
Crit Moves:  ****                       ****              ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:19                Page 51-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #49 Main St and Mainplace Dr / Memory Ln
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.512
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        24               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      34  920   301    36 1386   290   185  291    20   132  151    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   34  920   301    36 1386   290   185  291    20   132  151    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    34  920   301    36 1386   290   185  291    20   132  151    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   34  920   301    36 1386   290   185  291    20   132  151    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   34  920   301    36 1386   290   185  291    20   132  151    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 2.26  0.74  2.00 2.48  0.52  2.00 2.81  0.19  2.00 2.00  1.00
Final Sat.:  3200 3817  1183  3200 4169   831  3200 4691   309  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.24  0.25  0.01 0.33  0.35  0.06 0.06  0.06  0.04 0.04  0.01
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:20                Page 52-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #50 Main St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.884
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        78               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     133  788   169   237 1322    85   127 1336    67   356 1425    21
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  133  788   169   237 1322    85   127 1336    67   356 1425    21
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   133  788   169   237 1322    85   127 1336    67   356 1425    21
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  133  788   169   237 1322    85   127 1336    67   356 1425    21
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  133  788   169   237 1322    85   127 1336    67   356 1425    21
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.86  0.14  2.00 2.96  0.04
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 4771   229  3200 4930    70
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.23  0.11  0.07 0.39  0.05  0.04 0.28  0.29  0.11 0.29  0.30
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:20                Page 53-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #51 Main St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.783
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     142  925    81    55  970   148   120  727   132    43  566    34
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  142  925    81    55  970   148   120  727   132    43  566    34
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   142  925    81    55  970   148   120  727   132    43  566    34
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  142  925    81    55  970   148   120  727   132    43  566    34
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  142  925    81    55  970   148   120  727   132    43  566    34
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.03  1.00
Lanes:       1.00 1.84  0.16  1.00 1.74  0.26  1.00 1.69  0.31  1.00 1.89  0.11
Final Sat.:  1600 3042   258  1600 2876   424  1600 2808   492  1600 3119   181
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.30  0.31  0.03 0.34  0.35  0.08 0.26  0.27  0.03 0.18  0.19
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:21                Page 54-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #52 Main St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.926
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       105               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  1  1  0    0  0  0  0  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      66 1050     0     0 1135   100     0    0     0    90 1250    96
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   66 1050     0     0 1135   100     0    0     0    90 1250    96
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    66 1050     0     0 1135   100     0    0     0    90 1250    96
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   66 1050     0     0 1135   100     0    0     0    90 1250    96
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   66 1050     0     0 1135   100     0    0     0    90 1250    96
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  0.00  0.00 1.84  0.16  0.00 0.00  0.00  0.13 1.74  0.13
Final Sat.:  1600 3400     0     0 3041   259     0    0     0   201 2786   214
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.31  0.00  0.00 0.37  0.39  0.00 0.00  0.00  0.06 0.45  0.45
Crit Moves:  ****                     ****                          ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:21                Page 55-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #53 Main St and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.410
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        20               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1  1  0    0  0  1  1  0    0  0  1  1  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  939    22     0  961    24     0   70    11     0  140    34
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  939    22     0  961    24     0   70    11     0  140    34
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  939    22     0  961    24     0   70    11     0  140    34
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  939    22     0  961    24     0   70    11     0  140    34
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  939    22     0  961    24     0   70    11     0  140    34
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       0.00 1.95  0.05  0.00 1.95  0.05  0.00 1.73  0.27  0.00 1.61  0.39
Final Sat.:     0 3227    73     0 3222    78     0 2865   435     0 2675   625
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.29  0.30  0.00 0.30  0.31  0.00 0.02  0.03  0.00 0.05  0.05
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:22                Page 56-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #54 Main St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.681
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     103  532    54    77  772    57   106 1241   131    86 1072    60
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103  532    54    77  772    57   106 1241   131    86 1072    60
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   103  532    54    77  772    57   106 1241   131    86 1072    60
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103  532    54    77  772    57   106 1241   131    86 1072    60
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103  532    54    77  772    57   106 1241   131    86 1072    60
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 1.82  0.18  1.00 2.00  1.00  1.00 2.71  0.29  1.00 2.84  0.16
Final Sat.:  1600 3005   295  1600 3400  1600  1600 4542   458  1600 4746   254
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.18  0.18  0.05 0.23  0.04  0.07 0.27  0.29  0.05 0.23  0.24
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:23                Page 57-1
--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #55 Main St and McFadden Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.894
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        84               Level Of Service:                  D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      93  874    44   162 1259    25    86  815    89   164  438   126
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   93  874    44   162 1259    25    86  815    89   164  438   126
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    93  874    44   162 1259    25    86  815    89   164  438   126
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   93  874    44   162 1259    25    86  815    89   164  438   126
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   93  874    44   162 1259    25    86  815    89   164  438   126
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 1.90  0.10  1.00 1.96  0.04  1.00 1.80  0.20  1.00 1.55  0.45
Final Sat.:  1600 3147   153  1600 3238    62  1600 2985   315  1600 2585   715
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.28  0.29  0.10 0.39  0.40  0.05 0.27  0.28  0.10 0.17  0.18
Crit Moves:  ****                     ****              ****  ****
********************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #56 Main St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.795
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	51	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	99	561	61	211	975	51	96	1248	168	108	630	77
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	99	561	61	211	975	51	96	1248	168	108	630	77
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	99	561	61	211	975	51	96	1248	168	108	630	77
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	99	561	61	211	975	51	96	1248	168	108	630	77
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	99	561	61	211	975	51	96	1248	168	108	630	77
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.03	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	1.80	0.20	1.00	1.90	0.10	1.00	2.64	0.36	1.00	2.67	0.33
Final Sat.:	1600	2986	314	1600	3141	159	1600	4431	569	1600	4477	523
Capacity Analysis Module:												
Vol/Sat:	0.06	0.19	0.19	0.13	0.31	0.32	0.06	0.28	0.29	0.07	0.14	0.15
Crit Moves:	****					****			****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #57 Main St and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.680
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	35	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1
Volume Module:												
Base Vol:	51	295	250	539	709	160	230	1336	242	138	411	206
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	295	250	539	709	160	230	1336	242	138	411	206
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	51	295	250	539	709	160	230	1336	242	138	411	206
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	51	295	250	539	709	160	230	1336	242	138	411	206
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	51	295	250	539	709	160	230	1336	242	138	411	206
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	3200	5100	1600	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.02	0.06	0.16	0.17	0.14	0.10	0.07	0.26	0.15	0.04	0.08	0.13
Crit Moves:			****	****				****		****		

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2045 NP AM Peak Hour Thu Oct 22, 2020 14:10:25 Page 60-1

Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #58 Penn Wy and 17th St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.660
Loss Time (sec):	5	Average Delay (sec/veh):	12.2
Optimal Cycle:	35	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	0	0 2	0 0	0	0 0	0 0	2	1 0	1 0	3	0 0
Volume Module:												
Base Vol:	52	0	260	0	0	0	0	1341	684	214	1722	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	52	0	260	0	0	0	0	1341	684	214	1722	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	52	0	260	0	0	0	0	1341	684	214	1722	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	0	260	0	0	0	0	1341	684	214	1722	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	52	0	260	0	0	0	0	1341	684	214	1722	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.75	1.00	1.00	1.00	1.00	0.86	0.86	0.95	0.91	1.00
Lanes:	2.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	3.00	0.00
Final Sat.:	3502	0	2842	0	0	0	0	3282	1641	1805	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.01	0.00	0.09	0.00	0.00	0.00	0.00	0.41	0.42	0.12	0.33	0.00
Crit Moves:			****						****	****		
Green/Cycle:	0.14	0.00	0.14	0.00	0.00	0.00	0.00	0.63	0.63	0.18	0.81	0.00
Volume/Cap:	0.11	0.00	0.66	0.00	0.00	0.00	0.00	0.65	0.66	0.66	0.41	0.00
Delay/Veh:	37.8	0.0	44.9	0.0	0.0	0.0	0.0	11.9	12.2	43.1	2.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.8	0.0	44.9	0.0	0.0	0.0	0.0	11.9	12.2	43.1	2.7	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	A	A
HCM2k85thQ:	1	0	9	0	0	0	0	22	22	11	9	0

Note: Queue reported is the number of cars per lane.

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:25                Page 61-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #59 I-5 NB Off Ramps/17th Street
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.710
Loss Time (sec):       5               Average Delay (sec/veh):        30.0
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Street Name:         I-5 NB Off Ramps                    17th Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected         Permitted
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  1    1  0  0  0  1    1  0  3  0  1    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     720   33    21    54    0   279    89  932   337     0 1245    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  720   33    21    54    0   279    89  932   337     0 1245    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   720   33    21    54    0   279    89  932     0     0 1245    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  720   33    21    54    0   279    89  932     0     0 1245    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  720   33    21    54    0   279    89  932     0     0 1245    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.85  0.95 1.00  0.85  0.95 0.91  1.00  1.00 0.91  0.91
Lanes:       1.91 0.09  1.00  1.00 0.00  1.00  1.00 3.00  1.00  0.00 2.95  0.05
Final Sat.:  3466  159  1615  1805    0  1615  1805 5187  1900     0 5095    82
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.21  0.01  0.03 0.00  0.17  0.05 0.18  0.00  0.00 0.24  0.24
Crit Moves:  ****                      ****  ****                   ****
Green/Cycle: 0.29 0.29  0.29  0.24 0.00  0.24  0.07 0.41  0.00  0.00 0.34  0.34
Volume/Cap:  0.71 0.71  0.04  0.12 0.00  0.71  0.71 0.43  0.00  0.00 0.71  0.71
Delay/Veh:   33.8 33.8  25.4  29.6  0.0  40.5  62.7 21.1   0.0   0.0 29.8  29.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  33.8 33.8  25.4  29.6  0.0  40.5  62.7 21.1   0.0   0.0 29.8  29.8
LOS by Move:    C    C     C     C    A     D     E    C     A     A    C     C
HCM2k85thQ:    17   17     1     2    0    14     7   12     0     0   20    20
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:26                Page 62-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #60 Penn Wy and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.550
Loss Time (sec):       5               Average Delay (sec/veh):        21.2
Optimal Cycle:        27               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    2  0  2  0  0    0  0  0  0  0    1  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  260   230   951  196     0     0    0     0   196    0   110
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  260   230   951  196     0     0    0     0   196    0   110
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  260   230   951  196     0     0    0     0   196    0   110
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  260   230   951  196     0     0    0     0   196    0   110
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  260   230   951  196     0     0    0     0   196    0   110
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.92 0.95  1.00  1.00 1.00  1.00  0.95 1.00  0.75
Lanes:       0.00 2.00  1.00  2.00 2.00  0.00  0.00 0.00  0.00  1.00 0.00  2.00
Final Sat.:     0 3610  1615  3502 3610     0     0    0     0  1805    0  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.07  0.14  0.27 0.05  0.00  0.00 0.00  0.00  0.11 0.00  0.04
Crit Moves:             ****  ****                               ****
Green/Cycle: 0.00 0.26  0.26  0.49 0.75  0.00  0.00 0.00  0.00  0.20 0.00  0.69
Volume/Cap:  0.00 0.28  0.55  0.55 0.07  0.00  0.00 0.00  0.00  0.55 0.00  0.06
Delay/Veh:    0.0 29.8  33.6  18.0  3.2   0.0   0.0  0.0   0.0  38.0  0.0   5.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 29.8  33.6  18.0  3.2   0.0   0.0  0.0   0.0  38.0  0.0   5.0
LOS by Move:    A    C     C     B    A     A     A    A     A     D    A     A
HCM2k85thQ:     0    5    10    16    1     0     0    0     0     9    0     1
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:27                Page 63-1
------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #61 Santiago St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.769
Loss Time (sec):       5               Average Delay (sec/veh):       159.2
Optimal Cycle:         0               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     487  338    47    10  590   144   182   69   369   108   99    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  487  338    47    10  590   144   182   69   369   108   99    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   487  338    47    10  590   144   182   69   369   108   99    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  487  338    47    10  590   144   182   69   369   108   99    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  487  338    47    10  590   144   182   69   369   108   99    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.88  0.12  1.00 0.80  0.20  0.73 0.27  1.00  0.47 0.44  0.09
Final Sat.:   402  377    52   381  333    81   289  110   453   177  162    33
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     1.21 0.90  0.90  0.03 1.77  1.77  0.63 0.63  0.82  0.61 0.61  0.61
Crit Moves:  ****               ****                     ****  ****
Delay/Veh:  144.0 50.3  50.3  12.3  377 376.5  25.7 25.7  36.9  26.3 26.3  26.3
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 144.0 50.3  50.3  12.3  377 376.5  25.7 25.7  36.9  26.3 26.3  26.3
LOS by Move:    F    F     F     B    F     F     D    D     E     D    D     D
ApproachDel:     102.6            371.6            32.3            26.3
Delay Adj:        1.00             1.00            1.00            1.00
ApprAdjDel:      102.6            371.6            32.3            26.3
LOS by Appr:         F                F               D               D
AllWayAvgQ:  14.8  4.7   4.7   0.0 42.1  42.1   1.5  1.5   3.3   1.4  1.4   1.4
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #62 Santiago St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.037
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	2	0 1
Volume Module:												
Base Vol:	188	611	303	409	972	253	118	732	99	297	699	258
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	188	611	303	409	972	253	118	732	99	297	699	258
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	188	611	303	409	972	253	118	732	99	297	699	258
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	611	303	409	972	253	118	732	99	297	699	258
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	611	303	409	972	253	118	732	99	297	699	258
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.06	1.00
Lanes:	1.00	1.34	0.66	1.00	1.59	0.41	1.00	1.76	0.24	1.00	2.00	1.00
Final Sat.:	1600	2239	1061	1600	2639	661	1600	2919	381	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.12	0.27	0.29	0.26	0.37	0.38	0.07	0.25	0.26	0.19	0.21	0.16
Crit Moves:			****	****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #63 Standard Ave and 4th St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.939
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	117	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	191	473	248	431	604	332	298	624	219	250	550	340
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	191	473	248	431	604	332	298	624	219	250	550	340
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	191	473	248	431	604	332	298	624	219	250	550	340
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	191	473	248	431	604	332	298	624	219	250	550	340
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	191	473	248	431	604	332	298	624	219	250	550	340
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.05	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	1.48	0.52	1.00	1.24	0.76
Final Sat.:	1600	3400	1600	1600	3400	1600	1600	2469	831	1600	2078	1222
Capacity Analysis Module:												
Vol/Sat:	0.12	0.14	0.16	0.27	0.18	0.21	0.19	0.25	0.26	0.16	0.26	0.28
Crit Moves:		****	****				****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #64 Standard Ave and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.976
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	176	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	45	631	312	123	901	41	161	1959	121	194	1282	120
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	45	631	312	123	901	41	161	1959	121	194	1282	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	45	631	312	123	901	41	161	1959	121	194	1282	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	45	631	312	123	901	41	161	1959	121	194	1282	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	45	631	312	123	901	41	161	1959	121	194	1282	120
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.03	1.00	1.00	1.04	1.00	1.00	1.05	1.00
Lanes:	1.00	1.34	0.66	1.00	1.91	0.09	1.00	2.83	0.17	1.00	2.74	0.26
Final Sat.:	1600	2241	1059	1600	3161	139	1600	4721	279	1600	4589	411
Capacity Analysis Module:												
Vol/Sat:	0.03	0.28	0.29	0.08	0.29	0.29	0.10	0.41	0.43	0.12	0.28	0.29
Crit Moves:			****	****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #65 Standard Ave and Mcfadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.854
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	66	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	94	360	162	226	547	38	34	1178	142	150	397	89
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	360	162	226	547	38	34	1178	142	150	397	89
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	94	360	162	226	547	38	34	1178	142	150	397	89
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	94	360	162	226	547	38	34	1178	142	150	397	89
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	94	360	162	226	547	38	34	1178	142	150	397	89
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.03	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	1.38	0.62	1.00	1.87	0.13	1.00	1.78	0.22	1.00	1.63	0.37
Final Sat.:	1600	2307	993	1600	3092	208	1600	2956	344	1600	2714	586
Capacity Analysis Module:												
Vol/Sat:	0.06	0.16	0.16	0.14	0.18	0.18	0.02	0.40	0.41	0.09	0.15	0.15
Crit Moves:		****		****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #66 Halladay St and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.775
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	47	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0	0 0 0	0	0	2 1 0	0	1	2 0 0
Volume Module:												
Base Vol:	95	0	220	0	0	0	0	1833	207	260	986	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	95	0	220	0	0	0	0	1833	207	260	986	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	95	0	220	0	0	0	0	1833	207	260	986	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	95	0	220	0	0	0	0	1833	207	260	986	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	95	0	220	0	0	0	0	1833	207	260	986	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	2.70	0.30	0.63	2.37	0.00
Final Sat.:	1600	0	1600	0	0	0	0	4513	487	1002	3998	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.14	0.00	0.00	0.00	0.00	0.41	0.43	0.16	0.25	0.00
Crit Moves:			****						****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #67 Halladay St and Dyer Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.774
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	47	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	15	24	65	450	91	96	46	1537	11	104	566	91
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	15	24	65	450	91	96	46	1537	11	104	566	91
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	15	24	65	450	91	96	46	1537	11	104	566	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	15	24	65	450	91	96	46	1537	11	104	566	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	15	24	65	450	91	96	46	1537	11	104	566	91
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.05	1.00
Lanes:	1.00	0.27	0.73	1.00	0.49	0.51	1.00	2.98	0.02	1.00	2.58	0.42
Final Sat.:	1600	431	1169	1600	779	821	1600	4966	34	1600	4335	665
Capacity Analysis Module:												
Vol/Sat:	0.01	0.06	0.06	0.28	0.12	0.12	0.03	0.31	0.32	0.07	0.13	0.14
Crit Moves:		****		****					****	****		

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:31                Page 70-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #68 SR-55 SB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.608
Loss Time (sec):       5               Average Delay (sec/veh):        19.9
Optimal Cycle:        31               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  2    0  0  2  1  1    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   998    0   903     0 1349   961     0 1187   135
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   998    0   903     0 1349   961     0 1187   135
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:     0    0     0   998    0   903     0 1349     0     0 1187     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   998    0   903     0 1349     0     0 1187     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:    0    0     0   998    0   903     0 1349     0     0 1187     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.75  1.00 0.91  0.91  1.00 0.91  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  2.00  0.00 3.00  1.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3502    0  2842     0 5187  1729     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.29 0.00  0.32  0.00 0.26  0.00  0.00 0.23  0.00
Crit Moves:                               ****        ****        ****
Green/Cycle: 0.00 0.00  0.00  0.52 0.00  0.52  0.00 0.43  0.00  0.00 0.43  0.00
Volume/Cap:  0.00 0.00  0.00  0.55 0.00  0.61  0.00 0.61  0.00  0.00 0.54  0.00
Delay/Veh:    0.0  0.0   0.0  16.3  0.0  17.5   0.0 22.6   0.0   0.0 21.5   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  16.3  0.0  17.5   0.0 22.6   0.0   0.0 21.5   0.0
LOS by Move:    A    A     A     B    A     B     A    C     A     A    C     A
HCM2k85thQ:     0    0     0    16    0    17     0   18     0     0   15     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:32                Page 71-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #69 SR-55 NB Ramps and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.712
Loss Time (sec):       5               Average Delay (sec/veh):        19.3
Optimal Cycle:        40               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Ignore           Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  2  0  2    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     946    0  1017     0    0     0     0 1468   726     0  517   244
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  946    0  1017     0    0     0     0 1468   726     0  517   244
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   946    0     0     0    0     0     0 1468     0     0  517     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  946    0     0     0    0     0     0 1468     0     0  517     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  946    0     0     0    0     0     0 1468     0     0  517     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.88  1.00 0.91  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  2.00  0.00 3.00  1.00
Final Sat.:  3502    0  1900     0    0     0     0 3610  3344     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.00  0.00  0.00 0.00  0.00  0.00 0.41  0.00  0.00 0.10  0.00
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.38 0.00  0.00  0.00 0.00  0.00  0.00 0.57  0.00  0.00 0.57  0.00
Volume/Cap:  0.71 0.00  0.00  0.00 0.00  0.00  0.00 0.71  0.00  0.00 0.17  0.00
Delay/Veh:   28.2  0.0   0.0   0.0  0.0   0.0   0.0 16.7   0.0   0.0 10.3   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  28.2  0.0   0.0   0.0  0.0   0.0   0.0 16.7   0.0   0.0 10.3   0.0
LOS by Move:    C    A     A     A    A     A     A    B     A     A    B     A
HCM2k85thQ:    21    0     0     0    0     0     0   26     0     0    4     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #70 SR-55 SB Ramps and Dyer Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.617
Loss Time (sec):	5	Average Delay (sec/veh):	25.7
Optimal Cycle:	31	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Ovl			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 1	0	0 2	0 1	1	0 1	1 0	3	0 1	2 0	3	0 1
Volume Module:												
Base Vol:	286	34	654	50	242	60	37	1422	303	348	552	92
Growth Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
Initial Bse:	286	34	654	50	242	60	37	1422	303	348	552	92
User Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
PHF Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
PHF Volume:	286	34	654	50	242	60	37	1422	303	348	552	92
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	286	34	654	50	242	60	37	1422	303	348	552	92
PCE Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
MLF Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
FinalVolume:	286	34	654	50	242	60	37	1422	303	348	552	92
Saturation Flow Module:												
Sat/Lane:	1900 1900	1900		1900 1900	1900		1900 1900	1900		1900 1900	1900	
Adjustment:	0.96 0.96	0.75		0.94 0.94	0.85		0.95 0.91	0.85		0.92 0.91	0.85	
Lanes:	1.79 0.21	2.00		0.34 1.66	1.00		1.00 3.00	1.00		2.00 3.00	1.00	
Final Sat.:	3250	386	2842	613	2968	1615	1805	5187	1615	3502	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.09 0.09	0.23		0.08 0.08	0.04		0.02 0.27	0.19		0.10 0.11	0.06	
Crit Moves:		****			****			****			****	
Green/Cycle:	0.21 0.21	0.37		0.13 0.13	0.13		0.10 0.44	0.44		0.16 0.51	0.51	
Volume/Cap:	0.42 0.42	0.62		0.62 0.62	0.28		0.21 0.62	0.42		0.62 0.21	0.11	
Delay/Veh:	34.4 34.4	26.6		43.4 43.4	39.8		42.1 21.8	19.4		41.1 13.6	12.9	
User DelAdj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
AdjDel/Veh:	34.4 34.4	26.6		43.4 43.4	39.8		42.1 21.8	19.4		41.1 13.6	12.9	
LOS by Move:	C	C	C	D	D	D	D	C	B	D	B	B
HCM2k85thQ:	7	7	15	8	8	3	2	19	10	9	5	2

Note: Queue reported is the number of cars per lane.

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:33                Page 73-1
--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #71 Glassell St and La Veta Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.800
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        52               Level Of Service:                  D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Ovl              Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  1  1  0    1  0  1  0  1    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     263  412   125    14  295    65    57  293   563   367  387     9
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  263  412   125    14  295    65    57  293   563   367  387     9
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   263  412   125    14  295    65    57  293   563   367  387     9
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  263  412   125    14  295    65    57  293   563   367  387     9
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  263  412   125    14  295    65    57  293   563   367  387     9
OvlAdjVol:                 0                                 431
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.03  1.00
Lanes:       2.00 1.00  1.00  1.00 1.64  0.36  1.00 1.00  1.00  1.00 1.95  0.05
Final Sat.:  3200 1700  1600  1600 2722   578  1600 1700  1600  1600 3227    73
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.24  0.08  0.01 0.11  0.11  0.04 0.17  0.35  0.23 0.12  0.12
OvlAdjV/S:                 0.00                              0.27
Crit Moves:        ****        ****                          ****  ****
********************************************************************************
```

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```
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:34                Page 74-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #72 Glassell St and SR-22 WB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.871
Loss Time (sec):       5               Average Delay (sec/veh):        32.6
Optimal Cycle:        75               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted      Split Phase      Split Phase
Rights:           Include           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  2  0  1    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     511  574     0     0 1017   473     0    0     0   323    6   483
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  511  574     0     0 1017   473     0    0     0   323    6   483
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   511  574     0     0 1017   473     0    0     0   323    6   483
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  511  574     0     0 1017   473     0    0     0   323    6   483
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  511  574     0     0 1017   473     0    0     0   323    6   483
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  1.00  1.00 0.95  0.85  1.00 1.00  1.00  0.86 0.86  0.86
Lanes:       1.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  1.39 0.01  1.60
Final Sat.:  1805 3610     0     0 3610  1615     0    0     0  2270   24  2588
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.16  0.00  0.00 0.28  0.29  0.00 0.00  0.00  0.14 0.25  0.19
Crit Moves:  ****                     ****                          ****
Green/Cycle: 0.33 0.66  0.00  0.00 0.34  0.34  0.00 0.00  0.00  0.29 0.29  0.29
Volume/Cap:  0.87 0.24  0.00  0.00 0.84  0.87  0.00 0.00  0.00  0.49 0.87  0.65
Delay/Veh:   45.1  6.9   0.0   0.0 35.9  45.4   0.0  0.0   0.0  29.7 42.8  32.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  45.1  6.9   0.0   0.0 35.9  45.4   0.0  0.0   0.0  29.7 42.8  32.3
LOS by Move:    D    A     A     A    D     D     A    A     A     C    D     C
HCM2k85thQ:    26    6     0     0   26    25     0    0     0    10   22    14
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:34                Page 75-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #73 Grand Ave / Glassell St and SR-22 EB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.860
Loss Time (sec):       5               Average Delay (sec/veh):        30.6
Optimal Cycle:        71               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted       Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  2  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  918   245   373  977     0   270    0  1058     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  918   245   373  977     0   270    0  1058     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  918   245   373  977     0   270    0  1058     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  918   245   373  977     0   270    0  1058     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  918   245   373  977     0   270    0  1058     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.95 0.95  1.00  0.87 1.00  0.87  1.00 1.00  1.00
Lanes:       0.00 2.00  1.00  1.00 2.00  0.00  1.20 0.00  1.80  0.00 0.00  0.00
Final Sat.:     0 3610  1615  1805 3610     0  1992    0  2974     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.25  0.15  0.21 0.27  0.00  0.14 0.00  0.36  0.00 0.00  0.00
Crit Moves:       ****        ****                          ****
Green/Cycle: 0.00 0.30  0.30  0.24 0.54  0.00  0.41 0.00  0.41  0.00 0.00  0.00
Volume/Cap:  0.00 0.86  0.51  0.86 0.50  0.00  0.33 0.00  0.86  0.00 0.00  0.00
Delay/Veh:    0.0 40.4  30.2  52.1 15.0   0.0  19.9  0.0  31.8   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 40.4  30.2  52.1 15.0   0.0  19.9  0.0  31.8   0.0  0.0   0.0
LOS by Move:    A    D     C     D    B     A     B    A     C     A    A     A
HCM2k85thQ:     0   25    10    21   15     0     7    0    28     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:35                Page 76-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #74 Grand Ave and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.611
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      21  840   121   207 1718    38    99   60    59   213   24   192
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   21  840   121   207 1718    38    99   60    59   213   24   192
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    21  840   121   207 1718    38    99   60    59   213   24   192
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   21  840   121   207 1718    38    99   60    59   213   24   192
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   21  840   121   207 1718    38    99   60    59   213   24   192
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.62  0.38  1.00 2.94  0.06  1.00 1.01  0.99  1.00 1.00  1.00
Final Sat.:  1600 4396   604  1600 4896   104  1600 1713  1587  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.19  0.20  0.13 0.35  0.37  0.06 0.04  0.04  0.13 0.01  0.12
Crit Moves:  ****                      ****  ****                      ****
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:36                Page 77-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #75 Grand Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.843
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        63               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include        WideBypass          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      75  528   136   345 1687   380   143  233    48   200  385   352
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   75  528   136   345 1687   380   143  233    48   200  385   352
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    75  528   136   345 1687   380   143  233    48   200  385   352
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   75  528   136   345 1687   380   143  233    48   200  385   352
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   75  528   136   345 1687   380   143  233    48   200  385   352
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.39  0.61  1.00 2.45  0.55  1.00 0.83  0.17  1.00 1.00  1.00
Final Sat.:  1600 4017   983  1600 4118   882  1600 1327   273  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.13  0.14  0.22 0.41  0.43  0.09 0.18  0.18  0.13 0.23  0.22
Crit Moves:  ****                      ****  ****                 ****
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:36                Page 78-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #76 Grand Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.794
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     186  543   373   340 1426   280   198  739    94   342  894    98
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  186  543   373   340 1426   280   198  739    94   342  894    98
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   186  543   373   340 1426   280   198  739    94   342  894    98
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  186  543   373   340 1426   280   198  739    94   342  894    98
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  186  543   373   340 1426   280   198  739    94   342  894    98
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 2.51  0.49  2.00 2.66  0.34  2.00 2.70  0.30
Final Sat.:  1600 3400  1600  1600 4212   788  3200 4458   542  3200 4526   474
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.16  0.23  0.21 0.34  0.36  0.06 0.17  0.17  0.11 0.20  0.21
Crit Moves:  ****                      ****       ****        ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:37                Page 79-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #77 Grand Ave and I-5 NB Ramps
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.740
Loss Time (sec):       5                Average Delay (sec/veh):        13.2
Optimal Cycle:        44                Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  3  0  0    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1056   610    90 2893     0     0    0     0   507    0   140
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1056   610    90 2893     0     0    0     0   507    0   140
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1056     0    90 2893     0     0    0     0   507    0   140
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1056     0    90 2893     0     0    0     0   507    0   140
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1056     0    90 2893     0     0    0     0   507    0   140
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  1.00  0.95 0.91  1.00  1.00 1.00  1.00  0.92 1.00  0.85
Lanes:       0.00 2.00  1.00  1.00 3.00  0.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:     0 3610  1900  1805 5187     0     0    0     0  3502    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.29  0.00  0.05 0.56  0.00  0.00 0.00  0.00  0.14 0.00  0.09
Crit Moves:  ****                 ****                          ****
Green/Cycle: 0.00 0.64  0.00  0.11 0.75  0.00  0.00 0.00  0.00  0.20 0.00  0.20
Volume/Cap:  0.00 0.45  0.00  0.45 0.74  0.00  0.00 0.00  0.00  0.74 0.00  0.44
Delay/Veh:    0.0  9.1   0.0  43.3  7.6   0.0   0.0  0.0   0.0  42.1  0.0  36.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  9.1   0.0  43.3  7.6   0.0   0.0  0.0   0.0  42.1  0.0  36.4
LOS by Move:    A    A     A     D    A     A     A    A     A     D    A     D
HCM2k85thQ:     0   13     0     5   28     0     0    0     0    14    0     7
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:38                Page 80-1
------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #78 Grand Ave and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.832
Loss Time (sec):       5                Average Delay (sec/veh):        26.0
Optimal Cycle:        62                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include           Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  2    2  0  1  0  2    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      49  694    35   202 1670  1473   268  221   436     6  475    43
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   49  694    35   202 1670  1473   268  221   436     6  475    43
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    49  694    35   202 1670  1473   268  221   436     6  475    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   49  694    35   202 1670  1473   268  221   436     6  475    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   49  694    35   202 1670  1473   268  221   436     6  475    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.90  0.90  0.95 0.95  0.75  0.92 1.00  0.75  0.94 0.94  0.94
Lanes:       1.00 2.86  0.14  1.00 2.00  2.00  2.00 1.00  2.00  0.02 1.82  0.16
Final Sat.:  1805 4903   247  1805 3610  2842  3502 1900  2842    41 3230   292
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.14  0.14  0.11 0.46  0.52  0.08 0.12  0.15  0.15 0.15  0.15
Crit Moves:  ****                 ****                    ****       ****
Green/Cycle: 0.03 0.33  0.33  0.26 0.56  0.74  0.18 0.18  0.18  0.18 0.18  0.18
Volume/Cap:  0.83 0.43  0.43  0.43 0.83  0.70  0.42 0.63  0.83  0.83 0.83  0.83
Delay/Veh:  109.2 26.4  26.4  31.5 21.4   8.1  36.5 41.3  50.1  48.9 48.9  48.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 109.2 26.4  26.4  31.5 21.4   8.1  36.5 41.3  50.1  48.9 48.9  48.9
LOS by Move:    F    C     C     C    C     A     D    D     D     D    D     D
HCM2k85thQ:     5   10    10     8   35    22     6   11    15    16   16    16
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:38                Page 81-1
------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #79 Grand Ave and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.742
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     208  732    34    99 1432   174   436 1041   295   216  759    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  208  732    34    99 1432   174   436 1041   295   216  759    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   208  732    34    99 1432   174   436 1041   295   216  759    87
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  208  732    34    99 1432   174   436 1041   295   216  759    87
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  208  732    34    99 1432   174   436 1041   295   216  759    87
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 2.87  0.13  2.00 3.00  1.00  2.00 2.34  0.66  2.00 2.69  0.31
Final Sat.:  3200 4787   213  3200 5100  1600  3200 3940  1060  3200 4506   494
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.15  0.16  0.03 0.28  0.11  0.14 0.26  0.28  0.07 0.17  0.18
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:39                Page 82-1
------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #80 Grand Ave and Chestnut Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.704
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      53  737   163   161 1937    53    34  239    63   130  384   239
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   53  737   163   161 1937    53    34  239    63   130  384   239
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    53  737   163   161 1937    53    34  239    63   130  384   239
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   53  737   163   161 1937    53    34  239    63   130  384   239
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   53  737   163   161 1937    53    34  239    63   130  384   239
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 2.46  0.54  1.00 2.92  0.08  1.00 1.58  0.42  1.00 1.23  0.77
Final Sat.:  1600 4131   869  1600 4872   128  1600 2632   668  1600 2072  1228
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.18  0.19  0.10 0.40  0.41  0.02 0.09  0.09  0.08 0.19  0.19
Crit Moves:  ****                         ****  ****                   ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:40                Page 83-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #81 Grand Ave and McFadden Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.892
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        82               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     181  764   114   249 1672   163   205  663   201   123  440   111
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  181  764   114   249 1672   163   205  663   201   123  440   111
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   181  764   114   249 1672   163   205  663   201   123  440   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  181  764   114   249 1672   163   205  663   201   123  440   111
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  181  764   114   249 1672   163   205  663   201   123  440   111
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.61  0.39  1.00 2.73  0.27  1.00 1.53  0.47  1.00 1.60  0.40
Final Sat.:  1600 4377   623  1600 4574   426  1600 2556   744  1600 2655   645
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.17  0.18  0.16 0.37  0.38  0.13 0.26  0.27  0.08 0.17  0.17
Crit Moves:  ****                ****             ****  ****
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:41                Page 84-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #82 Grand Ave and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.838
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        61               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47  472    92   243 1244   243   347 1447   139   189  724   158
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47  472    92   243 1244   243   347 1447   139   189  724   158
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47  472    92   243 1244   243   347 1447   139   189  724   158
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47  472    92   243 1244   243   347 1447   139   189  724   158
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47  472    92   243 1244   243   347 1447   139   189  724   158
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.51  0.49  1.00 2.51  0.49  1.00 2.74  0.26  1.00 2.46  0.54
Final Sat.:  1600 4217   783  1600 4216   784  1600 4579   421  1600 4140   860
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.11  0.12  0.15 0.30  0.31  0.22 0.32  0.33  0.12 0.17  0.18
Crit Moves:  ****                         ****             ****  ****
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:41                Page 85-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #83 Grand Ave and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.613
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  3  0  1    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     142  429   184   183  528   178   333 1188   467    92  406   137
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  142  429   184   183  528   178   333 1188   467    92  406   137
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   142  429   184   183  528   178   333 1188   467    92  406   137
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  142  429   184   183  528   178   333 1188   467    92  406   137
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  142  429   184   183  528   178   333 1188   467    92  406   137
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.10  0.90  1.00 2.24  0.76  2.00 3.00  1.00  2.00 2.24  0.76
Final Sat.:  1600 3559  1441  1600 3790  1210  3200 5100  1600  3200 3789  1211
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.12  0.13  0.11 0.14  0.15  0.10 0.23  0.29  0.03 0.11  0.11
Crit Moves:             ****  ****                           ****  ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:42                Page 86-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #84 SR-55 NB Ramps and Dyer Rd
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.569
Loss Time (sec):       5                Average Delay (sec/veh):        17.1
Optimal Cycle:        28                Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    0  0  3  0  1    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     610    0   499     0    0     0     0 1618   647     0  599   361
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  610    0   499     0    0     0     0 1618   647     0  599   361
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   610    0   499     0    0     0     0 1618     0     0  599     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  610    0   499     0    0     0     0 1618     0     0  599     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  610    0   499     0    0     0     0 1618     0     0  599     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.91 1.00  0.91  1.00 1.00  1.00  1.00 0.91  1.00  1.00 0.91  0.91
Lanes:       1.55 0.00  1.45  0.00 0.00  0.00  0.00 3.00  1.00  0.00 3.00  0.00
Final Sat.:  2674    0  2501     0    0     0     0 5187  1900     0 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.00  0.20  0.00 0.00  0.00  0.00 0.31  0.00  0.00 0.12  0.00
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.40 0.00  0.40  0.00 0.00  0.00  0.00 0.55  0.00  0.00 0.55  0.00
Volume/Cap:  0.57 0.00  0.50  0.00 0.00  0.00  0.00 0.57  0.00  0.00 0.21  0.00
Delay/Veh:   23.6  0.0  22.6   0.0  0.0   0.0   0.0 15.1   0.0   0.0 11.6   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  23.6  0.0  22.6   0.0  0.0   0.0   0.0 15.1   0.0   0.0 11.6   0.0
LOS by Move:    C    A     C     A    A     A     A    B     A     A    B     A
HCM2k85thQ:    15    0    12     0    0     0     0   18     0     0    5     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:42                Page 87-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #85 Cambridge St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.971
Loss Time (sec):       5               Average Delay (sec/veh):        31.6
Optimal Cycle:         0               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0    0  0  1  0  1    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     185  235     0     0  480   245   273    0   436     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  185  235     0     0  480   245   273    0   436     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   185  235     0     0  480   245   273    0   436     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  185  235     0     0  480   245   273    0   436     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  185  235     0     0  480   245   273    0   436     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:   434  463     0     0  494   537   458    0   539     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.43 0.51  xxxx  xxxx 0.97  0.46  0.60 xxxx  0.81  xxxx xxxx  xxxx
Crit Moves:       ****             ****                     ****
Delay/Veh:   16.6 17.7   0.0   0.0 59.7  14.5  21.1  0.0  30.8   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  16.6 17.7   0.0   0.0 59.7  14.5  21.1  0.0  30.8   0.0  0.0   0.0
LOS by Move:    C    C     *     *    F     B     C    *     D     *    *     *
ApproachDel:       17.2             44.4             27.1           xxxxxx
Delay Adj:         1.00             1.00             1.00            xxxxx
ApprAdjDel:        17.2             44.4             27.1           xxxxxx
LOS by Appr:          C                E                D                *
AllWayAvgQ:   0.7  0.9   0.0   0.0  6.8   0.8   1.4  0.0   3.2   0.0  0.0   0.0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:43                Page 88-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #86 Cambridge St and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.563
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:            Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   567    0   183    80  216     0     0  195   152
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   567    0   183    80  216     0     0  195   152
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   567    0   183    80  216     0     0  195   152
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   567    0   183    80  216     0     0  195   152
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   567    0   183    80  216     0     0  195   152
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  1.00 2.00  0.00  0.00 1.12  0.88
Final Sat.:     0    0     0  1600    0  1600  1600 3400     0     0 1898  1402
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.35 0.00  0.11  0.05 0.06  0.00  0.00 0.10  0.11
Crit Moves:                   ****             ****                     ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:44                Page 89-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #87 Mabury St and 1st Street
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.714
Loss Time (sec):       5               Average Delay (sec/veh):        27.4
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Street Name:              Mabury                        1st Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    1  0  1! 0  1    0  0  2  1  0    1  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       6    0   157   248  147   554     0 1230    13    38  579     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6    0   157   248  147   554     0 1230    13    38  579     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     6    0   157   248  147   554     0 1230    13    38  579     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    6    0   157   248  147   554     0 1230    13    38  579     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    6    0   157   248  147   554     0 1230    13    38  579     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 1.00  0.85  0.90 0.90  0.90  1.00 0.91  0.91  0.95 0.91  0.91
Lanes:       1.00 0.00  1.00  1.23 0.27  1.50  0.00 2.97  0.03  1.00 3.00  0.00
Final Sat.:  1805    0  1615  2097  459  2575     0 5128    54  1805 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.10  0.12 0.32  0.22  0.00 0.24  0.24  0.02 0.11  0.00
Crit Moves:             ****       ****             ****        ****
Green/Cycle: 0.14 0.00  0.14  0.45 0.45  0.45  0.00 0.34  0.34  0.03 0.37  0.00
Volume/Cap:  0.02 0.00  0.71  0.26 0.71  0.48  0.00 0.71  0.71  0.71 0.31  0.00
Delay/Veh:   37.5  0.0  51.9  17.3 24.2  19.6   0.0 30.4  30.4  84.9 22.8   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  37.5  0.0  51.9  17.3 24.2  19.6   0.0 30.4  30.4  84.9 22.8   0.0
LOS by Move:    D    A     D     B    C     B     A    C     C     F    C     A
HCM2k85thQ:     0    0    10     6   22    12     0   20    20     4    7     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

Attachment 8

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:45                Page 90-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #88 Tustin St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.446
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       7  301    87    67 1307     4     9   11    35   307    1    47
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    7  301    87    67 1307     4     9   11    35   307    1    47
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     7  301    87    67 1307     4     9   11    35   307    1    47
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    7  301    87    67 1307     4     9   11    35   307    1    47
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    7  301    87    67 1307     4     9   11    35   307    1    47
OvlAdjVol:                                                                   0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.33  0.67  1.00 2.99  0.01  1.00 1.00  1.00  1.99 0.01  1.00
Final Sat.:  1600 3924  1076  1600 4985    15  1600 1700  1600  3190   10  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.08  0.08  0.04 0.26  0.27  0.01 0.01  0.02  0.10 0.10  0.03
OvlAdjV/S:                                                                0.00
Crit Moves:  ****                      ****             ****       ****
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:45                Page 91-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #89 Tustin St and SR-22 WB On-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.635
Loss Time (sec):       5               Average Delay (sec/veh):        12.2
Optimal Cycle:        33               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include           Include         Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  0    0  0  2  1  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     614  571     0     0 1171   699     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  614  571     0     0 1171   699     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   614  571     0     0 1171   699     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  614  571     0     0 1171   699     0    0     0     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  614  571     0     0 1171   699     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  1.00  1.00 0.86  0.86  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  0.00 0.00  0.00
Final Sat.:  3502 3610     0     0 3264  1632     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.16  0.00  0.00 0.36  0.43  0.00 0.00  0.00  0.00 0.00  0.00
Crit Moves:  ****                      ****
Green/Cycle: 0.28 0.95  0.00  0.00 0.67  0.67  0.00 0.00  0.00  0.00 0.00  0.00
Volume/Cap:  0.64 0.17  0.00  0.00 0.53  0.64  0.00 0.00  0.00  0.00 0.00  0.00
Delay/Veh:   33.2  0.2   0.0   0.0  8.4   9.8   0.0  0.0   0.0   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  33.2  0.2   0.0   0.0  8.4   9.8   0.0  0.0   0.0   0.0  0.0   0.0
LOS by Move:    C    A     A     A    A     A     A    A     A     A    A     A
HCM2k85thQ:    14    1     0     0   15    21     0    0     0     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Attachment 8

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:46                Page 92-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #90 Tustin St and SR-22 EB Off-Ramp / Seba Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.723
Loss Time (sec):       5                Average Delay (sec/veh):        25.0
Optimal Cycle:        42                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  1  0    1  0  3  0  0    1  0  1! 0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  953     5    17 1049     0   275   27  1182     6    0    43
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  953     5    17 1049     0   275   27  1182     6    0    43
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  953     5    17 1049     0   275   27  1182     6    0    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  953     5    17 1049     0   275   27  1182     6    0    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  953     5    17 1049     0   275   27  1182     6    0    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.91  0.14 0.91  1.00  0.87 0.87  0.87  0.88 1.00  0.88
Lanes:       0.00 2.98  0.02  1.00 3.00  0.00  1.18 0.04  1.78  0.12 0.00  0.88
Final Sat.:     0 5155    27   272 5187     0  1961   59  2956   204    0  1460
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.18  0.18  0.06 0.20  0.00  0.14 0.46  0.40  0.03 0.00  0.03
Crit Moves:                       ****             ****        ****
Green/Cycle: 0.00 0.28  0.28  0.28 0.28  0.00  0.63 0.63  0.63  0.04 0.00  0.04
Volume/Cap:  0.00 0.66  0.66  0.22 0.72  0.00  0.22 0.72  0.63  0.72 0.00  0.72
Delay/Veh:    0.0 33.0  33.0  29.2 34.4   0.0   8.0 13.9  12.0  79.1  0.0  79.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 33.0  33.0  29.2 34.4   0.0   8.0 13.9  12.0  79.1  0.0  79.1
LOS by Move:    A    C     C     C    C     A     A    B     B     E    A     E
HCM2k85thQ:     0   16    16     1   18     0     5   25    19     5    0     5
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:47                Page 93-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #91 Tustin Ave and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.195
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     101  586   103   280 2411    48    84  317   546   416  460   601
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  101  586   103   280 2411    48    84  317   546   416  460   601
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   101  586   103   280 2411    48    84  317   546   416  460   601
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  101  586   103   280 2411    48    84  317   546   416  460   601
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  101  586   103   280 2411    48    84  317   546   416  460   601
OvlAdjVol:                                                                 461
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.55  0.45  2.00 2.94  0.06  1.00 1.00  1.00  1.00 1.00  1.00
Final Sat.:  3200 4282   718  3200 4906    94  1600 1700  1600  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.14  0.14  0.09 0.49  0.51  0.05 0.19  0.34  0.26 0.27  0.38
OvlAdjV/S:                                                                 0.29
Crit Moves:  ****                      ****             ****  ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:48                Page 94-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #92 Tustin Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.037
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                 F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:      83  453    84   151 3094    98   124  314   229   160  332   166
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   83  453    84   151 3094    98   124  314   229   160  332   166
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    83  453    84   151 3094    98   124  314   229   160  332   166
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   83  453    84   151 3094    98   124  314   229   160  332   166
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   83  453    84   151 3094    98   124  314   229   160  332   166
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.53  0.47  2.00 2.91  0.09  1.00 1.16  0.84  1.00 1.33  0.67
Final Sat.:  1600 4249   751  3200 4853   147  1600 1950  1350  1600 2233  1067
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.11  0.11  0.05 0.64  0.67  0.08 0.16  0.17  0.10 0.15  0.16
Crit Moves:  ****                         ****             ****  ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:49                Page 95-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #93 Tustin Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.911
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        93               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     127  226   269   716 2067    23   230  908   155   664 1047   256
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  127  226   269   716 2067    23   230  908   155   664 1047   256
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   127  226   269   716 2067    23   230  908   155   664 1047   256
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  127  226   269   716 2067    23   230  908   155   664 1047   256
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  127  226   269   716 2067    23   230  908   155   664 1047   256
OvlAdjVol:                 0                                                  0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.00  1.00  2.00 2.97  0.03  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 3400  1600  3200 4947    53  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.07  0.17  0.22 0.42  0.44  0.07 0.18  0.10  0.21 0.21  0.16
OvlAdjV/S:                 0.00                                               0.00
Crit Moves:  ****                         ****        ****        ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:50                Page 96-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #94 Tustin Ave and 4th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.830
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        59               Level Of Service:                 D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  0  1    1  0  2  1  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       80  408   365   601  765   237   126  748    31   125  704   457
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    80  408   365   601  765   237   126  748    31   125  704   457
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     80  408   365   601  765   237   126  748    31   125  704   457
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    80  408   365   601  765   237   126  748    31   125  704   457
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    80  408   365   601  765   237   126  748    31   125  704   457
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.00  1.00  2.00 2.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00
Final Sat.:  1600 3400  1600  3200 3400  1600  1600 5100  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.12  0.23  0.19 0.23  0.15  0.08 0.15  0.02  0.08 0.21  0.29
Crit Moves:             ****  ****             ****                       ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:50                Page 97-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #95 SR-55 SB Ramps / Auto Mall Dr and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.672
Loss Time (sec):       5               Average Delay (sec/veh):        25.2
Optimal Cycle:        36               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    1  0  1  0  1    1  0  3  0  1    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     456   68   540    50   30     8    36 1426   527   510 1202   157
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  456   68   540    50   30     8    36 1426   527   510 1202   157
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   456   68   540    50   30     8    36 1426     0   510 1202   157
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  456   68   540    50   30     8    36 1426     0   510 1202   157
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  456   68   540    50   30     8    36 1426     0   510 1202   157
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.75  0.95 1.00  0.85  0.95 0.91  1.00  0.92 0.89  0.89
Lanes:       1.74 0.26  2.00  1.00 1.00  1.00  1.00 3.00  1.00  2.00 2.65  0.35
Final Sat.:  3168  472  2842  1805 1900  1615  1805 5187  1900  3502 4510   589
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.14  0.19  0.03 0.02  0.00  0.02 0.27  0.00  0.15 0.27  0.27
Crit Moves:             ****  ****                 ****        ****
Green/Cycle: 0.28 0.28  0.28  0.04 0.04  0.04  0.04 0.41  0.00  0.22 0.58  0.58
Volume/Cap:  0.51 0.51  0.67  0.67 0.38  0.12  0.46 0.67  0.00  0.67 0.46  0.46
Delay/Veh:   30.5 30.5  34.0  68.7 49.8  47.0  50.8 24.9   0.0  38.3 12.0  12.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  30.5 30.5  34.0  68.7 49.8  47.0  50.8 24.9   0.0  38.3 12.0  12.0
LOS by Move:    C    C     C     E    D     D     D    C     A     D    B     B
HCM2k85thQ:    11   11    14     4    2     1     3   20     0    13   13    13
```

```
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:51                Page 98-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #96 SR-55 NB Ramps / Del Amo Ave and Newport Avenue
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.673
Loss Time (sec):       5                Average Delay (sec/veh):        25.4
Optimal Cycle:        36                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  3  0  1    2  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     392  104    66    21  512   750   269  163   155     8  223     4
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  392  104    66    21  512   750   269  163   155     8  223     4
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   392  104    66    21  512   750   269  163   155     8  223     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  392  104    66    21  512   750   269  163   155     8  223     4
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  392  104    66    21  512   750   269  163   155     8  223     4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.86  0.86  0.95 0.91  0.85  0.92 0.88  0.88  0.95 0.95  0.95
Lanes:       2.00 2.00  1.00  1.00 3.00  1.00  2.00 1.03  0.97  1.00 1.96  0.04
Final Sat.:  3502 3257  1629  1805 5187  1615  3502 1715  1631  1805 3536    63
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.03  0.04  0.01 0.10  0.46  0.08 0.10  0.10  0.00 0.06  0.06
Crit Moves:  ****                        ****  ****                   ****
Green/Cycle: 0.17 0.58  0.58  0.17 0.58  0.69  0.11 0.20  0.20  0.01 0.09  0.09
Volume/Cap:  0.67 0.06  0.07  0.07 0.17  0.67  0.67 0.48  0.48  0.48 0.67  0.67
Delay/Veh:   42.2  9.3   9.4  35.3 10.0  10.6  47.0 36.0  36.0  69.3 49.1  49.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  42.2  9.3   9.4  35.3 10.0  10.6  47.0 36.0  36.0  69.3 49.1  49.1
LOS by Move:    D    A     A     D    B     B     D    D     D     E    D     D
HCM2k85thQ:    11    1     2     1    4    21     8    8     8     1    8     8
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:52                Page 99-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #97 Red Hill Ave and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.610
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Ovl            Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     101  374   106   195  828   388   397 1276   271   255 1234   173
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  101  374   106   195  828   388   397 1276   271   255 1234   173
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   101  374   106   195  828   388   397 1276   271   255 1234   173
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  101  374   106   195  828   388   397 1276   271   255 1234   173
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  101  374   106   195  828   388   397 1276   271   255 1234   173
OvlAdjVol:                                 189              221
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.07  0.07  0.06 0.16  0.24  0.12 0.25  0.17  0.08 0.24  0.11
OvlAdjV/S:                                 0.12             0.14
Crit Moves:  ****                  ****        ****                  ****
******************************************************************************
```

```
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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:53              Page 100-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #98 Red Hill Ave and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.560
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  1  0    2  0  2  1  0    1  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       68  414    56    20  935   188   273  464   342   120  427    76
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    68  414    56    20  935   188   273  464   342   120  427    76
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     68  414    56    20  935   188   273  464   342   120  427    76
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    68  414    56    20  935   188   273  464   342   120  427    76
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    68  414    56    20  935   188   273  464   342   120  427    76
OvlAdjVol:                                                                   66
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:        2.00 3.52  0.48  2.00 2.50  0.50  1.00 2.00  1.00  2.00 3.00  1.00
Final Sat.:   3200 5937   763  3200 4196   804  1600 3400  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.02 0.07  0.07  0.01 0.22  0.23  0.17 0.14  0.21  0.04 0.08  0.05
OvlAdjV/S:                                                                   0.04
Crit Moves:   ****                     ****  ****                 ****
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:53              Page 101-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #99 Red Hill Ave and Dyer Rd / barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.548
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        26               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  4  0  1    2  0  4  0  1    2  0  3  1  0    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     152  379   125   163  719    94   124  748   296   511  571   111
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  152  379   125   163  719    94   124  748   296   511  571   111
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   152  379   125   163  719    94   124  748   296   511  571   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  152  379   125   163  719    94   124  748   296   511  571   111
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  152  379   125   163  719    94   124  748   296   511  571   111
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 4.00  1.00  2.00 4.00  1.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 6800  1600  3200 6800  1600  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.06  0.08  0.05 0.11  0.06  0.04 0.15  0.19  0.16 0.08  0.07
Crit Moves:  ****                ****                     ****  ****
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:54                Page 102-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #100 Red Hill Ave and Alton Pkwy
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.855
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        67               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     225  663   415   212  962   154   158  490   490   342  290   163
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  225  663   415   212  962   154   158  490   490   342  290   163
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   225  663   415   212  962   154   158  490   490   342  290   163
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  225  663   415   212  962   154   158  490   490   342  290   163
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  225  663   415   212  962   154   158  490   490   342  290   163
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 3400  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.13  0.26  0.13 0.19  0.10  0.10 0.14  0.31  0.11 0.17  0.10
Crit Moves:             ****  ****                     ****  ****
******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:55                Page 103-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #101 Red Hill Ave and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.686
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ignore           Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       83  742    13   186  481   441  1153  596    98    32  308   789
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    83  742    13   186  481   441  1153  596    98    32  308   789
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Volume:     83  742    13   186  481     0  1153  596    98    32  308     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    83  742    13   186  481     0  1153  596    98    32  308     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:    83  742    13   186  481     0  1153  596    98    32  308     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.95  0.05  2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 4917    83  3200 5100  1600  3200 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.15  0.16  0.06 0.09  0.00  0.36 0.12  0.06  0.02 0.06  0.00
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:55                Page 104-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #102 Red Hill Ave and Main St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.722
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        40               Level Of Service:                    C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     201  691   449    56  261    90   139 1309   254   154  309    73
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  201  691   449    56  261    90   139 1309   254   154  309    73
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   201  691   449    56  261    90   139 1309   254   154  309    73
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  201  691   449    56  261    90   139 1309   254   154  309    73
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  201  691   449    56  261    90   139 1309   254   154  309    73
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.51  0.49  2.00 2.43  0.57
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 4220   780  3200 4083   917
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.20  0.28  0.02 0.08  0.06  0.04 0.31  0.33  0.05 0.08  0.08
Crit Moves:             ****  ****                          ****  ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:56                Page 105-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #103 I-5 SB Ramps and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.559
Loss Time (sec):       5               Average Delay (sec/veh):        17.4
Optimal Cycle:        28               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   382    0    38   332  569     0     0 1267   370
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   382    0    38   332  569     0     0 1267   370
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   382    0    38   332  569     0     0 1267   370
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   382    0    38   332  569     0     0 1267   370
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   382    0    38   332  569     0     0 1267   370
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.85  0.92 0.91  1.00  1.00 0.88  0.88
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 2.32  0.68
Final Sat.:     0    0     0  3502    0  1615  3502 5187     0     0 3878  1133
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.11 0.00  0.02  0.09 0.11  0.00  0.00 0.33  0.33
Crit Moves:                   ****             ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.20 0.00  0.37  0.17 0.75  0.00  0.00 0.58  0.58
Volume/Cap:  0.00 0.00  0.00  0.56 0.00  0.06  0.56 0.15  0.00  0.00 0.56  0.56
Delay/Veh:    0.0  0.0   0.0  37.4  0.0  20.7  39.3  3.4   0.0   0.0 13.0  13.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

```
AdjDel/Veh:   0.0  0.0   0.0  37.4  0.0  20.7  39.3  3.4   0.0   0.0 13.0  13.0
LOS by Move:    A    A     A     D    A     C     D    A     A     A    B     B
HCM2k85thQ:     0    0     0     9    0     1     9    3     0     0   17    17
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:57                Page 106-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #104 Tustin Ranch Rd and Warner Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.520
Loss Time (sec):       5                Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25                Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   141    0    18    27  357     0     0 2130   490
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   141    0    18    27  357     0     0 2130   490
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   141    0    18    27  357     0     0 2130   490
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   141    0    18    27  357     0     0 2130   490
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   141    0    18    27  357     0     0 2130   490
OvlAdjVol:                                                                 420
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3200    0  1600  3200 5100     0     0 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.04 0.00  0.01  0.01 0.07  0.00  0.00 0.42  0.31
OvlAdjV/S:                                                                 0.26
Crit Moves:                    ****             ****                  ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:58                Page 107-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #105 Von Karman Ave and Barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.929
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:       108               Level Of Service:                    E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  1  0    2  0  2  0  2    2  0  3  0  1    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     401  533   319   104 1021   446   219  823   275   902 1482    46
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  401  533   319   104 1021   446   219  823   275   902 1482    46
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   401  533   319   104 1021   446   219  823   275   902 1482    46
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  401  533   319   104 1021   446   219  823   275   902 1482    46
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  401  533   319   104 1021   446   219  823   275   902 1482    46
OvlAdjVol:                          227
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 1.25  0.75  2.00 2.00  2.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 2102  1198  3200 3400  3200  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.25  0.27  0.03 0.30  0.14  0.07 0.16  0.17  0.28 0.22  0.03
OvlAdjV/S:                          0.07
Crit Moves:  ****                ****                     ****  ****
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:10:59                Page 108-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #106 Red Hill Avenue and El Camino Real
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.650
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        33               Level Of Service:                    B
*******************************************************************************
Street Name:         Red Hill Avenue                   El Camino Real
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    1  0  2  1  0    1  0  1  0  1    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     230  589   190    19 1372    84    48  108   114   246  202    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  230  589   190    19 1372    84    48  108   114   246  202    15
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   230  589   190    19 1372    84    48  108   114   246  202    15
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  230  589   190    19 1372    84    48  108   114   246  202    15
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  230  589   190    19 1372    84    48  108   114   246  202    15
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       2.00 3.00  1.00  1.00 2.83  0.17  1.00 1.00  1.00  1.00 0.93  0.07
Final Sat.:  3200 5100  1600  1600 4723   277  1600 1700  1600  1600 1489   111
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.12  0.12  0.01 0.29  0.30  0.03 0.06  0.07  0.15 0.14  0.14
Crit Moves:  ****                     ****                ****  ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:00              Page 109-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #107 Red Hill Avenue and I-5 NB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.627
Loss Time (sec):       5               Average Delay (sec/veh):        20.8
Optimal Cycle:        32               Level Of Service:                 C
*******************************************************************************
Street Name:         Red Hill Avenue                    I-5 NB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  3  0  1    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     254  843     0     0 1171   440     0    0     0   258    0   295
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  254  843     0     0 1171   440     0    0     0   258    0   295
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   254  843     0     0 1171   440     0    0     0   258    0   295
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  254  843     0     0 1171   440     0    0     0   258    0   295
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  254  843     0     0 1171   440     0    0     0   258    0   295
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.85  1.00 1.00  1.00  0.60 1.00  0.85
Lanes:       1.00 3.00  0.00  0.00 3.00  1.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:  1805 5187     0     0 5187  1615     0    0     0  2267    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.16  0.00  0.00 0.23  0.27  0.00 0.00  0.00  0.11 0.00  0.18
Crit Moves:  ****                     ****                                 ****
Green/Cycle: 0.22 0.66  0.00  0.00 0.43  0.43  0.00 0.00  0.00  0.29 0.00  0.29
Volume/Cap:  0.63 0.25  0.00  0.00 0.52  0.63  0.00 0.00  0.00  0.39 0.00  0.63
Delay/Veh:   38.1  7.0   0.0   0.0 20.9  23.8   0.0  0.0   0.0  28.7  0.0  33.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

```
AdjDel/Veh:  38.1  7.0   0.0   0.0 20.9  23.8   0.0  0.0   0.0  28.7  0.0  33.4
LOS by Move:    D    A     A     A    C     C     A    A     A     C    A     C
HCM2k85thQ:    12    6     0     0   15    17     0    0     0     6    0    13
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:01              Page 110-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #108 Red Hill Avenue and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.799
Loss Time (sec):       5               Average Delay (sec/veh):        23.7
Optimal Cycle:        54               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 SB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    1  0  3  0  0    0  1  0  0  1    0  0  0  0  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       0 1191   527   371 1064     0   200    5   367     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1191   527   371 1064     0   200    5   367     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1191   527   371 1064     0   200    5   367     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1191   527   371 1064     0   200    5   367     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1191   527   371 1064     0   200    5   367     0    0     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  0.95 0.91  1.00  0.95 0.95  0.85  1.00 1.00  1.00
Lanes:       0.00 4.00  1.00  1.00 3.00  0.00  0.98 0.02  1.00  0.00 0.00  0.00
Final Sat.:     0 6916  1615  1805 5187     0  1757   44  1615     0    0     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.17  0.33  0.21 0.21  0.00  0.11 0.11  0.23  0.00 0.00  0.00
Crit Moves:             ****  ****                         ****
Green/Cycle: 0.00 0.41  0.41  0.26 0.67  0.00  0.28 0.28  0.28  0.00 0.00  0.00
Volume/Cap:  0.00 0.42  0.80  0.80 0.31  0.00  0.40 0.40  0.80  0.00 0.00  0.00
Delay/Veh:    0.0 21.2  32.8  44.2  7.1   0.0  29.4 29.4  42.7   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 21.2  32.8  44.2  7.1   0.0  29.4 29.4  42.7   0.0  0.0   0.0
LOS by Move:    A    C     C     D    A     A     C    C     D     A    A     A
HCM2k85thQ:     0   11    24    19    8     0     8    8    19     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:01              Page 111-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #109 Red Hill Avenue and Nisson Road
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.651
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33               Level Of Service:                  B
******************************************************************************
Street Name:         Red Hill Avenue                    Nisson Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      16 1244    23   162 1222   128   242   59    48    49   26   215
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   16 1244    23   162 1222   128   242   59    48    49   26   215
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    16 1244    23   162 1222   128   242   59    48    49   26   215
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   16 1244    23   162 1222   128   242   59    48    49   26   215
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   16 1244    23   162 1222   128   242   59    48    49   26   215
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.93  0.07  1.00 2.72  0.28  1.00 0.55  0.45  1.00 0.11  0.89
Final Sat.:  1600 6584   116  1600 4545   455  1600  882   718  1600  173  1427
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.19  0.20  0.10 0.27  0.28  0.15 0.07  0.07  0.03 0.15  0.15
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:02                Page 112-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #110 Red Hill Avenue and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.636
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        31               Level Of Service:                  B
*******************************************************************************
Street Name:         Red Hill Avenue                   Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     129  502    95   113 1135   127   104  258   254   263  348   166
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  129  502    95   113 1135   127   104  258   254   263  348   166
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   129  502    95   113 1135   127   104  258   254   263  348   166
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  129  502    95   113 1135   127   104  258   254   263  348   166
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  129  502    95   113 1135   127   104  258   254   263  348   166
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       1.00 2.52  0.48  1.00 2.70  0.30  1.00 1.01  0.99  2.00 1.35  0.65
Final Sat.:  1600 4236   764  1600 4517   483  1600 1713  1588  3200 2267  1033
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.12  0.12  0.07 0.25  0.26  0.07 0.15  0.16  0.08 0.15  0.16
Crit Moves:  ****                 ****             ****  ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:02                Page 113-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #111 Red Hill Avenue and Valencia Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.652
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33               Level Of Service:                  B
*******************************************************************************
Street Name:         Red Hill Avenue                 Valencia Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  1  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       98  412   133   126 1082    72    49  343   133   315  433   153
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    98  412   133   126 1082    72    49  343   133   315  433   153
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     98  412   133   126 1082    72    49  343   133   315  433   153
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    98  412   133   126 1082    72    49  343   133   315  433   153
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    98  412   133   126 1082    72    49  343   133   315  433   153
OvlAdjVol:                  0                                                 27
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:        1.00 3.02  0.98  1.00 2.81  0.19  1.00 1.00  1.00  2.00 1.00  1.00
Final Sat.:   1600 5138  1562  1600 4701   299  1600 1700  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.06 0.08  0.09  0.08 0.23  0.24  0.03 0.20  0.08  0.10 0.25  0.10
OvlAdjV/S:                0.00                                              0.02
Crit Moves:   ****                       ****        ****        ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:03              Page 114-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #112 Tustin Ranch Road and Warner Avenue North
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.449
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22               Level Of Service:                  A
******************************************************************************
Street Name:        Tustin Ranch Road               Warner Avenue North
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    2  0  3  0  0    0  0  0  0  0    3  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  321   311   403 1140     0     0    0     0   844    0   249
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  321   311   403 1140     0     0    0     0   844    0   249
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  321   311   403 1140     0     0    0     0   844    0   249
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  321   311   403 1140     0     0    0     0   844    0   249
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  321   311   403 1140     0     0    0     0   844    0   249
OvlAdjVol:                30                                                 0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 3.00  1.00  2.00 3.00  0.00  0.00 0.00  0.00  3.00 0.00  2.00
Final Sat.:     0 5100  1600  3200 5100     0     0    0     0  4800    0  3200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.06  0.19  0.13 0.22  0.00  0.00 0.00  0.00  0.18 0.00  0.08
OvlAdjV/S:              0.02                                                0.00
Crit Moves:  ****                ****                          ****
******************************************************************************
```

```
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2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:04              Page 115-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #113 Tustin Ranch Road and Walnut Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.273
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Street Name:        Tustin Ranch Road                 Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       92  567   283  1076 3008   401   834 1089   658   187  276   233
Growth Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    92  567   283  1076 3008   401   834 1089   658   187  276   233
User Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     92  567   283  1076 3008   401   834 1089   658   187  276   233
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    92  567   283  1076 3008   401   834 1089   658   187  276   233
PCE Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:      1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    92  567   283  1076 3008   401   834 1089   658   187  276   233
OvlAdjVol:              190               0                                   0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:     1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:   1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:        2.00 3.00  1.00  2.00 3.00  1.00  2.00 1.25  0.75  2.00 2.00  1.00
Final Sat.:   3200 5100  1600  3200 5100  1600  3200 2095  1205  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:      0.03 0.11  0.18  0.34 0.59  0.25  0.26 0.52  0.55  0.06 0.08  0.15
OvlAdjV/S:              0.12               0.00                                0.00
Crit Moves:   ****                 ****                     ****  ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:04                Page 116-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #114 SR-55 SB Ramps and Irvine Boulevard
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.099
Loss Time (sec):       5               Average Delay (sec/veh):        41.0
Optimal Cycle:       180               Level Of Service:                 D
*******************************************************************************
Street Name:          SR-55 SB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  1! 0  1    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    65    0    71     0  647  1161   496 1240     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    65    0    71     0  647  1161   496 1240     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    65    0    71     0  647  1161   496 1240     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    65    0    71     0  647  1161   496 1240     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    65    0    71     0  647  1161   496 1240     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.88 1.00  0.77  1.00 0.82  0.82  0.95 0.91  1.00
Lanes:       0.00 0.00  0.00  1.44 0.00  1.56  0.00 2.00  1.00  1.00 3.00  0.00
Final Sat.:     0    0     0  2417    0  2277     0 3126  1563  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.03 0.00  0.03  0.00 0.21  0.74  0.27 0.24  0.00
Crit Moves:                   ****                          ****  ****
Green/Cycle: 0.00 0.00  0.00  0.02 0.00  0.05  0.00 0.68  0.68  0.25 0.93  0.00
Volume/Cap:  0.00 0.00  0.00  0.90 0.00  0.65  0.00 0.31  1.10  1.10 0.26  0.00
Delay/Veh:    0.0  0.0   0.0  94.5  0.0  54.0   0.0  6.6  70.6 109.4  0.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  94.5  0.0  54.0   0.0  6.6  70.6 109.4  0.4   0.0
LOS by Move:    A    A     A     F    A     D     A    A     E     F    A     A
```

```
HCM2k85thQ:     0    0     0     5    0     4     0    7    77    36    2     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP AM Peak Hour       Thu Oct 22, 2020 14:11:05              Page 117-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #115 SR-55 NB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.906
Loss Time (sec):       5               Average Delay (sec/veh):        23.5
Optimal Cycle:        93               Level Of Service:                  C
******************************************************************************
Street Name:          SR-55 NB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:         Permitted       Protected        Protected        Protected
Rights:           Include         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    1  0  3  0  0    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     440    0   423     0    0     0   222  526     0     0 1241   863
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  440    0   423     0    0     0   222  526     0     0 1241   863
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   440    0   423     0    0     0   222  526     0     0 1241   863
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  440    0   423     0    0     0   222  526     0     0 1241   863
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  440    0   423     0    0     0   222  526     0     0 1241   863
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.75 1.00  0.74  1.00 1.00  1.00  0.95 0.91  1.00  1.00 0.85  0.85
Lanes:       1.51 0.00  1.49  0.00 0.00  0.00  1.00 3.00  0.00  0.00 2.00  1.00
Final Sat.:  2135    0  2097     0    0     0  1805 5187     0     0 3247  1624
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.00  0.20  0.00 0.00  0.00  0.12 0.10  0.00  0.00 0.38  0.53
Crit Moves:  ****                             ****                       ****
Green/Cycle: 0.23 0.00  0.45  0.00 0.00  0.00  0.14 0.72  0.00  0.00 0.59  0.59
Volume/Cap:  0.91 0.00  0.44  0.00 0.00  0.00  0.91 0.14  0.00  0.00 0.65  0.91
Delay/Veh:   49.8  0.0  18.8   0.0  0.0   0.0  76.1  4.3   0.0   0.0 14.3  23.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  49.8  0.0  18.8   0.0  0.0   0.0  76.1  4.3   0.0   0.0 14.3  23.8
LOS by Move:    D    A     B     A    A     A     E    A     A     A    B     C
HCM2k85thQ:    18    0    10     0    0     0    15    3     0     0   21    42
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

APPENDIX D.4

ANALYSIS WORKSHEETS –
2045 NP (PM Peak Hour)

Santa Ana Circulation Element

Scenario Report

Scenario:	2045 NP PM Peak Hour
Command:	Default Command
Volume:	2045 NP PM
Geometry:	MPAH
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2045 NP PM Peak Hour Thu Oct 22, 2020 14:15:55 Page 2-1

Santa Ana Circulation Element

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in V/C
# 1 Euclid St and 1st St	D	xxxxx	0.857	D	xxxxx	0.857	+ 0.000 V/C
# 2 Euclid St and McFadden Ave	D	xxxxx	0.896	D	xxxxx	0.896	+ 0.000 V/C
# 3 Euclid St and Edinger Ave	D	xxxxx	0.888	D	xxxxx	0.888	+ 0.000 V/C
# 4 Newhope St and Hazard Ave	C	xxxxx	0.721	C	xxxxx	0.721	+ 0.000 V/C
# 5 Newhope St and McFadden Ave	C	xxxxx	0.777	C	xxxxx	0.777	+ 0.000 V/C
# 6 Harbor Blvd and SR-22 WB Off-R	C	24.2	0.802	C	24.2	0.802	+ 0.000 D/V
# 7 Trask Avenue and SR-22 EB On-R	B	13.6	0.533	B	13.6	0.533	+ 0.000 D/V
# 8 Harbor Blvd and Westminster Av	D	xxxxx	0.882	D	xxxxx	0.882	+ 0.000 V/C
# 9 Harbor Blvd and 1st St	C	xxxxx	0.778	C	xxxxx	0.778	+ 0.000 V/C
# 10 Harbor Blvd and McFadden Ave	D	xxxxx	0.812	D	xxxxx	0.812	+ 0.000 V/C
# 11 Harbor Blvd and Edinger Ave	C	xxxxx	0.725	C	xxxxx	0.725	+ 0.000 V/C
# 12 Harbor Blvd and Warner Ave	F	xxxxx	1.536	F	xxxxx	1.536	+ 0.000 V/C
# 13 Harbor Blvd and Segerstrom Ave	E	xxxxx	0.921	E	xxxxx	0.921	+ 0.000 V/C
# 14 MacArthur Blvd and Hyland Ave	E	xxxxx	0.917	E	xxxxx	0.917	+ 0.000 V/C
# 15 MacArthur Blvd and Harbor Blvd	C	xxxxx	0.783	C	xxxxx	0.783	+ 0.000 V/C
# 16 Harbor Blvd and Sunflower Ave	C	xxxxx	0.717	C	xxxxx	0.717	+ 0.000 V/C
# 17 Harbor Blvd and I-405 NB Off-R	B	18.3	0.699	B	18.3	0.699	+ 0.000 D/V
# 18 Harbor Blvd and I-405 SB Off-R	B	17.9	0.667	B	17.9	0.667	+ 0.000 D/V
# 19 Fairview St and Civic Center D	C	xxxxx	0.757	C	xxxxx	0.757	+ 0.000 V/C
# 20 Fairview St and 1st St	D	xxxxx	0.898	D	xxxxx	0.898	+ 0.000 V/C
# 21 Fairview St and McFadden Ave	C	xxxxx	0.776	C	xxxxx	0.776	+ 0.000 V/C
# 22 Fairview St and Edinger Ave	E	xxxxx	0.916	E	xxxxx	0.916	+ 0.000 V/C
# 23 Fairview St and Warner Ave	C	xxxxx	0.796	C	xxxxx	0.796	+ 0.000 V/C
# 24 Fairview St and MacArthur Blvd	C	xxxxx	0.768	C	xxxxx	0.768	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 25 Fairview Rd and Sunflower Ave	C	xxxxx	0.715	C	xxxxx	0.715	+ 0.000 V/C
# 26 Greenville St and Edinger Ave	A	xxxxx	0.595	A	xxxxx	0.595	+ 0.000 V/C
# 27 Greenville St and Segerstrom A	C	xxxxx	0.777	C	xxxxx	0.777	+ 0.000 V/C
# 28 Raitt St and McFadden Ave	C	xxxxx	0.758	C	xxxxx	0.758	+ 0.000 V/C
# 29 Raitt St and Edinger Ave	E	xxxxx	0.986	E	xxxxx	0.986	+ 0.000 V/C
# 30 Bear St and MacArthur Blvd	D	xxxxx	0.851	D	xxxxx	0.851	+ 0.000 V/C
# 31 Bristol St and 17th St	D	xxxxx	0.823	D	xxxxx	0.823	+ 0.000 V/C
# 32 Bristol St and Civic Center Dr	E	xxxxx	0.911	E	xxxxx	0.911	+ 0.000 V/C
# 33 Bristol St and Santa Ana Blvd	D	xxxxx	0.853	D	xxxxx	0.853	+ 0.000 V/C
# 34 Bristol St and 1st St	D	xxxxx	0.826	D	xxxxx	0.826	+ 0.000 V/C
# 35 Bristol St and McFadden Ave	F	xxxxx	1.028	F	xxxxx	1.028	+ 0.000 V/C
# 36 Bristol St and Warner Ave	D	xxxxx	0.847	D	xxxxx	0.847	+ 0.000 V/C
# 37 Bristol St and Segerstrom Ave	D	xxxxx	0.870	D	xxxxx	0.870	+ 0.000 V/C
# 38 Bristol St and Alton Ave	B	xxxxx	0.633	B	xxxxx	0.633	+ 0.000 V/C
# 39 Bristol St and MacArthur Blvd	C	xxxxx	0.765	C	xxxxx	0.765	+ 0.000 V/C
# 40 Bristol St and Sunflower Ave	B	xxxxx	0.692	B	xxxxx	0.692	+ 0.000 V/C
# 41 Bristol St and I-405 NB Ramps	C	28.5	0.825	C	28.5	0.825	+ 0.000 D/V
# 42 Bristol St and I-405 SB Ramps	B	18.3	0.617	B	18.3	0.617	+ 0.000 D/V
# 43 Flower St and Santa Ana Blvd	D	xxxxx	0.857	D	xxxxx	0.857	+ 0.000 V/C
# 44 Flower St and 1st St	D	xxxxx	0.877	D	xxxxx	0.877	+ 0.000 V/C
# 45 Flower St and McFadden Ave	F	xxxxx	1.037	F	xxxxx	1.037	+ 0.000 V/C
# 46 Flower St and Segerstrom Ave	D	xxxxx	0.866	D	xxxxx	0.866	+ 0.000 V/C
# 47 Flower St and MacArthur Blvd	E	xxxxx	0.900	E	xxxxx	0.900	+ 0.000 V/C
# 48 Main St and La Veta Ave	B	xxxxx	0.696	B	xxxxx	0.696	+ 0.000 V/C
# 49 Main St and Mainplace Dr / Mem	A	xxxxx	0.556	A	xxxxx	0.556	+ 0.000 V/C
# 50 Main St and 17th St	C	xxxxx	0.760	C	xxxxx	0.760	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 51 Main St and Civic Center Dr	E	xxxxx	0.965	E	xxxxx	0.965	+ 0.000 V/C
# 52 Main St and Santa Ana Blvd	C	xxxxx	0.792	C	xxxxx	0.792	+ 0.000 V/C
# 53 Main St and 4th St	A	xxxxx	0.447	A	xxxxx	0.447	+ 0.000 V/C
# 54 Main St and 1st St	C	xxxxx	0.744	C	xxxxx	0.744	+ 0.000 V/C
# 55 Main St and McFadden Ave	E	xxxxx	0.925	E	xxxxx	0.925	+ 0.000 V/C
# 56 Main St and Edinger Ave	D	xxxxx	0.867	D	xxxxx	0.867	+ 0.000 V/C
# 57 Main St and MacArthur Blvd	C	xxxxx	0.749	C	xxxxx	0.749	+ 0.000 V/C
# 58 Penn Wy and 17th St	C	25.5	0.872	C	25.5	0.872	+ 0.000 D/V
# 59 I-5 NB Off Ramps/17th Street	B	19.0	0.587	B	19.0	0.587	+ 0.000 D/V
# 60 Penn Wy and I-5 SB Ramps	C	23.0	0.573	C	23.0	0.573	+ 0.000 D/V
# 61 Santiago St and Civic Center D	F	110.0	1.369	F	110.0	1.369	+ 0.000 V/C
# 62 Santiago St and Santa Ana Blvd	F	xxxxx	1.017	F	xxxxx	1.017	+ 0.000 V/C
# 63 Standard Ave and 4th St	D	xxxxx	0.893	D	xxxxx	0.893	+ 0.000 V/C
# 64 Standard Ave and 1st St	E	xxxxx	0.968	E	xxxxx	0.968	+ 0.000 V/C
# 65 Standard Ave and Mcfadden Ave	D	xxxxx	0.828	D	xxxxx	0.828	+ 0.000 V/C
# 66 Halladay St and Warner Ave	E	xxxxx	0.975	E	xxxxx	0.975	+ 0.000 V/C
# 67 Halladay St and Dyer Rd	F	xxxxx	1.057	F	xxxxx	1.057	+ 0.000 V/C
# 68 SR-55 SB Ramps and MacArthur B	B	17.8	0.567	B	17.8	0.567	+ 0.000 D/V
# 69 SR-55 NB Ramps and MacArthur B	B	14.6	0.484	B	14.6	0.484	+ 0.000 D/V
# 70 SR-55 SB Ramps and Dyer Rd	C	26.5	0.663	C	26.5	0.663	+ 0.000 D/V
# 71 Glassell St and La Veta Ave	C	xxxxx	0.744	C	xxxxx	0.744	+ 0.000 V/C
# 72 Glassell St and SR-22 WB Ramps	C	30.5	0.910	C	30.5	0.910	+ 0.000 D/V
# 73 Grand Ave / Glassell St and SR	C	31.6	0.931	C	31.6	0.931	+ 0.000 D/V
# 74 Grand Ave and Fairhaven Ave	C	xxxxx	0.717	C	xxxxx	0.717	+ 0.000 V/C
# 75 Grand Ave and Santa Clara Ave	D	xxxxx	0.808	D	xxxxx	0.808	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in V/C
# 76 Grand Ave and 17th St	D	xxxxx	0.856	D	xxxxx	0.856	+ 0.000 V/C
# 77 Grand Ave and I-5 NB Ramps	B	10.1	0.696	B	10.1	0.696	+ 0.000 D/V
# 78 Grand Ave and Santa Ana Blvd	C	25.3	0.721	C	25.3	0.721	+ 0.000 D/V
# 79 Grand Ave and 1st St	C	xxxxx	0.731	C	xxxxx	0.731	+ 0.000 V/C
# 80 Grand Ave and Chestnut Ave	B	xxxxx	0.688	B	xxxxx	0.688	+ 0.000 V/C
# 81 Grand Ave and McFadden Ave	D	xxxxx	0.821	D	xxxxx	0.821	+ 0.000 V/C
# 82 Grand Ave and Edinger Ave	F	xxxxx	1.004	F	xxxxx	1.004	+ 0.000 V/C
# 83 Grand Ave and Warner Ave	D	xxxxx	0.827	D	xxxxx	0.827	+ 0.000 V/C
# 84 SR-55 NB Ramps and Dyer Rd	A	5.7	0.362	A	5.7	0.362	+ 0.000 D/V
# 85 Cambridge St and La Veta Ave	C	19.7	0.779	C	19.7	0.779	+ 0.000 V/C
# 86 Cambridge St and Fairhaven Ave	A	xxxxx	0.454	A	xxxxx	0.454	+ 0.000 V/C
# 87 Mabury St and 1st Street	C	27.1	0.674	C	27.1	0.674	+ 0.000 D/V
# 88 Tustin St and La Veta Ave	A	xxxxx	0.381	A	xxxxx	0.381	+ 0.000 V/C
# 89 Tustin St and SR-22 WB On-Ramp	B	11.1	0.391	B	11.1	0.391	+ 0.000 D/V
# 90 Tustin St and SR-22 EB Off-Ram	C	23.1	0.679	C	23.1	0.679	+ 0.000 D/V
# 91 Tustin Ave and Fairhaven Ave	B	xxxxx	0.685	B	xxxxx	0.685	+ 0.000 V/C
# 92 Tustin Ave and Santa Clara Ave	C	xxxxx	0.709	C	xxxxx	0.709	+ 0.000 V/C
# 93 Tustin Ave and 17th St	C	xxxxx	0.797	C	xxxxx	0.797	+ 0.000 V/C
# 94 Tustin Ave and 4th St	C	xxxxx	0.708	C	xxxxx	0.708	+ 0.000 V/C
# 95 SR-55 SB Ramps / Auto Mall Dr	C	25.5	0.702	C	25.5	0.702	+ 0.000 D/V
# 96 SR-55 NB Ramps / Del Amo Ave a	D	39.1	0.895	D	39.1	0.895	+ 0.000 D/V
# 97 Red Hill Ave and Edinger Ave	D	xxxxx	0.853	D	xxxxx	0.853	+ 0.000 V/C
# 98 Red Hill Ave and Warner Ave	D	xxxxx	0.875	D	xxxxx	0.875	+ 0.000 V/C
# 99 Red Hill Ave and Dyer Rd / bar	A	xxxxx	0.537	A	xxxxx	0.537	+ 0.000 V/C
#100 Red Hill Ave and Alton Pkwy	F	xxxxx	1.184	F	xxxxx	1.184	+ 0.000 V/C
#101 Red Hill Ave and MacArthur Blv	C	xxxxx	0.702	C	xxxxx	0.702	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
#102 Red Hill Ave and Main St	D	xxxxx	0.813	D	xxxxx	0.813	+ 0.000 V/C
#103 I-5 SB Ramps and Santa Ana Blv	B	18.4	0.487	B	18.4	0.487	+ 0.000 D/V
#104 Tustin Ranch Rd and Warner Ave	B	xxxxx	0.645	B	xxxxx	0.645	+ 0.000 V/C
#105 Von Karman Ave and Barranca Pk	F	xxxxx	1.228	F	xxxxx	1.228	+ 0.000 V/C
#106 Red Hill Avenue and El Camino	C	xxxxx	0.779	C	xxxxx	0.779	+ 0.000 V/C
#107 Red Hill Avenue and I-5 NB Ram	C	23.7	0.634	C	23.7	0.634	+ 0.000 D/V
#108 Red Hill Avenue and I-5 SB Ram	C	22.2	0.695	C	22.2	0.695	+ 0.000 D/V
#109 Red Hill Avenue and Nisson Roa	B	xxxxx	0.693	B	xxxxx	0.693	+ 0.000 V/C
#110 Red Hill Avenue and Walnut Ave	C	xxxxx	0.739	C	xxxxx	0.739	+ 0.000 V/C
#111 Red Hill Avenue and Valencia A	C	xxxxx	0.738	C	xxxxx	0.738	+ 0.000 V/C
#112 Tustin Ranch Road and Warner A	D	xxxxx	0.885	D	xxxxx	0.885	+ 0.000 V/C
#113 Tustin Ranch Road and Walnut A	F	xxxxx	1.715	F	xxxxx	1.715	+ 0.000 V/C
#114 SR-55 SB Ramps and Irvine Boul	C	25.6	0.915	C	25.6	0.915	+ 0.000 D/V
#115 SR-55 NB Ramps and Irvine Boul	C	22.9	0.932	C	22.9	0.932	+ 0.000 D/V

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:15:58                  Page 3-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #1 Euclid St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.857
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        67               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include       WideBypass       WideBypass
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     169 1569   126   152  866   164   212  678   106   209  877   209
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  169 1569   126   152  866   164   212  678   106   209  877   209
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   169 1569   126   152  866   164   212  678   106   209  877   209
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  169 1569   126   152  866   164   212  678   106   209  877   209
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  169 1569   126   152  866   164   212  678   106   209  877   209
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.78  0.22  1.00 2.52  0.48  1.00 2.59  0.41  1.00 2.42  0.58
Final Sat.:  1600 4643   357  1600 4236   764  1600 4351   649  1600 4076   924
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.34  0.35  0.10 0.20  0.21  0.13 0.16  0.16  0.13 0.22  0.23
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:15:59                  Page 4-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #2 Euclid St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.896
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        84               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     242 1973   127    96 1179   143   207  475   210   114  479   221
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  242 1973   127    96 1179   143   207  475   210   114  479   221
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   242 1973   127    96 1179   143   207  475   210   114  479   221
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  242 1973   127    96 1179   143   207  475   210   114  479   221
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  242 1973   127    96 1179   143   207  475   210   114  479   221
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.82  0.18  1.00 2.68  0.32  1.00 1.39  0.61  1.00 1.37  0.63
Final Sat.:  1600 4710   290  1600 4481   519  1600 2319   981  1600 2290  1010
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.42  0.44  0.06 0.26  0.28  0.13 0.20  0.21  0.07 0.21  0.22
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:00                  Page 5-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #3 Euclid St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.888
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        80               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     539 1610   115   136  897   228   141  544   163   128 1181   191
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  539 1610   115   136  897   228   141  544   163   128 1181   191
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   539 1610   115   136  897   228   141  544   163   128 1181   191
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  539 1610   115   136  897   228   141  544   163   128 1181   191
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  539 1610   115   136  897   228   141  544   163   128 1181   191
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.80  0.20  2.00 2.39  0.61  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3200 4680   320  3200 4027   973  1600 3400  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.34  0.36  0.04 0.22  0.23  0.09 0.16  0.10  0.08 0.35  0.12
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:00                  Page 6-1
--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Newhope St and Hazard Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.721
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40               Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     105 1159    45    46  982   117    75  148    91    88  556   160
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  105 1159    45    46  982   117    75  148    91    88  556   160
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   105 1159    45    46  982   117    75  148    91    88  556   160
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  105 1159    45    46  982   117    75  148    91    88  556   160
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  105 1159    45    46  982   117    75  148    91    88  556   160
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 1.93  0.07  1.00 1.79  0.21  1.00 1.24  0.76  1.00 1.55  0.45
Final Sat.:  1600 3180   120  1600 2959   341  1600 2082  1218  1600 2585   715
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.36  0.38  0.03 0.33  0.34  0.05 0.07  0.07  0.06 0.22  0.22
Crit Moves:  ****                ****  ****                ****
********************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:01                  Page 7-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #5 Newhope St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.777
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        48               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     188 1009   177   140  625   121    61  372    54   104  574   164
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  188 1009   177   140  625   121    61  372    54   104  574   164
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   188 1009   177   140  625   121    61  372    54   104  574   164
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  188 1009   177   140  625   121    61  372    54   104  574   164
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  188 1009   177   140  625   121    61  372    54   104  574   164
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.70  0.30  1.00 1.68  0.32  1.00 1.75  0.25  1.00 1.56  0.44
Final Sat.:  1600 2822   478  1600 2781   519  1600 2894   406  1600 2589   711
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.36  0.37  0.09 0.22  0.23  0.04 0.13  0.13  0.07 0.22  0.23
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:02                  Page 8-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #6 Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.802
Loss Time (sec):       5                Average Delay (sec/veh):        24.2
Optimal Cycle:        55                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  2  1  0    0  0  1! 0  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     109 2457     0     0 1801    58   102    0    86   576   78   165
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  109 2457     0     0 1801    58   102    0    86   576   78   165
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   109 2457     0     0 1801    58   102    0    86   576   78   165
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  109 2457     0     0 1801    58   102    0    86   576   78   165
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  109 2457     0     0 1801    58   102    0    86   576   78   165
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.91 1.00  0.91  0.96 0.96  0.85
Lanes:       1.00 3.00  0.00  0.00 2.91  0.09  0.54 0.00  0.46  1.76 0.24  1.00
Final Sat.:  1805 5187     0     0 5000   161   942    0   794  3206  434  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.47  0.00  0.00 0.36  0.36  0.11 0.00  0.11  0.18 0.18  0.10
Crit Moves:       ****        ****             ****             ****
Green/Cycle: 0.08 0.59  0.00  0.00 0.51  0.51  0.14 0.00  0.14  0.22 0.22  0.22
Volume/Cap:  0.71 0.80  0.00  0.00 0.71  0.71  0.80 0.00  0.80  0.80 0.80  0.46
Delay/Veh:   59.1 17.5   0.0   0.0 20.0  20.0  59.6  0.0  59.6  42.4 42.4  34.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  59.1 17.5   0.0   0.0 20.0  20.0  59.6  0.0  59.6  42.4 42.4  34.4
LOS by Move:    E    B     A     A    C     C     E    A     E     D    D     C
HCM2k85thQ:     7   33     0     0   25    25    12    0    12    18   18     7
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:02                  Page 9-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 Trask Avenue and SR-22 EB On-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.533
Loss Time (sec):       5               Average Delay (sec/veh):        13.6
Optimal Cycle:        26               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  0  0  0    2  0  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0     0   927  695     0     0  786    74
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0     0   927  695     0     0  786    74
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     0    0     0   927  695     0     0  786    74
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0     0    0     0   927  695     0     0  786    74
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0     0    0     0   927  695     0     0  786    74
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  0.92 1.00  1.00  1.00 0.94  0.94
Lanes:       0.00 0.00  0.00  0.00 0.00  0.00  2.00 1.00  0.00  0.00 1.83  0.17
Final Sat.:     0    0     0     0    0     0  3502 1900     0     0 3256   307
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.00 0.00  0.00  0.26 0.37  0.00  0.00 0.24  0.24
Crit Moves:                                     ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.00 0.00  0.00  0.50 0.95  0.00  0.00 0.45  0.45
Volume/Cap:  0.00 0.00  0.00  0.00 0.00  0.00  0.53 0.39  0.00  0.00 0.53  0.53
Delay/Veh:    0.0  0.0   0.0   0.0  0.0   0.0  17.5  0.3   0.0   0.0 20.1  20.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0   0.0  0.0   0.0  17.5  0.3   0.0   0.0 20.1  20.1
LOS by Move:    A    A     A     A    A     A     B    A     A     A    C     C
HCM2k85thQ:     0    0     0     0    0     0    15    3     0     0   15    15
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:03                Page 10-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #8 Harbor Blvd and Westminster Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.882
Loss Time (sec):       0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  1  0    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     237 1178   279   254 1752   202   215  768    37   357 1238   281
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  237 1178   279   254 1752   202   215  768    37   357 1238   281
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   237 1178   279   254 1752   202   215  768    37   357 1238   281
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  237 1178   279   254 1752   202   215  768    37   357 1238   281
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  237 1178   279   254 1752   202   215  768    37   357 1238   281
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.86  0.14  1.00 3.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 4779   221  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.23  0.17  0.16 0.34  0.13  0.13 0.16  0.17  0.22 0.24  0.18
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:04                Page 11-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #9 Harbor Blvd and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.778
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        48               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     290 1497   166   245 1073   145   179  730   138   199  929   151
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  290 1497   166   245 1073   145   179  730   138   199  929   151
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   290 1497   166   245 1073   145   179  730   138   199  929   151
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  290 1497   166   245 1073   145   179  730   138   199  929   151
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  290 1497   166   245 1073   145   179  730   138   199  929   151
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  2.00 2.52  0.48  2.00 2.58  0.42
Final Sat.:  1600 5100  1600  1600 5100  1600  3200 4237   763  3200 4329   671
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.29  0.10  0.15 0.21  0.09  0.06 0.17  0.18  0.06 0.21  0.23
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #10 Harbor Blvd and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.812
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	55	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	2 1	0	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	169	1737	127	256	1094	99	241	585	73	198	474	137
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	169	1737	127	256	1094	99	241	585	73	198	474	137
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	169	1737	127	256	1094	99	241	585	73	198	474	137
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	169	1737	127	256	1094	99	241	585	73	198	474	137
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	169	1737	127	256	1094	99	241	585	73	198	474	137
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	2.00	3.00	1.00	2.00	2.75	0.25	1.00	1.78	0.22	1.00	1.55	0.45
Final Sat.:	3200	5100	1600	3200	4602	398	1600	2945	355	1600	2582	718
Capacity Analysis Module:												
Vol/Sat:	0.05	0.34	0.08	0.08	0.24	0.25	0.15	0.20	0.21	0.12	0.18	0.19
Crit Moves:		****			****			****				****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #11 Harbor Blvd and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.725
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	40	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	2 0	2 1	0	2 0	3 0	1
Volume Module:												
Base Vol:	254	1597	193	290	843	77	109	460	81	196	1138	379
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	254	1597	193	290	843	77	109	460	81	196	1138	379
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	254	1597	193	290	843	77	109	460	81	196	1138	379
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	254	1597	193	290	843	77	109	460	81	196	1138	379
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	254	1597	193	290	843	77	109	460	81	196	1138	379
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.55	0.45	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	3200	4281	719	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.08	0.31	0.12	0.09	0.17	0.05	0.03	0.11	0.11	0.06	0.22	0.24
Crit Moves:		****			****			****				****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #12 Harbor Blvd and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.536
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     762 3656   275   262 1457   174   217 1539   352   249 2589   827
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  762 3656   275   262 1457   174   217 1539   352   249 2589   827
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   762 3656   275   262 1457   174   217 1539   352   249 2589   827
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  762 3656   275   262 1457   174   217 1539   352   249 2589   827
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  762 3656   275   262 1457   174   217 1539   352   249 2589   827
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.79  0.21  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4664   336  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.78  0.82  0.08 0.29  0.11  0.07 0.30  0.22  0.08 0.51  0.52
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #13 Harbor Blvd and Segerstrom Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.921
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	100	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	1 0	2	1 0	1 0	1	1 0	1 0	2	0 1
Volume Module:												
Base Vol:	273	1717	55	87	986	87	118	585	192	117	1269	461
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	273	1717	55	87	986	87	118	585	192	117	1269	461
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	273	1717	55	87	986	87	118	585	192	117	1269	461
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	273	1717	55	87	986	87	118	585	192	117	1269	461
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	273	1717	55	87	986	87	118	585	192	117	1269	461
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.06	1.00
Lanes:	2.00	2.91	0.09	1.00	2.76	0.24	1.00	1.51	0.49	1.00	2.00	1.00
Final Sat.:	3200	4851	149	1600	4611	389	1600	2509	791	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.09	0.35	0.37	0.05	0.21	0.22	0.07	0.23	0.24	0.07	0.37	0.29
Crit Moves:			****	****			****				****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #14 MacArthur Blvd and Hyland Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.917
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        98               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    1201    7    70    12    4    14    36  891   160    25 2350    12
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse: 1201    7    70    12    4    14    36  891   160    25 2350    12
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:  1201    7    70    12    4    14    36  891   160    25 2350    12
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 1201    7    70    12    4    14    36  891   160    25 2350    12
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume: 1201    7    70    12    4    14    36  891   160    25 2350    12
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 0.09  0.91  1.00 1.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200  145  1455  1600 1700  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.38 0.05  0.05  0.01 0.00  0.01  0.02 0.17  0.10  0.02 0.46  0.01
Crit Moves:  ****                      ****  ****                    ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #15 MacArthur Blvd and Harbor Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.783
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     558 1441    83   204 1028   169   140  489   181    81 1373   258
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  558 1441    83   204 1028   169   140  489   181    81 1373   258
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   558 1441    83   204 1028   169   140  489   181    81 1373   258
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  558 1441    83   204 1028   169   140  489   181    81 1373   258
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  558 1441    83   204 1028   169   140  489   181    81 1373   258
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.28  0.05  0.06 0.20  0.11  0.09 0.10  0.11  0.05 0.27  0.16
Crit Moves:  ****               ****        ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #16 Harbor Blvd and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.717
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        39               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  1  1  0    1  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     154 1532   228   114 1417    43    81  220   229   301  632   236
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  154 1532   228   114 1417    43    81  220   229   301  632   236
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   154 1532   228   114 1417    43    81  220   229   301  632   236
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  154 1532   228   114 1417    43    81  220   229   301  632   236
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  154 1532   228   114 1417    43    81  220   229   301  632   236
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 1.00  1.00  1.00 1.39  0.61
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 1700  1600  1600 2322   974
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.30  0.14  0.04 0.28  0.03  0.05 0.13  0.14  0.19 0.27  0.24
Crit Moves:       ****        ****                     ****  ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:08                Page 19-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #17 Harbor Blvd and I-405 NB Off-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.699
Loss Time (sec):       5               Average Delay (sec/veh):        18.3
Optimal Cycle:        39               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  0    0  0  4  0  0    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1529     0     0 2570     0     0    0     0   496    0   801
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1529     0     0 2570     0     0    0     0   496    0   801
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1529     0     0 2570     0     0    0     0   496    0   801
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1529     0     0 2570     0     0    0     0   496    0   801
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1529     0     0 2570     0     0    0     0   496    0   801
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  1.00 1.00  1.00  0.89 1.00  0.89
Lanes:       0.00 4.00  0.00  0.00 4.00  0.00  0.00 0.00  0.00  1.38 0.00  1.62
Final Sat.:     0 6916     0     0 6916     0     0    0     0  2337    0  2735
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.22  0.00  0.00 0.37  0.00  0.00 0.00  0.00  0.21 0.00  0.29
Crit Moves:  ****                 ****                                     ****
Green/Cycle: 0.00 0.53  0.00  0.00 0.53  0.00  0.00 0.00  0.00  0.42 0.00  0.42
Volume/Cap:  0.00 0.42  0.00  0.00 0.70  0.00  0.00 0.00  0.00  0.51 0.00  0.70
Delay/Veh:    0.0 14.2   0.0   0.0 18.1   0.0   0.0  0.0   0.0  21.6  0.0  25.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 14.2   0.0   0.0 18.1   0.0   0.0  0.0   0.0  21.6  0.0  25.1
LOS by Move:    A    B     A     A    B     A     A    A     A     C    A     C
HCM2k85thQ:     0   12     0     0   25     0     0    0     0    13    0    20
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:09                Page 20-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #18 Harbor Blvd and I-405 SB Off-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.667
Loss Time (sec):       5               Average Delay (sec/veh):        17.9
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    0  0  4  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1881     0     0 2281     0   177    0   815     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1881     0     0 2281     0   177    0   815     0    0     0
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1881     0     0 2281     0   177    0   815     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1881     0     0 2281     0   177    0   815     0    0     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1881     0     0 2281     0   177    0   815     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  0.87 1.00  0.87  1.00 1.00  1.00
Lanes:       0.00 3.00  1.00  0.00 4.00  0.00  1.18 0.00  1.82  0.00 0.00  0.00
Final Sat.:     0 5187  1900     0 6916     0  1946    0  3008     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.36  0.00  0.00 0.33  0.00  0.09 0.00  0.27  0.00 0.00  0.00
Crit Moves:       ****        ****                     ****
Green/Cycle: 0.00 0.54  0.00  0.00 0.54  0.00  0.41 0.00  0.41  0.00 0.00  0.00
Volume/Cap:  0.00 0.67  0.00  0.00 0.61  0.00  0.22 0.00  0.67  0.00 0.00  0.00
Delay/Veh:    0.0 17.0   0.0   0.0 15.8   0.0  19.4  0.0  25.3   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 17.0   0.0   0.0 15.8   0.0  19.4  0.0  25.3   0.0  0.0   0.0
LOS by Move:    A    B     A     A    B     A     B    A     C     A    A     A
HCM2k85thQ:     0   23     0     0   20     0     5    0    18     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:10                Page 21-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #19 Fairview St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.757
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    0  1  0  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       6 1690   475   192 1784     0     2    6     4   424    0   157
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6 1690   475   192 1784     0     2    6     4   424    0   157
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     6 1690   475   192 1784     0     2    6     4   424    0   157
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    6 1690   475   192 1784     0     2    6     4   424    0   157
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    6 1690   475   192 1784     0     2    6     4   424    0   157
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.34  0.66  1.00 3.00  0.00  0.33 1.00  0.67  2.00 0.00  1.00
Final Sat.:  1600 3947  1053  1600 5000     0   533 1600  1067  3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.43  0.45  0.12 0.36  0.00  0.00 0.00  0.00  0.13 0.00  0.10
Crit Moves:             ****  ****             ****             ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:10                Page 22-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #20 Fairview St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.898
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        85               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     169 1241   112   236 1468   291   193  781   136   140 1060   164
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  169 1241   112   236 1468   291   193  781   136   140 1060   164
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   169 1241   112   236 1468   291   193  781   136   140 1060   164
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  169 1241   112   236 1468   291   193  781   136   140 1060   164
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  169 1241   112   236 1468   291   193  781   136   140 1060   164
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 3.00  1.00  1.00 2.50  0.50  1.00 2.56  0.44  1.00 2.60  0.40
Final Sat.:  1600 5100  1600  1600 4206   794  1600 4288   712  1600 4357   643
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.24  0.07  0.15 0.35  0.37  0.12 0.18  0.19  0.09 0.24  0.26
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:11                Page 23-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #21 Fairview St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.776
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        47               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     164 1507   131   191 1553   242   158  427   106   158  545   134
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  164 1507   131   191 1553   242   158  427   106   158  545   134
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   164 1507   131   191 1553   242   158  427   106   158  545   134
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  164 1507   131   191 1553   242   158  427   106   158  545   134
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  164 1507   131   191 1553   242   158  427   106   158  545   134
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 1.60  0.40  1.00 1.61  0.39
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 2664   636  1600 2668   632
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.30  0.08  0.12 0.30  0.15  0.10 0.16  0.17  0.10 0.20  0.21
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:12                Page 24-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #22 Fairview St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.916
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        97               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     184 1759   108   204  635   156   205  628   168   650 1375   302
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  184 1759   108   204  635   156   205  628   168   650 1375   302
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   184 1759   108   204  635   156   205  628   168   650 1375   302
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  184 1759   108   204  635   156   205  628   168   650 1375   302
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  184 1759   108   204  635   156   205  628   168   650 1375   302
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 2.83  0.17  2.00 2.41  0.59  2.00 2.37  0.63  2.00 2.46  0.54
Final Sat.:  3200 4722   278  3200 4053   947  3200 3987  1013  3200 4136   864
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.37  0.39  0.06 0.16  0.16  0.06 0.16  0.17  0.20 0.33  0.35
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:12                Page 25-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #23 Fairview St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.796
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     213 1695   158   182  921    93   168  815   126   168  989   214
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  213 1695   158   182  921    93   168  815   126   168  989   214
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   213 1695   158   182  921    93   168  815   126   168  989   214
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  213 1695   158   182  921    93   168  815   126   168  989   214
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  213 1695   158   182  921    93   168  815   126   168  989   214
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 2.74  0.26  2.00 2.72  0.28  2.00 2.60  0.40  2.00 2.47  0.53
Final Sat.:  3200 4591   409  3200 4560   440  3200 4357   643  3200 4146   854
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.37  0.39  0.06 0.20  0.21  0.05 0.19  0.20  0.05 0.24  0.25
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:13                Page 26-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #24 Fairview St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.768
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     225 1550    84   171  955    88   240  627   211   167 1272   223
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  225 1550    84   171  955    88   240  627   211   167 1272   223
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   225 1550    84   171  955    88   240  627   211   167 1272   223
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  225 1550    84   171  955    88   240  627   211   167 1272   223
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  225 1550    84   171  955    88   240  627   211   167 1272   223
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.85  0.15  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4753   247  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.33  0.34  0.05 0.19  0.06  0.08 0.12  0.13  0.05 0.25  0.14
Crit Moves:             ****  ****            ****                   ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:13                Page 27-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #25 Fairview Rd and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.715
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        39               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     192 1725   375   140 1162    81   262  555   123   227  569   148
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  192 1725   375   140 1162    81   262  555   123   227  569   148
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   192 1725   375   140 1162    81   262  555   123   227  569   148
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  192 1725   375   140 1162    81   262  555   123   227  569   148
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  192 1725   375   140 1162    81   262  555   123   227  569   148
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.80  0.20  2.00 1.64  0.36  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4687   313  3200 2719   581  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.34  0.23  0.04 0.25  0.26  0.08 0.20  0.21  0.07 0.17  0.09
Crit Moves:       ****        ****                     ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #26 Greenville St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.595
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	29	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	2	1 0	1 0	3	0 0
Volume Module:												
Base Vol:	293	0	195	0	0	0	0	1061	216	153	1811	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	293	0	195	0	0	0	0	1061	216	153	1811	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	293	0	195	0	0	0	0	1061	216	153	1811	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	293	0	195	0	0	0	0	1061	216	153	1811	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	293	0	195	0	0	0	0	1061	216	153	1811	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	2.49	0.51	1.00	3.00	0.00
Final Sat.:	1600	0	1600	0	0	0	0	4188	812	1600	5100	0
Capacity Analysis Module:												
Vol/Sat:	0.18	0.00	0.12	0.00	0.00	0.00	0.00	0.25	0.27	0.10	0.36	0.00
Crit Moves:	****								****	****		

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #27 Greenville St and Segerstrom Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.777
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        48               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      50  414    31    52  171    52   127  967    55    37 1414   202
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   50  414    31    52  171    52   127  967    55    37 1414   202
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    50  414    31    52  171    52   127  967    55    37 1414   202
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   50  414    31    52  171    52   127  967    55    37 1414   202
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   50  414    31    52  171    52   127  967    55    37 1414   202
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 0.93  0.07  1.00 0.77  0.23  1.00 2.84  0.16  1.00 2.62  0.38
Final Sat.:  1600 1489   111  1600 1227   373  1600 4742   258  1600 4400   600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.28  0.28  0.03 0.14  0.14  0.08 0.20  0.21  0.02 0.32  0.34
Crit Moves:       ****        ****             ****                       ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #28 Raitt St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.758
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        45               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      61  872   136    51  533    86   108  640    56    98  827   114
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   61  872   136    51  533    86   108  640    56    98  827   114
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    61  872   136    51  533    86   108  640    56    98  827   114
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   61  872   136    51  533    86   108  640    56    98  827   114
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   61  872   136    51  533    86   108  640    56    98  827   114
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 1.73  0.27  1.00 1.72  0.28  1.00 1.84  0.16  1.00 1.76  0.24
Final Sat.:  1600 2868   432  1600 2855   445  1600 3043   257  1600 2912   388
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.30  0.32  0.03 0.19  0.19  0.07 0.21  0.22  0.06 0.28  0.29
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #29 Raitt St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.986
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     171  736   206   114  396    99   125  862   123   192 2171   194
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  171  736   206   114  396    99   125  862   123   192 2171   194
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   171  736   206   114  396    99   125  862   123   192 2171   194
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  171  736   206   114  396    99   125  862   123   192 2171   194
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  171  736   206   114  396    99   125  862   123   192 2171   194
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 1.56  0.44  1.00 1.60  0.40  1.00 2.63  0.37  1.00 2.75  0.25
Final Sat.:  1600 2600   700  1600 2660   640  1600 4401   599  1600 4606   394
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.28  0.29  0.07 0.15  0.15  0.08 0.20  0.21  0.12 0.47  0.49
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #30 Bear St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.851
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        65               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     273 1314   343   115  278    84    80  753    78    67 1211   193
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  273 1314   343   115  278    84    80  753    78    67 1211   193
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   273 1314   343   115  278    84    80  753    78    67 1211   193
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  273 1314   343   115  278    84    80  753    78    67 1211   193
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  273 1314   343   115  278    84    80  753    78    67 1211   193
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 2.72  0.28  1.00 2.59  0.41
Final Sat.:  1600 3400  1600  1600 3400  1600  1600 4549   451  1600 4340   660
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.39  0.21  0.07 0.08  0.05  0.05 0.17  0.17  0.04 0.28  0.29
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #31 Bristol St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.823
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        57               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     375 1823   303   337 1794   305   238  530    96   311 1170   396
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  375 1823   303   337 1794   305   238  530    96   311 1170   396
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   375 1823   303   337 1794   305   238  530    96   311 1170   396
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  375 1823   303   337 1794   305   238  530    96   311 1170   396
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  375 1823   303   337 1794   305   238  530    96   311 1170   396
OvlAdjVol:                                                                 228
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.54  0.46  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4264   736  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.36  0.19  0.11 0.35  0.19  0.07 0.12  0.13  0.10 0.23  0.25
OvlAdjV/S:                                                                 0.14
Crit Moves:  ****                 ****        ****                  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #32 Bristol St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.911
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        93               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     222 1550    81   159 1458   149   195  549    65   184  789    89
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  222 1550    81   159 1458   149   195  549    65   184  789    89
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   222 1550    81   159 1458   149   195  549    65   184  789    89
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  222 1550    81   159 1458   149   195  549    65   184  789    89
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  222 1550    81   159 1458   149   195  549    65   184  789    89
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.03  1.00  1.00 1.03  1.00
Lanes:       1.00 2.85  0.15  1.00 2.72  0.28  1.00 1.79  0.21  1.00 1.80  0.20
Final Sat.:  1600 4762   238  1600 4555   445  1600 2961   339  1600 2976   324
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.33  0.34  0.10 0.32  0.33  0.12 0.19  0.19  0.12 0.27  0.27
Crit Moves:  ****                ****  ****                ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #33 Bristol St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.853
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	66	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	84	1702	97	117	1558	59	155	428	100	392	624	168
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	84	1702	97	117	1558	59	155	428	100	392	624	168
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	84	1702	97	117	1558	59	155	428	100	392	624	168
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	84	1702	97	117	1558	59	155	428	100	392	624	168
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	84	1702	97	117	1558	59	155	428	100	392	624	168
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	2.84	0.16	1.00	2.89	0.11	1.00	2.43	0.57	1.00	2.36	0.64
Final Sat.:	1600	4741	259	1600	4825	175	1600	4091	909	1600	3982	1018
Capacity Analysis Module:												
Vol/Sat:	0.05	0.36	0.37	0.07	0.32	0.34	0.10	0.10	0.11	0.25	0.16	0.16
Crit Moves:			****	****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #34 Bristol St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.826
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	58	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	392	1693	250	223	1209	273	160	900	115	196	1204	114
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	392	1693	250	223	1209	273	160	900	115	196	1204	114
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	392	1693	250	223	1209	273	160	900	115	196	1204	114
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	392	1693	250	223	1209	273	160	900	115	196	1204	114
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	392	1693	250	223	1209	273	160	900	115	196	1204	114
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	2.66	0.34	1.00	2.74	0.26
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	4456	544	1600	4585	415
Capacity Analysis Module:												
Vol/Sat:	0.12	0.33	0.16	0.07	0.24	0.17	0.10	0.20	0.21	0.12	0.26	0.27
Crit Moves:		****			****			****				****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #35 Bristol St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.028
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 3	0 1	1	0 3	0 1	1	0 1	1 0	1	0 1	1 0
Volume Module:												
Base Vol:	224	1649	90	111	1554	358	245	478	95	209	1088	127
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	224	1649	90	111	1554	358	245	478	95	209	1088	127
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	224	1649	90	111	1554	358	245	478	95	209	1088	127
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	224	1649	90	111	1554	358	245	478	95	209	1088	127
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	224	1649	90	111	1554	358	245	478	95	209	1088	127
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.03	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	1.00	1.67	0.33	1.00	1.79	0.21
Final Sat.:	1600	5100	1600	1600	5100	1600	1600	2769	531	1600	2966	334
Capacity Analysis Module:												
Vol/Sat:	0.14	0.32	0.06	0.07	0.30	0.22	0.15	0.17	0.18	0.13	0.37	0.38
Crit Moves:	****			****			****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #36 Bristol St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.847
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        64               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     316 1182   216   338 1128   219   176  791   140   251 1481   434
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  316 1182   216   338 1128   219   176  791   140   251 1481   434
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   316 1182   216   338 1128   219   176  791   140   251 1481   434
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  316 1182   216   338 1128   219   176  791   140   251 1481   434
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  316 1182   216   338 1128   219   176  791   140   251 1481   434
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.54  0.46  2.00 2.51  0.49  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 4258   742  3200 4220   780  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.28  0.29  0.11 0.27  0.28  0.11 0.16  0.09  0.16 0.29  0.27
Crit Moves:             ****  ****            ****                  ****
******************************************************************************
```

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                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #37 Bristol St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.870
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        72               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     182 1347   237   101  927   194   224  803    64   145 1313    66
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  182 1347   237   101  927   194   224  803    64   145 1313    66
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   182 1347   237   101  927   194   224  803    64   145 1313    66
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  182 1347   237   101  927   194   224  803    64   145 1313    66
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  182 1347   237   101  927   194   224  803    64   145 1313    66
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.55  0.45  1.00 2.48  0.52  1.00 2.78  0.22  1.00 2.86  0.14
Final Sat.:  1600 4282   718  1600 4169   831  1600 4646   354  1600 4770   230
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.31  0.33  0.06 0.22  0.23  0.14 0.17  0.18  0.09 0.28  0.29
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #38 Bristol St and Alton Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.633
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        31               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:         WideBypass         Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  3  0  1    1  0  1  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      43 1681   158   116  870    54    25   35    65    91  150    29
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   43 1681   158   116  870    54    25   35    65    91  150    29
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    43 1681   158   116  870    54    25   35    65    91  150    29
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   43 1681   158   116  870    54    25   35    65    91  150    29
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   43 1681   158   116  870    54    25   35    65    91  150    29
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.74  0.26  1.00 3.00  1.00  1.00 1.00  1.00  1.00 0.84  0.16
Final Sat.:  1600 4588   412  1600 5100  1600  1600 1700  1600  1600 1341   259
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.37  0.38  0.07 0.17  0.03  0.02 0.02  0.04  0.06 0.11  0.11
Crit Moves:             ****  ****            ****                 ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #39 Bristol St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.765
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     321 1369   249   233  858   135   335  746   158   236 1370   259
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  321 1369   249   233  858   135   335  746   158   236 1370   259
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   321 1369   249   233  858   135   335  746   158   236 1370   259
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  321 1369   249   233  858   135   335  746   158   236 1370   259
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  321 1369   249   233  858   135   335  746   158   236 1370   259
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.59  0.41  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 4347   653  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.27  0.16  0.07 0.20  0.21  0.10 0.15  0.10  0.07 0.27  0.16
Crit Moves:       ****        ****            ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #40 Bristol St and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.692
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  1    2  0  3  0  1    2  0  2  1  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     651 1376   222   215  804   230   301  588   228   247  952   303
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  651 1376   222   215  804   230   301  588   228   247  952   303
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   651 1376   222   215  804   230   301  588   228   247  952   303
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  651 1376   222   215  804   230   301  588   228   247  952   303
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  651 1376   222   215  804   230   301  588   228   247  952   303
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.88  1.12  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4812  1788  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.27  0.14  0.07 0.16  0.14  0.09 0.12  0.13  0.08 0.19  0.19
Crit Moves:  ****               ****        ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #41 Bristol St and I-405 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.825
Loss Time (sec):       5               Average Delay (sec/veh):        28.5
Optimal Cycle:        60               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    0  0  4  1  0    0  0  0  0  2    1  1  1  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 2094   183     0 2375    22     0    0   204   350  300  1162
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 2094   183     0 2375    22     0    0   204   350  300  1162
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 2094   183     0 2375    22     0    0   204   350  300  1162
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 2094   183     0 2375    22     0    0   204   350  300  1162
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 2094   183     0 2375    22     0    0   204   350  300  1162
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  1.00 0.91  0.91  1.00 1.00  0.75  0.93 0.93  0.75
Lanes:       0.00 4.00  1.00  0.00 4.95  0.05  0.00 0.00  2.00  1.62 1.38  2.00
Final Sat.:     0 6916  1615     0 8557    79     0    0  2842  2840 2434  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.30  0.11  0.00 0.28  0.28  0.00 0.00  0.07  0.12 0.12  0.41
Crit Moves:       ****        ****                         ****            ****
Green/Cycle: 0.00 0.37  0.37  0.00 0.37  0.37  0.00 0.00  0.09  0.50 0.50  0.50
Volume/Cap:  0.00 0.82  0.31  0.00 0.76  0.76  0.00 0.00  0.82  0.25 0.25  0.82
Delay/Veh:    0.0 31.0  22.9   0.0 28.8  28.8   0.0  0.0  64.6  14.5 14.5  25.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 31.0  22.9   0.0 28.8  28.8   0.0  0.0  64.6  14.5 14.5  25.6
LOS by Move:    A    C     C     A    C     C     A    A     E     B    B     C
HCM2k85thQ:     0   27     6     0   23    23     0    0     9     6    6    28
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #42 Bristol St and I-405 SB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	0.617
Loss Time (sec):	5	Average Delay (sec/veh):	18.3
Optimal Cycle:	31	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Ignore			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	4 0	0	0 0	2	1 1	3 0	0	0 1	0 0	0	0 0
Volume Module:												
Base Vol:	128	1570	0	0	1611	942	740	0	331	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	128	1570	0	0	1611	942	740	0	331	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	128	1570	0	0	1611	0	740	0	331	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	128	1570	0	0	1611	0	740	0	331	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	128	1570	0	0	1611	0	740	0	331	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.91	1.00	1.00	0.91	0.91	0.92	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	4.00	0.00	0.00	3.00	1.00	3.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	6916	0	0	5187	1729	5253	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.07	0.23	0.00	0.00	0.31	0.00	0.14	0.00	0.20	0.00	0.00	0.00
Crit Moves:	****				****				****			
Green/Cycle:	0.11	0.62	0.00	0.00	0.50	0.00	0.33	0.00	0.33	0.00	0.00	0.00
Volume/Cap:	0.62	0.37	0.00	0.00	0.62	0.00	0.42	0.00	0.62	0.00	0.00	0.00
Delay/Veh:	47.7	9.5	0.0	0.0	18.4	0.0	26.1	0.0	30.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.7	9.5	0.0	0.0	18.4	0.0	26.1	0.0	30.2	0.0	0.0	0.0
LOS by Move:	D	A	A	A	B	A	C	A	C	A	A	A
HCM2k85thQ:	7	10	0	0	20	0	10	0	14	0	0	0

Note: Queue reported is the number of cars per lane.

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #43 Flower St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.857
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	68	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	3 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	198	1206	99	87	442	40	357	1029	168	186	649	192
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	198	1206	99	87	442	40	357	1029	168	186	649	192
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	198	1206	99	87	442	40	357	1029	168	186	649	192
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	198	1206	99	87	442	40	357	1029	168	186	649	192
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	198	1206	99	87	442	40	357	1029	168	186	649	192
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	3.00	1.00	1.00	2.32	0.68
Final Sat.:	1600	3400	1600	1600	3400	1600	1600	5100	1600	1600	3904	1096
Capacity Analysis Module:												
Vol/Sat:	0.12	0.35	0.06	0.05	0.13	0.03	0.22	0.20	0.11	0.12	0.17	0.18
Crit Moves:		****			****			****				****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #44 Flower St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.877
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	75	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	1 1	0	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	224	1063	253	200	549	159	102	895	74	210	1415	147
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	224	1063	253	200	549	159	102	895	74	210	1415	147
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	224	1063	253	200	549	159	102	895	74	210	1415	147
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	224	1063	253	200	549	159	102	895	74	210	1415	147
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	224	1063	253	200	549	159	102	895	74	210	1415	147
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	2.00	1.00	1.00	1.55	0.45	1.00	2.77	0.23	1.00	2.72	0.28
Final Sat.:	1600	3400	1600	1600	2581	719	1600	4633	367	1600	4548	452
Capacity Analysis Module:												
Vol/Sat:	0.14	0.31	0.16	0.13	0.21	0.22	0.06	0.19	0.20	0.13	0.31	0.33
Crit Moves:		****			****			****				****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #45 Flower St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.037
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  1  0  1  0    0  1  0  1  0    0  1  0  1  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      91 1234    76    46  352    57   124  928    37    93 1159   166
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   91 1234    76    46  352    57   124  928    37    93 1159   166
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    91 1234    76    46  352    57   124  928    37    93 1159   166
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   91 1234    76    46  352    57   124  928    37    93 1159   166
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   91 1234    76    46  352    57   124  928    37    93 1159   166
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       0.13 1.76  0.11  0.20 1.55  0.25  0.23 1.70  0.07  0.13 1.64  0.23
Final Sat.:   208 2819   174   324 2476   401   364 2727   109   210 2616   375
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.44  0.44  0.03 0.14  0.14  0.08 0.34  0.34  0.06 0.44  0.44
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #46 Flower St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.866
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        71               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     122  859    82    84  469   135   203 1011   107    92 1545    99
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  122  859    82    84  469   135   203 1011   107    92 1545    99
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   122  859    82    84  469   135   203 1011   107    92 1545    99
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  122  859    82    84  469   135   203 1011   107    92 1545    99
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  122  859    82    84  469   135   203 1011   107    92 1545    99
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 1.83  0.17  1.00 1.55  0.45  1.00 2.71  0.29  1.00 2.82  0.18
Final Sat.:  1600 3021   279  1600 2585   715  1600 4541   459  1600 4711   289
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.28  0.29  0.05 0.18  0.19  0.13 0.22  0.23  0.06 0.33  0.34
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #47 Flower St and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.900
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	87	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	130	621	72	93	224	215	199	947	60	62	1989	177
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	130	621	72	93	224	215	199	947	60	62	1989	177
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	130	621	72	93	224	215	199	947	60	62	1989	177
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	130	621	72	93	224	215	199	947	60	62	1989	177
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	130	621	72	93	224	215	199	947	60	62	1989	177
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.05	1.00
Lanes:	1.00	1.79	0.21	1.00	1.02	0.98	1.00	2.82	0.18	1.00	2.75	0.25
Final Sat.:	1600	2968	332	1600	1733	1567	1600	4714	286	1600	4608	392
Capacity Analysis Module:												
Vol/Sat:	0.08	0.21	0.22	0.06	0.13	0.14	0.12	0.20	0.21	0.04	0.43	0.45
Crit Moves:			****	****			****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #48 Main St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.696
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        37               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     347 1059   496   164 1031   266   327  466   209   282  563   226
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  347 1059   496   164 1031   266   327  466   209   282  563   226
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   347 1059   496   164 1031   266   327  466   209   282  563   226
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  347 1059   496   164 1031   266   327  466   209   282  563   226
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  347 1059   496   164 1031   266   327  466   209   282  563   226
OvlAdjVol:               355                                              144
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.38  0.62  2.00 2.07  0.93  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4016   984  3200 3514  1486  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.21  0.31  0.05 0.26  0.27  0.10 0.13  0.14  0.09 0.17  0.14
OvlAdjV/S:               0.22                                              0.09
Crit Moves:  ****                      ****  ****                  ****
******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:29                Page 51-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #49 Main St and Mainplace Dr / Memory Ln
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.556
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        26               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     113 1186   225    52 1083   143   391  433   116   278  227   110
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  113 1186   225    52 1083   143   391  433   116   278  227   110
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   113 1186   225    52 1083   143   391  433   116   278  227   110
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  113 1186   225    52 1083   143   391  433   116   278  227   110
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  113 1186   225    52 1083   143   391  433   116   278  227   110
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 2.52  0.48  2.00 2.65  0.35  2.00 2.37  0.63  2.00 2.00  1.00
Final Sat.:  3200 4235   765  3200 4440   560  3200 3986  1014  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.28  0.29  0.02 0.24  0.26  0.12 0.11  0.11  0.09 0.07  0.07
Crit Moves:             ****  ****                 ****        ****
******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:30                Page 52-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #50 Main St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.760
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        45               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     197 1019   222   222  969   150   224 1256    74   199 1220    81
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  197 1019   222   222  969   150   224 1256    74   199 1220    81
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   197 1019   222   222  969   150   224 1256    74   199 1220    81
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  197 1019   222   222  969   150   224 1256    74   199 1220    81
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  197 1019   222   222  969   150   224 1256    74   199 1220    81
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.83  0.17  2.00 2.81  0.19
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 4733   267  3200 4701   299
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.30  0.14  0.07 0.28  0.09  0.07 0.27  0.28  0.06 0.26  0.27
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #51 Main St and Civic Center Dr

Cycle (sec):	100	Critical Vol./Cap.(X):	0.965
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	152	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	92	1169	98	52	853	54	239	1322	158	38	384	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	92	1169	98	52	853	54	239	1322	158	38	384	39
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	92	1169	98	52	853	54	239	1322	158	38	384	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	92	1169	98	52	853	54	239	1322	158	38	384	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	92	1169	98	52	853	54	239	1322	158	38	384	39
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.03	1.00	1.00	1.03	1.00	1.00	1.03	1.00
Lanes:	1.00	1.85	0.15	1.00	1.88	0.12	1.00	1.79	0.21	1.00	1.82	0.18
Final Sat.:	1600	3052	248	1600	3109	191	1600	2958	342	1600	3005	295
Capacity Analysis Module:												
Vol/Sat:	0.06	0.38	0.40	0.03	0.27	0.28	0.15	0.45	0.46	0.02	0.13	0.13
Crit Moves:			****	****					****	****		

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #52 Main St and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.792
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  1  1  0    0  0  0  0  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      51 1152     0     0 1083    53     0    0     0    92  924   120
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   51 1152     0     0 1083    53     0    0     0    92  924   120
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    51 1152     0     0 1083    53     0    0     0    92  924   120
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   51 1152     0     0 1083    53     0    0     0    92  924   120
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   51 1152     0     0 1083    53     0    0     0    92  924   120
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  0.00  0.00 1.91  0.09  0.00 0.00  0.00  0.16 1.63  0.21
Final Sat.:  1600 3400     0     0 3151   149     0    0     0   259 2603   338
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.34  0.00  0.00 0.34  0.36  0.00 0.00  0.00  0.06 0.36  0.35
Crit Moves:  ****                     ****                           ****
*******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:32                Page 55-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #53 Main St and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.447
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1  1  0    0  0  1  1  0    0  0  1  1  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  950    45     0  864    39     0   70    39     0  229    58
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  950    45     0  864    39     0   70    39     0  229    58
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  950    45     0  864    39     0   70    39     0  229    58
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  950    45     0  864    39     0   70    39     0  229    58
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  950    45     0  864    39     0   70    39     0  229    58
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       0.00 1.91  0.09  0.00 1.91  0.09  0.00 1.28  0.72  0.00 1.60  0.40
Final Sat.:     0 3155   145     0 3162   138     0 2155  1145     0 2653   647
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.30  0.31  0.00 0.27  0.28  0.00 0.03  0.03  0.00 0.09  0.09
Crit Moves:             ****  ****             ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #54 Main St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.744
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        43               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     152  745    65   146  559   119   116 1172    87   111 1244    87
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  152  745    65   146  559   119   116 1172    87   111 1244    87
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   152  745    65   146  559   119   116 1172    87   111 1244    87
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  152  745    65   146  559   119   116 1172    87   111 1244    87
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  152  745    65   146  559   119   116 1172    87   111 1244    87
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.84  0.16  1.00 2.00  1.00  1.00 2.79  0.21  1.00 2.80  0.20
Final Sat.:  1600 3043   257  1600 3400  1600  1600 4668   332  1600 4686   314
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.24  0.25  0.09 0.16  0.07  0.07 0.25  0.26  0.07 0.27  0.28
Crit Moves:             ****  ****            ****                      ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #55 Main St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.925
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       104               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     132 1037    64   123  834    61   182  805    98   133  752   338
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  132 1037    64   123  834    61   182  805    98   133  752   338
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   132 1037    64   123  834    61   182  805    98   133  752   338
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  132 1037    64   123  834    61   182  805    98   133  752   338
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  132 1037    64   123  834    61   182  805    98   133  752   338
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 1.88  0.12  1.00 1.86  0.14  1.00 1.78  0.22  1.00 1.38  0.62
Final Sat.:  1600 3114   186  1600 3082   218  1600 2953   347  1600 2308   992
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.33  0.34  0.08 0.27  0.28  0.11 0.27  0.28  0.08 0.33  0.34
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #56 Main St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.867
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	71	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	101	1069	49	129	646	88	118	698	78	102	1364	141
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	101	1069	49	129	646	88	118	698	78	102	1364	141
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	101	1069	49	129	646	88	118	698	78	102	1364	141
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	101	1069	49	129	646	88	118	698	78	102	1364	141
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	101	1069	49	129	646	88	118	698	78	102	1364	141
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	1.91	0.09	1.00	1.76	0.24	1.00	2.70	0.30	1.00	2.72	0.28
Final Sat.:	1600	3160	140	1600	2916	384	1600	4518	482	1600	4550	450
Capacity Analysis Module:												
Vol/Sat:	0.06	0.34	0.35	0.08	0.22	0.23	0.07	0.15	0.16	0.06	0.30	0.31
Crit Moves:		****	****				****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #57 Main St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.749
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        43               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     446 1067   293   265  345   260   313  643    62   193 1529   444
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  446 1067   293   265  345   260   313  643    62   193 1529   444
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   446 1067   293   265  345   260   313  643    62   193 1529   444
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  446 1067   293   265  345   260   313  643    62   193 1529   444
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  446 1067   293   265  345   260   313  643    62   193 1529   444
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.21  0.18  0.08 0.07  0.16  0.10 0.13  0.04  0.06 0.30  0.28
Crit Moves:  ****                      ****  ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #58 Penn Wy and 17th St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.872
Loss Time (sec):	5	Average Delay (sec/veh):	25.5
Optimal Cycle:	76	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	0	0 2	0 0	0	0 0	0 0	2	1 0	1 0	3	0 0
Volume Module:												
Base Vol:	1113	0	543	0	0	0	0	1672	539	123	1440	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1113	0	543	0	0	0	0	1672	539	123	1440	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1113	0	543	0	0	0	0	1672	539	123	1440	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1113	0	543	0	0	0	0	1672	539	123	1440	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1113	0	543	0	0	0	0	1672	539	123	1440	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.75	1.00	1.00	1.00	1.00	0.88	0.88	0.95	0.91	1.00
Lanes:	2.00	0.00	2.00	0.00	0.00	0.00	0.00	2.27	0.73	1.00	3.00	0.00
Final Sat.:	3502	0	2842	0	0	0	0	3777	1218	1805	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.32	0.00	0.19	0.00	0.00	0.00	0.00	0.44	0.44	0.07	0.28	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.36	0.00	0.36	0.00	0.00	0.00	0.00	0.51	0.51	0.08	0.59	0.00
Volume/Cap:	0.87	0.00	0.52	0.00	0.00	0.00	0.00	0.87	0.87	0.87	0.47	0.00
Delay/Veh:	36.5	0.0	25.5	0.0	0.0	0.0	0.0	25.4	25.4	86.2	12.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	36.5	0.0	25.5	0.0	0.0	0.0	0.0	25.4	25.4	86.2	12.0	0.0
LOS by Move:	D	A	C	A	A	A	A	C	C	F	B	A
HCM2k85thQ:	28	0	12	0	0	0	0	36	36	10	14	0

Note: Queue reported is the number of cars per lane.

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:36                Page 61-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #59 I-5 NB Off Ramps/17th Street
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.587
Loss Time (sec):       5               Average Delay (sec/veh):        19.0
Optimal Cycle:        29               Level Of Service:                  B
******************************************************************************
Street Name:         I-5 NB Off Ramps                    17th Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected         Permitted
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  1    1  0  0  0  1    1  0  3  0  1    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     330   44    17    50    0   130   114 1047   688     0 1564    42
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  330   44    17    50    0   130   114 1047   688     0 1564    42
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   330   44    17    50    0   130   114 1047     0     0 1564    42
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  330   44    17    50    0   130   114 1047     0     0 1564    42
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  330   44    17    50    0   130   114 1047     0     0 1564    42
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.85  0.95 1.00  0.85  0.95 0.91  1.00  1.00 0.91  0.91
Lanes:       1.76 0.24  1.00  1.00 0.00  1.00  1.00 3.00  1.00  0.00 2.92  0.08
Final Sat.:  3212  428  1615  1805    0  1615  1805 5187  1900     0 5031   135
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.10  0.01  0.03 0.00  0.08  0.06 0.20  0.00  0.00 0.31  0.31
Crit Moves:       ****                     ****  ****                 ****
Green/Cycle: 0.18 0.18  0.18  0.14 0.00  0.14  0.11 0.64  0.00  0.00 0.53  0.53
Volume/Cap:  0.59 0.59  0.06  0.20 0.00  0.59  0.59 0.32  0.00  0.00 0.59  0.59
Delay/Veh:   39.3 39.3  34.5  38.7  0.0  44.5  47.1  8.3   0.0   0.0 16.4  16.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  39.3 39.3  34.5  38.7  0.0  44.5  47.1  8.3   0.0   0.0 16.4  16.4
LOS by Move:    D    D     C     D    A     D     D    A     A     A    B     B
HCM2k85thQ:     9    9     1     2    0     7     7    8     0     0   19    19
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:37                Page 62-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #60 Penn Wy and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.573
Loss Time (sec):       5               Average Delay (sec/veh):        23.0
Optimal Cycle:        29               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    2  0  2  0  0    0  0  0  0  0    1  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  631   414   592  137     0     0    0     0   214    0   183
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  631   414   592  137     0     0    0     0   214    0   183
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  631   414   592  137     0     0    0     0   214    0   183
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  631   414   592  137     0     0    0     0   214    0   183
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  631   414   592  137     0     0    0     0   214    0   183
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.92 0.95  1.00  1.00 1.00  1.00  0.95 1.00  0.75
Lanes:       0.00 2.00  1.00  2.00 2.00  0.00  0.00 0.00  0.00  1.00 0.00  2.00
Final Sat.:     0 3610  1615  3502 3610     0     0    0     0  1805    0  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.17  0.26  0.17 0.04  0.00  0.00 0.00  0.00  0.12 0.00  0.06
Crit Moves:             ****  ****                               ****
Green/Cycle: 0.00 0.45  0.45  0.30 0.74  0.00  0.00 0.00  0.00  0.21 0.00  0.50
Volume/Cap:  0.00 0.39  0.57  0.57 0.05  0.00  0.00 0.00  0.00  0.57 0.00  0.13
Delay/Veh:    0.0 18.6  21.6  30.7  3.4   0.0   0.0  0.0   0.0  37.8  0.0  13.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 18.6  21.6  30.7  3.4   0.0   0.0  0.0   0.0  37.8  0.0  13.3
LOS by Move:    A    B     C     C    A     A     A    A     A     D    A     B
HCM2k85thQ:     0   10    15    13    1     0     0    0     0    10    0     3
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:37                Page 63-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #61 Santiago St and Civic Center Dr
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.369
Loss Time (sec):       5               Average Delay (sec/veh):       110.0
Optimal Cycle:         0               Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    0  1  0  0  1    0  0  1! 0  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     194  598    60    32  456   117   266   76   269    14   19    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  194  598    60    32  456   117   266   76   269    14   19    18
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   194  598    60    32  456   117   266   76   269    14   19    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  194  598    60    32  456   117   266   76   269    14   19    18
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  194  598    60    32  456   117   266   76   269    14   19    18
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.91  0.09  1.00 0.80  0.20  0.78 0.22  1.00  0.27 0.38  0.35
Final Sat.:   446  437    44   428  375    96   342   98   507   104  141   134
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.44 1.37  1.37  0.07 1.22  1.22  0.78 0.78  0.53  0.13 0.13  0.13
Crit Moves:             ****       ****             ****             ****
Delay/Veh:   16.8  201 200.6  11.6  140 140.1  34.1 34.1  17.5  13.7 13.7  13.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  16.8  201 200.6  11.6  140 140.1  34.1 34.1  17.5  13.7 13.7  13.7
LOS by Move:    C    F     F     B    F     F     D    D     C     B    B     B
ApproachDel:     158.8            133.3             26.8             13.7
Delay Adj:        1.00             1.00             1.00             1.00
ApprAdjDel:      158.8            133.3             26.8             13.7
LOS by Appr:         F                F                D                B
AllWayAvgQ:   0.7 25.4  25.4   0.1 17.0  17.0   2.8  2.8   1.1   0.1  0.1   0.1
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #62 Santiago St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.017
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	2	0 1
Volume Module:												
Base Vol:	135	833	236	378	639	103	164	673	87	255	546	347
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	135	833	236	378	639	103	164	673	87	255	546	347
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	135	833	236	378	639	103	164	673	87	255	546	347
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	135	833	236	378	639	103	164	673	87	255	546	347
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	135	833	236	378	639	103	164	673	87	255	546	347
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.06	1.00
Lanes:	1.00	1.56	0.44	1.00	1.72	0.28	1.00	1.77	0.23	1.00	2.00	1.00
Final Sat.:	1600	2594	706	1600	2856	444	1600	2934	366	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.08	0.32	0.33	0.24	0.22	0.23	0.10	0.23	0.24	0.16	0.16	0.22
Crit Moves:			****	****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #63 Standard Ave and 4th St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.893
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	83	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	251	543	214	254	428	297	302	477	201	233	648	351
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	251	543	214	254	428	297	302	477	201	233	648	351
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	251	543	214	254	428	297	302	477	201	233	648	351
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	251	543	214	254	428	297	302	477	201	233	648	351
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	251	543	214	254	428	297	302	477	201	233	648	351
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.05	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	1.41	0.59	1.00	1.30	0.70
Final Sat.:	1600	3400	1600	1600	3400	1600	1600	2351	949	1600	2176	1124
Capacity Analysis Module:												
Vol/Sat:	0.16	0.16	0.13	0.16	0.13	0.19	0.19	0.20	0.21	0.15	0.30	0.31
Crit Moves:	****					****	****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #64 Standard Ave and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.968
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	159	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	109	724	259	142	679	47	168	1279	65	264	1888	116
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	109	724	259	142	679	47	168	1279	65	264	1888	116
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	109	724	259	142	679	47	168	1279	65	264	1888	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	109	724	259	142	679	47	168	1279	65	264	1888	116
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	109	724	259	142	679	47	168	1279	65	264	1888	116
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.03	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	1.47	0.53	1.00	1.87	0.13	1.00	2.85	0.15	1.00	2.83	0.17
Final Sat.:	1600	2457	843	1600	3093	207	1600	4768	232	1600	4722	278
Capacity Analysis Module:												
Vol/Sat:	0.07	0.29	0.31	0.09	0.22	0.23	0.11	0.27	0.28	0.17	0.40	0.42
Crit Moves:			****	****			****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #65 Standard Ave and Mcfadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.828
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	59	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	194	765	94	237	520	90	95	632	108	123	749	217
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	194	765	94	237	520	90	95	632	108	123	749	217
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	194	765	94	237	520	90	95	632	108	123	749	217
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	194	765	94	237	520	90	95	632	108	123	749	217
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	194	765	94	237	520	90	95	632	108	123	749	217
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	1.78	0.22	1.00	1.70	0.30	1.00	1.71	0.29	1.00	1.55	0.45
Final Sat.:	1600	2950	350	1600	2828	472	1600	2833	467	1600	2581	719
Capacity Analysis Module:												
Vol/Sat:	0.12	0.26	0.27	0.15	0.18	0.19	0.06	0.22	0.23	0.08	0.29	0.30
Crit Moves:			****	****			****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #66 Halladay St and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.975
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	173	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0	0 0 0	0	1	1 1 0	0	1	2 0 0
Volume Module:												
Base Vol:	338	0	704	0	0	0	2	868	87	272	2159	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	338	0	704	0	0	0	2	868	87	272	2159	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	338	0	704	0	0	0	2	868	87	272	2159	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	338	0	704	0	0	0	2	868	87	272	2159	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	338	0	704	0	0	0	2	868	87	272	2159	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.02	1.00	1.00	1.05	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.01	2.72	0.27	0.34	2.66	0.00
Final Sat.:	1600	0	1600	0	0	0	10	4454	436	537	4463	0
Capacity Analysis Module:												
Vol/Sat:	0.21	0.00	0.44	0.00	0.00	0.00	0.00	0.19	0.20	0.17	0.48	0.00
Crit Moves:			****				****				****	

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #67 Halladay St and Dyer Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.057
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	61	266	307	296	39	83	147	1271	9	51	1655	132
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	61	266	307	296	39	83	147	1271	9	51	1655	132
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	61	266	307	296	39	83	147	1271	9	51	1655	132
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	61	266	307	296	39	83	147	1271	9	51	1655	132
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	61	266	307	296	39	83	147	1271	9	51	1655	132
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	0.46	0.54	1.00	0.32	0.68	1.00	2.98	0.02	1.00	2.78	0.22
Final Sat.:	1600	743	857	1600	511	1089	1600	4966	34	1600	4645	355
Capacity Analysis Module:												
Vol/Sat:	0.04	0.36	0.36	0.19	0.08	0.08	0.09	0.26	0.27	0.03	0.36	0.37
Crit Moves:		****	****				****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #68 SR-55 SB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.567
Loss Time (sec):       5               Average Delay (sec/veh):        17.8
Optimal Cycle:        28               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  2    0  0  2  1  1    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   299    0   724     0 1187  1058     0 1474   579
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   299    0   724     0 1187  1058     0 1474   579
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:     0    0     0   299    0   724     0 1187     0     0 1474     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   299    0   724     0 1187     0     0 1474     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:    0    0     0   299    0   724     0 1187     0     0 1474     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.75  1.00 0.91  0.91  1.00 0.91  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  2.00  0.00 3.00  1.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3502    0  2842     0 5187  1729     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.09 0.00  0.25  0.00 0.23  0.00  0.00 0.28  0.00
Crit Moves:                                ****  ****                 ****
Green/Cycle: 0.00 0.00  0.00  0.45 0.00  0.45  0.00 0.50  0.00  0.00 0.50  0.00
Volume/Cap:  0.00 0.00  0.00  0.19 0.00  0.57  0.00 0.46  0.00  0.00 0.57  0.00
Delay/Veh:    0.0  0.0   0.0  16.7  0.0  21.0   0.0 16.3   0.0   0.0 17.7   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  16.7  0.0  21.0   0.0 16.3   0.0   0.0 17.7   0.0
LOS by Move:    A    A     A     B    A     C     A    B     A     A    B     A
HCM2k85thQ:     0    0     0     4    0    15     0   13     0     0   18     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #69 SR-55 NB Ramps and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.484
Loss Time (sec):       5               Average Delay (sec/veh):        14.6
Optimal Cycle:        24               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Ignore           Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  2  0  2    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     620    0   412     0    0     0     0  711   731     0 1467  1056
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  620    0   412     0    0     0     0  711   731     0 1467  1056
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   620    0     0     0    0     0     0  711     0     0 1467     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  620    0     0     0    0     0     0  711     0     0 1467     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  620    0     0     0    0     0     0  711     0     0 1467     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.88  1.00 0.91  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  2.00  0.00 3.00  1.00
Final Sat.:  3502    0  1900     0    0     0     0 3610  3344     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.00  0.00  0.00 0.00  0.00  0.00 0.20  0.00  0.00 0.28  0.00
Crit Moves:  ****                              ****                   ****
Green/Cycle: 0.37 0.00  0.00  0.00 0.00  0.00  0.00 0.58  0.00  0.00 0.58  0.00
Volume/Cap:  0.48 0.00  0.00  0.00 0.00  0.00  0.00 0.34  0.00  0.00 0.48  0.00
Delay/Veh:   24.7  0.0   0.0   0.0  0.0   0.0   0.0 10.9   0.0   0.0 12.2   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  24.7  0.0   0.0   0.0  0.0   0.0   0.0 10.9   0.0   0.0 12.2   0.0
LOS by Move:    C    A     A     A    A     A     A    B     A     A    B     A
HCM2k85thQ:    12    0     0     0    0     0     0    9     0     0   15     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #70 SR-55 SB Ramps and Dyer Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.663
Loss Time (sec):	5	Average Delay (sec/veh):	26.5
Optimal Cycle:	35	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Ovl			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 1	0	2	0 1	1	0 1	1 0	3	0 1	2 0	3	0 1
Volume Module:												
Base Vol:	386	12	291	103	226	110	59	1379	187	566	1008	65
Growth Adj:	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
Initial Bse:	386	12	291	103	226	110	59	1379	187	566	1008	65
User Adj:	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
PHF Adj:	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
PHF Volume:	386	12	291	103	226	110	59	1379	187	566	1008	65
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	386	12	291	103	226	110	59	1379	187	566	1008	65
PCE Adj:	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
MLF Adj:	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
FinalVolume:	386	12	291	103	226	110	59	1379	187	566	1008	65
Saturation Flow Module:												
Sat/Lane:	1900 1900		1900	1900 1900		1900	1900 1900		1900	1900 1900		1900
Adjustment:	0.95 0.95		0.75	0.94 0.94		0.85	0.95 0.91		0.85	0.92 0.91		0.85
Lanes:	1.94 0.06		2.00	0.63 1.37		1.00	1.00 3.00		1.00	2.00 3.00		1.00
Final Sat.:	3516	109	2842	1113 2443		1615	1805 5187		1615	3502 5187		1615
Capacity Analysis Module:												
Vol/Sat:	0.11 0.11		0.10	0.09 0.09		0.07	0.03 0.27		0.12	0.16 0.19		0.04
Crit Moves:	****			****			****			****		
Green/Cycle:	0.17 0.17		0.41	0.14 0.14		0.14	0.09 0.40		0.40	0.24 0.55		0.55
Volume/Cap:	0.66 0.66		0.25	0.66 0.66		0.49	0.35 0.66		0.29	0.66 0.35		0.07
Delay/Veh:	41.9 41.9		19.5	44.1 44.1		41.4	43.8 25.2		20.5	36.1 12.5		10.5
User DelAdj:	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00	1.00 1.00		1.00
AdjDel/Veh:	41.9 41.9		19.5	44.1 44.1		41.4	43.8 25.2		20.5	36.1 12.5		10.5
LOS by Move:	D	D	B	D	D	D	D	C	C	D	B	B
HCM2k85thQ:	11	11	5	10	10	6	3	20	6	14	10	1

Note: Queue reported is the number of cars per lane.

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #71 Glassell St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.744
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        43               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Ovl              Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  1  1  0    1  0  1  0  1    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     573  595   194    14  471    35   106  346   594   211  382    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  573  595   194    14  471    35   106  346   594   211  382    15
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   573  595   194    14  471    35   106  346   594   211  382    15
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  573  595   194    14  471    35   106  346   594   211  382    15
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  573  595   194    14  471    35   106  346   594   211  382    15
OvlAdjVol:                 0                                  308
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.03  1.00
Lanes:       2.00 1.00  1.00  1.00 1.86  0.14  1.00 1.00  1.00  1.00 1.92  0.08
Final Sat.:  3200 1700  1600  1600 3079   221  1600 1700  1600  1600 3179   121
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.35  0.12  0.01 0.15  0.16  0.07 0.20  0.37  0.13 0.12  0.12
OvlAdjV/S:                 0.00                                  0.19
Crit Moves:       ****        ****                   ****        ****
******************************************************************************
```

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```
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:44                Page 74-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #72 Glassell St and SR-22 WB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.910
Loss Time (sec):       5               Average Delay (sec/veh):        30.5
Optimal Cycle:        96               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted      Split Phase      Split Phase
Rights:           Include           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  2  0  1    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     660 1079     0     0 1007   293     0    0     0   251    9   446
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  660 1079     0     0 1007   293     0    0     0   251    9   446
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   660 1079     0     0 1007   293     0    0     0   251    9   446
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  660 1079     0     0 1007   293     0    0     0   251    9   446
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  660 1079     0     0 1007   293     0    0     0   251    9   446
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  1.00  1.00 0.95  0.85  1.00 1.00  1.00  0.86 0.86  0.86
Lanes:       1.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  1.35 0.03  1.62
Final Sat.:  1805 3610     0     0 3610  1615     0    0     0  2200   41  2644
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.37 0.30  0.00  0.00 0.28  0.18  0.00 0.00  0.00  0.11 0.22  0.17
Crit Moves:  ****                 ****                               ****
Green/Cycle: 0.40 0.71  0.00  0.00 0.31  0.31  0.00 0.00  0.00  0.24 0.24  0.24
Volume/Cap:  0.91 0.42  0.00  0.00 0.91  0.59  0.00 0.00  0.00  0.47 0.91  0.70
Delay/Veh:   43.7  6.2   0.0   0.0 44.3  31.3   0.0  0.0   0.0  32.7 51.5  36.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  43.7  6.2   0.0   0.0 44.3  31.3   0.0  0.0   0.0  32.7 51.5  36.8
LOS by Move:    D    A     A     A    D     C     A    A     A     C    D     D
HCM2k85thQ:    33   11     0     0   29    13     0    0     0     8   21    14
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:45                Page 75-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #73 Grand Ave / Glassell St and SR-22 EB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.931
Loss Time (sec):       5               Average Delay (sec/veh):        31.6
Optimal Cycle:       113               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted       Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  2  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1450   370   461  824     0   229    4   503     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1450   370   461  824     0   229    4   503     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1450   370   461  824     0   229    4   503     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1450   370   461  824     0   229    4   503     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1450   370   461  824     0   229    4   503     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.95 0.95  1.00  0.86 0.86  0.86  1.00 1.00  1.00
Lanes:       0.00 2.00  1.00  1.00 2.00  0.00  1.31 0.01  1.68  0.00 0.00  0.00
Final Sat.:     0 3610  1615  1805 3610     0  2129   18  2731     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.40  0.23  0.26 0.23  0.00  0.11 0.23  0.18  0.00 0.00  0.00
Crit Moves:       ****        ****                ****
Green/Cycle: 0.00 0.43  0.43  0.27 0.71  0.00  0.24 0.24  0.24  0.00 0.00  0.00
Volume/Cap:  0.00 0.93  0.53  0.93 0.32  0.00  0.44 0.93  0.75  0.00 0.00  0.00
Delay/Veh:    0.0 37.4  21.8  59.8  5.7   0.0  32.2 54.5  38.4   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 37.4  21.8  59.8  5.7   0.0  32.2 54.5  38.4   0.0  0.0   0.0
LOS by Move:    A    D     C     E    A     A     C    D     D     A    A     A
HCM2k85thQ:     0   38    13    27    8     0     8   23    15     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:46                Page 76-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #74 Grand Ave and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.717
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        39               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      54 1420   284   242  974    89    79   45    33   221   42   157
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   54 1420   284   242  974    89    79   45    33   221   42   157
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    54 1420   284   242  974    89    79   45    33   221   42   157
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   54 1420   284   242  974    89    79   45    33   221   42   157
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   54 1420   284   242  974    89    79   45    33   221   42   157
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 2.50  0.50  1.00 2.75  0.25  1.00 1.15  0.85  1.00 1.00  1.00
Final Sat.:  1600 4200   800  1600 4598   402  1600 1946  1354  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.34  0.36  0.15 0.21  0.22  0.05 0.02  0.02  0.14 0.02  0.10
Crit Moves:             ****  ****                ****        ****
*******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:46                Page 77-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #75 Grand Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.808
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include        WideBypass          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     103 1386   288   240  946   240   114  139    26   157  282   300
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103 1386   288   240  946   240   114  139    26   157  282   300
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   103 1386   288   240  946   240   114  139    26   157  282   300
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103 1386   288   240  946   240   114  139    26   157  282   300
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103 1386   288   240  946   240   114  139    26   157  282   300
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.48  0.52  1.00 2.39  0.61  1.00 0.84  0.16  1.00 1.00  1.00
Final Sat.:  1600 4174   826  1600 4029   971  1600 1348   252  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.33  0.35  0.15 0.23  0.25  0.07 0.10  0.10  0.10 0.17  0.19
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:47                Page 78-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #76 Grand Ave and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.856
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        67               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     288 1026   259   294  634   140   321  823   138   279 1031   187
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  288 1026   259   294  634   140   321  823   138   279 1031   187
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   288 1026   259   294  634   140   321  823   138   279 1031   187
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  288 1026   259   294  634   140   321  823   138   279 1031   187
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  288 1026   259   294  634   140   321  823   138   279 1031   187
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.40  0.60  1.00 2.46  0.54  2.00 2.57  0.43  2.00 2.54  0.46
Final Sat.:  1600 4033   967  1600 4132   868  3200 4311   689  3200 4263   737
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.25  0.27  0.18 0.15  0.16  0.10 0.19  0.20  0.09 0.24  0.25
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:47                Page 79-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #77 Grand Ave and I-5 NB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.696
Loss Time (sec):       5               Average Delay (sec/veh):        10.1
Optimal Cycle:        38               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  3  0  0    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1855  1432    62 1501     0     0    0     0   151    0   182
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1855  1432    62 1501     0     0    0     0   151    0   182
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1855     0    62 1501     0     0    0     0   151    0   182
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1855     0    62 1501     0     0    0     0   151    0   182
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1855     0    62 1501     0     0    0     0   151    0   182
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  1.00  0.95 0.91  1.00  1.00 1.00  1.00  0.92 1.00  0.85
Lanes:       0.00 2.00  1.00  1.00 3.00  0.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:     0 3610  1900  1805 5187     0     0    0     0  3502    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.51  0.00  0.03 0.29  0.00  0.00 0.00  0.00  0.04 0.00  0.11
Crit Moves:       ****        ****                                       ****
Green/Cycle: 0.00 0.74  0.00  0.05 0.79  0.00  0.00 0.00  0.00  0.16 0.00  0.16
Volume/Cap:  0.00 0.70  0.00  0.70 0.37  0.00  0.00 0.00  0.00  0.27 0.00  0.70
Delay/Veh:    0.0  7.8   0.0  68.1  3.2   0.0   0.0  0.0   0.0  36.9  0.0  47.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  7.8   0.0  68.1  3.2   0.0   0.0  0.0   0.0  36.9  0.0  47.5
LOS by Move:    A    A     A     E    A     A     A    A     A     D    A     D
HCM2k85thQ:     0   25     0     5    8     0     0    0     0     4    0    10
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:48                Page 80-1
------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #78 Grand Ave and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.721
Loss Time (sec):       5                Average Delay (sec/veh):        25.3
Optimal Cycle:        41                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  2    2  0  1  0  2    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     185 2091    34    38  839   595   377  230   363    34  228   165
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  185 2091    34    38  839   595   377  230   363    34  228   165
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   185 2091    34    38  839   595   377  230   363    34  228   165
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  185 2091    34    38  839   595   377  230   363    34  228   165
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  185 2091    34    38  839   595   377  230   363    34  228   165
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  0.91  0.95 0.95  0.75  0.92 1.00  0.75  0.89 0.89  0.89
Lanes:       1.00 2.95  0.05  1.00 2.00  2.00  2.00 1.00  2.00  0.16 1.07  0.77
Final Sat.:  1805 5094    83  1805 3610  2842  3502 1900  2842   270 1809  1309
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.41  0.41  0.02 0.23  0.21  0.11 0.12  0.13  0.13 0.13  0.13
Crit Moves:       ****        ****                          ****  ****
Green/Cycle: 0.18 0.57  0.57  0.03 0.42  0.59  0.18 0.18  0.18  0.17 0.17  0.17
Volume/Cap:  0.56 0.72  0.72  0.72 0.56  0.35  0.61 0.68  0.72  0.72 0.72  0.72
Delay/Veh:   39.3 16.6  16.6  86.7 22.8  10.6  39.7 44.2  43.9  43.3 43.3  43.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  39.3 16.6  16.6  86.7 22.8  10.6  39.7 44.2  43.9  43.3 43.3  43.3
LOS by Move:    D    B     B     F    C     B     D    D     D     D    D     D
HCM2k85thQ:     9   27    27     4   16     8    10   12    12    12   12    12
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:49                Page 81-1
------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #79 Grand Ave and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.731
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     188 1435    43   113  667   266   326 1080   107   154  958   176
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  188 1435    43   113  667   266   326 1080   107   154  958   176
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   188 1435    43   113  667   266   326 1080   107   154  958   176
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  188 1435    43   113  667   266   326 1080   107   154  958   176
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  188 1435    43   113  667   266   326 1080   107   154  958   176
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 2.91  0.09  2.00 3.00  1.00  2.00 2.73  0.27  2.00 2.53  0.47
Final Sat.:  3200 4860   140  3200 5100  1600  3200 4567   433  3200 4255   745
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.30  0.31  0.04 0.13  0.17  0.10 0.24  0.25  0.05 0.23  0.24
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:50                Page 82-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #80 Grand Ave and Chestnut Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.688
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     152 1142   198   161  716   121    70  214    47   139  433   252
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  152 1142   198   161  716   121    70  214    47   139  433   252
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   152 1142   198   161  716   121    70  214    47   139  433   252
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  152 1142   198   161  716   121    70  214    47   139  433   252
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  152 1142   198   161  716   121    70  214    47   139  433   252
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 2.56  0.44  1.00 2.57  0.43  1.00 1.64  0.36  1.00 1.26  0.74
Final Sat.:  1600 4291   709  1600 4306   694  1600 2724   576  1600 2123  1177
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.27  0.28  0.10 0.17  0.17  0.04 0.08  0.08  0.09 0.20  0.21
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

```
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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:50                Page 83-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #81 Grand Ave and McFadden Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.821
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        57               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     222 1264   218   153  696   187   122  454    79    96  762   168
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  222 1264   218   153  696   187   122  454    79    96  762   168
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   222 1264   218   153  696   187   122  454    79    96  762   168
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  222 1264   218   153  696   187   122  454    79    96  762   168
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  222 1264   218   153  696   187   122  454    79    96  762   168
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.56  0.44  1.00 2.36  0.64  1.00 1.70  0.30  1.00 1.64  0.36
Final Sat.:  1600 4294   706  1600 3983  1017  1600 2826   474  1600 2722   578
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.29  0.31  0.10 0.17  0.18  0.08 0.16  0.17  0.06 0.28  0.29
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

```
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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:51                Page 84-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #82 Grand Ave and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.004
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     244 1411   122   203  501   281   182  787    63    93 1673   217
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  244 1411   122   203  501   281   182  787    63    93 1673   217
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   244 1411   122   203  501   281   182  787    63    93 1673   217
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  244 1411   122   203  501   281   182  787    63    93 1673   217
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  244 1411   122   203  501   281   182  787    63    93 1673   217
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.76  0.24  1.00 2.00  1.00  1.00 2.78  0.22  1.00 2.66  0.34
Final Sat.:  1600 4618   382  1600 3400  1600  1600 4644   356  1600 4449   551
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.31  0.32  0.13 0.15  0.18  0.11 0.17  0.18  0.06 0.38  0.39
Crit Moves:             ****  ****            ****                      ****
*******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:51                Page 85-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #83 Grand Ave and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.827
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  3  0  1    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     183  660   146   140  452   208   306  587   127   241 1539   504
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  183  660   146   140  452   208   306  587   127   241 1539   504
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   183  660   146   140  452   208   306  587   127   241 1539   504
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  183  660   146   140  452   208   306  587   127   241 1539   504
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  183  660   146   140  452   208   306  587   127   241 1539   504
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.46  0.54  1.00 2.05  0.95  2.00 3.00  1.00  2.00 2.26  0.74
Final Sat.:  1600 4131   869  1600 3487  1513  3200 5100  1600  3200 3816  1184
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.16  0.17  0.09 0.13  0.14  0.10 0.12  0.08  0.08 0.40  0.43
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:52                Page 86-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #84 SR-55 NB Ramps and Dyer Rd
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.362
Loss Time (sec):       5                Average Delay (sec/veh):         5.7
Optimal Cycle:        20                Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    0  0  3  0  1    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     181    0    49     0    0     0     0 1183   602     0 1488   929
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  181    0    49     0    0     0     0 1183   602     0 1488   929
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   181    0    49     0    0     0     0 1183     0     0 1488     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  181    0    49     0    0     0     0 1183     0     0 1488     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  181    0    49     0    0     0     0 1183     0     0 1488     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.93 1.00  0.93  1.00 1.00  1.00  1.00 0.91  1.00  1.00 0.91  0.91
Lanes:       1.79 0.00  1.21  0.00 0.00  0.00  0.00 3.00  1.00  0.00 3.00  0.00
Final Sat.:  3162    0  2146     0    0     0     0 5187  1900     0 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.00  0.02  0.00 0.00  0.00  0.00 0.23  0.00  0.00 0.29  0.00
Crit Moves:  ****                             ****                   ****
Green/Cycle: 0.16 0.00  0.16  0.00 0.00  0.00  0.00 0.79  0.00  0.00 0.79  0.00
Volume/Cap:  0.36 0.00  0.14  0.00 0.00  0.00  0.00 0.29  0.00  0.00 0.36  0.00
Delay/Veh:   38.0  0.0  36.3   0.0  0.0   0.0   0.0  2.8   0.0   0.0  3.1   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  38.0  0.0  36.3   0.0  0.0   0.0   0.0  2.8   0.0   0.0  3.1   0.0
LOS by Move:    D    A     D     A    A     A     A    A     A     A    A     A
HCM2k85thQ:     5    0     2     0    0     0     0    6     0     0    8     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:53                Page 87-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #85 Cambridge St and La Veta Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.779
Loss Time (sec):       5               Average Delay (sec/veh):        19.7
Optimal Cycle:         0               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0    0  0  1  0  1    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     235  327     0     0  206   191   375    0   247     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  235  327     0     0  206   191   375    0   247     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   235  327     0     0  206   191   375    0   247     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  235  327     0     0  206   191   375    0   247     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  235  327     0     0  206   191   375    0   247     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:   474  510     0     0  485   534   482    0   567     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.50 0.64  xxxx  xxxx 0.42  0.36  0.78 xxxx  0.44  xxxx xxxx  xxxx
Crit Moves:       ****             ****        ****
Delay/Veh:   17.0 20.9   0.0   0.0 14.9  12.6  30.8  0.0  13.4   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  17.0 20.9   0.0   0.0 14.9  12.6  30.8  0.0  13.4   0.0  0.0   0.0
LOS by Move:    C    C     *     *    B     B     D    *     B     *    *     *
ApproachDel:       19.3             13.8             23.9           xxxxxx
Delay Adj:         1.00             1.00             1.00            xxxxx
ApprAdjDel:        19.3             13.8             23.9           xxxxxx
LOS by Appr:          C                B                C                *
AllWayAvgQ:   0.9  1.6   0.0   0.0  0.7   0.5   2.8  0.0   0.7   0.0  0.0   0.0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:53                Page 88-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #86 Cambridge St and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.454
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:            Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  2  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   219    0    76   132  230     0     0  237   295
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   219    0    76   132  230     0     0  237   295
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   219    0    76   132  230     0     0  237   295
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   219    0    76   132  230     0     0  237   295
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   219    0    76   132  230     0     0  237   295
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  1.00 2.00  0.00  0.00 1.00  1.00
Final Sat.:     0    0     0  1600    0  1600  1600 3400     0     0 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.14 0.00  0.05  0.08 0.07  0.00  0.00 0.14  0.18
Crit Moves:                   ****             ****                     ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:54                Page 89-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #87 Mabury St and 1st Street
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.674
Loss Time (sec):       5               Average Delay (sec/veh):        27.1
Optimal Cycle:        36               Level Of Service:                  C
*******************************************************************************
Street Name:              Mabury                          1st Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    1  0  1! 0  1    0  0  2  1  0    1  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:      23    0   233   195   83   367     0 1334    21    40  549     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   23    0   233   195   83   367     0 1334    21    40  549     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    23    0   233   195   83   367     0 1334    21    40  549     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   23    0   233   195   83   367     0 1334    21    40  549     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   23    0   233   195   83   367     0 1334    21    40  549     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 1.00  0.85  0.90 0.90  0.90  1.00 0.91  0.91  0.95 0.91  0.91
Lanes:       1.00 0.00  1.00  1.27 0.23  1.50  0.00 2.95  0.05  1.00 3.00  0.00
Final Sat.:  1805    0  1615  2171  390  2576     0 5096    80  1805 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.00  0.14  0.09 0.21  0.14  0.00 0.26  0.26  0.02 0.11  0.00
Crit Moves:             ****        ****              ****        ****
Green/Cycle: 0.21 0.00  0.21  0.32 0.32  0.32  0.00 0.39  0.39  0.03 0.42  0.00
Volume/Cap:  0.06 0.00  0.67  0.28 0.67  0.45  0.00 0.67  0.67  0.67 0.25  0.00
Delay/Veh:   31.4  0.0  41.3  25.8 31.7  27.6   0.0 26.3  26.3  74.4 18.8   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.4  0.0  41.3  25.8 31.7  27.6   0.0 26.3  26.3  74.4 18.8   0.0
LOS by Move:    C    A     D     C    C     C     A    C     C     E    B     A
HCM2k85thQ:     1    0    12     6   16    10     0   20    20     4    6     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:55                Page 90-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #88 Tustin St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.381
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        19               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      38  863   205    79  701    13    13    5    20   146    4    90
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   38  863   205    79  701    13    13    5    20   146    4    90
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    38  863   205    79  701    13    13    5    20   146    4    90
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   38  863   205    79  701    13    13    5    20   146    4    90
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   38  863   205    79  701    13    13    5    20   146    4    90
OvlAdjVol:                                                                  11
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.42  0.58  1.00 2.95  0.05  1.00 1.00  1.00  1.95 0.05  1.00
Final Sat.:  1600 4079   921  1600 4913    87  1600 1700  1600  3115   85  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.21  0.22  0.05 0.14  0.15  0.01 0.00  0.01  0.05 0.05  0.06
OvlAdjV/S:                                                                  0.01
Crit Moves:             ****  ****                          ****       ****
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:55                Page 91-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #89 Tustin St and SR-22 WB On-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.391
Loss Time (sec):       5               Average Delay (sec/veh):        11.1
Optimal Cycle:        29               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include           Include         Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  0    0  0  2  1  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     466 1340     0     0  573   294     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  466 1340     0     0  573   294     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   466 1340     0     0  573   294     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  466 1340     0     0  573   294     0    0     0     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  466 1340     0     0  573   294     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  1.00  1.00 0.86  0.86  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  0.00 0.00  0.00
Final Sat.:  3502 3610     0     0 3282  1641     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.37  0.00  0.00 0.17  0.18  0.00 0.00  0.00  0.00 0.00  0.00
Crit Moves:       ****
Green/Cycle: 0.65 0.95  0.00  0.00 0.30  0.30  0.00 0.00  0.00  0.00 0.00  0.00
Volume/Cap:  0.21 0.39  0.00  0.00 0.57  0.59  0.00 0.00  0.00  0.00 0.00  0.00
Delay/Veh:    7.3  0.3   0.0   0.0 29.9  30.2   0.0  0.0   0.0   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   7.3  0.3   0.0   0.0 29.9  30.2   0.0  0.0   0.0   0.0  0.0   0.0
LOS by Move:    A    A     A     A    C     C     A    A     A     A    A     A
HCM2k85thQ:     5    3     0     0   13    14     0    0     0     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Attachment 8

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:56                Page 92-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #90 Tustin St and SR-22 EB Off-Ramp / Seba Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.679
Loss Time (sec):       5                Average Delay (sec/veh):        23.1
Optimal Cycle:        37                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  1  0    1  0  3  0  0    1  0  1! 0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1416     4    40  550     0   440   39   558    28    0    67
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1416     4    40  550     0   440   39   558    28    0    67
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1416     4    40  550     0   440   39   558    28    0    67
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1416     4    40  550     0   440   39   558    28    0    67
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1416     4    40  550     0   440   39   558    28    0    67
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.91  0.10 0.91  1.00  0.90 0.90  0.90  0.89 1.00  0.89
Lanes:       0.00 2.99  0.01  1.00 3.00  0.00  1.41 0.07  1.52  0.29 0.00  0.71
Final Sat.:     0 5172    15   188 5187     0  2408  124  2596   499    0  1195
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.27  0.27  0.21 0.11  0.00  0.18 0.31  0.21  0.06 0.00  0.06
Crit Moves:       ****                          ****        ****
Green/Cycle: 0.00 0.40  0.40  0.40 0.40  0.00  0.46 0.46  0.46  0.08 0.00  0.08
Volume/Cap:  0.00 0.68  0.68  0.53 0.26  0.00  0.39 0.68  0.46  0.68 0.00  0.68
Delay/Veh:    0.0 25.4  25.4  29.3 20.0   0.0  17.7 22.2  18.5  57.2  0.0  57.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 25.4  25.4  29.3 20.0   0.0  17.7 22.2  18.5  57.2  0.0  57.2
LOS by Move:    A    C     C     C    B     A     B    C     B     E    A     E
HCM2k85thQ:     0   21    21     3    6     0    10   20    12     7    0     7
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:57                Page 93-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #91 Tustin Ave and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.685
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  0  1
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     280 1492   132   356  940   108    89  200   163   100  220   208
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  280 1492   132   356  940   108    89  200   163   100  220   208
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   280 1492   132   356  940   108    89  200   163   100  220   208
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  280 1492   132   356  940   108    89  200   163   100  220   208
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  280 1492   132   356  940   108    89  200   163   100  220   208
OvlAdjVol:                                                                  30
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.76  0.24  2.00 2.69  0.31  1.00 1.10  0.90  1.00 1.00  1.00
Final Sat.:  3200 4610   390  3200 4505   495  1600 1863  1437  1600 1700  1600
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.32  0.34  0.11 0.21  0.22  0.06 0.11  0.11  0.06 0.13  0.13
OvlAdjV/S:                                                                0.02
Crit Moves:             ****  ****             ****                 ****
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:58                Page 94-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #92 Tustin Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.709
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     191  923   142   199 1574   109    68  213   125   133  166   157
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  191  923   142   199 1574   109    68  213   125   133  166   157
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   191  923   142   199 1574   109    68  213   125   133  166   157
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  191  923   142   199 1574   109    68  213   125   133  166   157
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  191  923   142   199 1574   109    68  213   125   133  166   157
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 2.60  0.40  2.00 2.81  0.19  1.00 1.26  0.74  1.00 1.03  0.97
Final Sat.:  1600 4360   640  3200 4689   311  1600 2117  1183  1600 1745  1555
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.21  0.22  0.06 0.34  0.35  0.04 0.10  0.11  0.08 0.10  0.10
Crit Moves:  ****                          ****             ****  ****
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:16:59                Page 95-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #93 Tustin Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.797
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     253 1083   557   377  404    40   493  968   131   243  798   444
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  253 1083   557   377  404    40   493  968   131   243  798   444
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   253 1083   557   377  404    40   493  968   131   243  798   444
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  253 1083   557   377  404    40   493  968   131   243  798   444
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  253 1083   557   377  404    40   493  968   131   243  798   444
OvlAdjVol:               436                                              256
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.00  1.00  2.00 2.73  0.27  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 3400  1600  3200 4568   432  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.32  0.35  0.12 0.09  0.09  0.15 0.19  0.08  0.08 0.16  0.28
OvlAdjV/S:               0.27                                             0.16
Crit Moves:       ****        ****             ****                 ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:00                Page 96-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #94 Tustin Ave and 4th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.708
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  0  1    1  0  2  1  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       28  299    97   459  339   124   208  743    38   118  798   491
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    28  299    97   459  339   124   208  743    38   118  798   491
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     28  299    97   459  339   124   208  743    38   118  798   491
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    28  299    97   459  339   124   208  743    38   118  798   491
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    28  299    97   459  339   124   208  743    38   118  798   491
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.27  0.73  2.00 2.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00
Final Sat.:  1600 3824  1176  3200 3400  1600  1600 5100  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.08  0.08  0.14 0.10  0.08  0.13 0.15  0.02  0.07 0.23  0.31
Crit Moves:       ****        ****             ****                        ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:01                Page 97-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #95 SR-55 SB Ramps / Auto Mall Dr and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.702
Loss Time (sec):       5               Average Delay (sec/veh):        25.5
Optimal Cycle:        39               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    1  0  1  0  1    1  0  3  0  1    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     401   32   423   110   50    37    47 1677   472   468 1220   146
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  401   32   423   110   50    37    47 1677   472   468 1220   146
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   401   32   423   110   50    37    47 1677     0   468 1220   146
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  401   32   423   110   50    37    47 1677     0   468 1220   146
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  401   32   423   110   50    37    47 1677     0   468 1220   146
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.75  0.95 1.00  0.85  0.95 0.91  1.00  0.92 0.90  0.90
Lanes:       1.85 0.15  2.00  1.00 1.00  1.00  1.00 3.00  1.00  2.00 2.68  0.32
Final Sat.:  3364  268  2842  1805 1900  1615  1805 5187  1900  3502 4558   546
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.12  0.15  0.06 0.03  0.02  0.03 0.32  0.00  0.13 0.27  0.27
Crit Moves:             ****  ****                 ****        ****
Green/Cycle: 0.21 0.21  0.21  0.09 0.09  0.09  0.06 0.46  0.00  0.19 0.59  0.59
Volume/Cap:  0.56 0.56  0.70  0.70 0.30  0.26  0.45 0.70  0.00  0.70 0.45  0.45
Delay/Veh:   36.2 36.2  40.2  57.7 43.9  43.7  48.7 22.4   0.0  41.2 11.4  11.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  36.2 36.2  40.2  57.7 43.9  43.7  48.7 22.4   0.0  41.2 11.4  11.4
LOS by Move:    D    D     D     E    D     D     D    C     A     D    B     B
HCM2k85thQ:    10   10    13     7    3     2     3   23     0    13   13    13
```

```
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:02                Page 98-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #96 SR-55 NB Ramps / Del Amo Ave and Newport Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.895
Loss Time (sec):       5               Average Delay (sec/veh):        39.1
Optimal Cycle:        87               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  3  0  1    2  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     879  262    51    17  209   803   156   54    32    23  348    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  879  262    51    17  209   803   156   54    32    23  348    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   879  262    51    17  209   803   156   54    32    23  348    16
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  879  262    51    17  209   803   156   54    32    23  348    16
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  879  262    51    17  209   803   156   54    32    23  348    16
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.89  0.89  0.95 0.91  0.85  0.92 0.90  0.90  0.95 0.94  0.94
Lanes:       2.00 2.51  0.49  1.00 3.00  1.00  2.00 1.26  0.74  1.00 1.91  0.09
Final Sat.:  3502 4238   825  1805 5187  1615  3502 2140  1268  1805 3427   158
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.25 0.06  0.06  0.01 0.04  0.50  0.04 0.03  0.03  0.01 0.10  0.10
Crit Moves:  ****                         ****  ****                   ****
Green/Cycle: 0.28 0.68  0.68  0.10 0.51  0.56  0.05 0.11  0.11  0.05 0.11  0.11
Volume/Cap:  0.89 0.09  0.09  0.09 0.08  0.89  0.89 0.23  0.23  0.23 0.89  0.89
Delay/Veh:   45.1  5.4   5.4  40.7 12.7  31.0  86.9 41.1  41.1  46.5 65.2  65.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  45.1  5.4   5.4  40.7 12.7  31.0  86.9 41.1  41.1  46.5 65.2  65.2
LOS by Move:    D    A     A     D    B     C     F    D     D     D    E     E
HCM2k85thQ:    25    2     2     1    2    36     8    2     2     1   14    14
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #97 Red Hill Ave and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.853
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        66               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Ovl            Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     204 1469   233   105  209   169   410 1051   128    90 1161   567
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  204 1469   233   105  209   169   410 1051   128    90 1161   567
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   204 1469   233   105  209   169   410 1051   128    90 1161   567
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  204 1469   233   105  209   169   410 1051   128    90 1161   567
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  204 1469   233   105  209   169   410 1051   128    90 1161   567
OvlAdjVol:                                  0                26
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.29  0.15  0.03 0.04  0.11  0.13 0.21  0.08  0.03 0.23  0.35
OvlAdjV/S:                                0.00             0.02
Crit Moves:       ****        ****             ****                        ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #98 Red Hill Ave and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.875
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        74               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  1  0    2  0  2  1  0    1  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     374 1281   147    79  304   385   246  668   104    76 1598   210
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  374 1281   147    79  304   385   246  668   104    76 1598   210
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   374 1281   147    79  304   385   246  668   104    76 1598   210
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  374 1281   147    79  304   385   246  668   104    76 1598   210
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  374 1281   147    79  304   385   246  668   104    76 1598   210
OvlAdjVol:                                                                 171
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.59  0.41  2.00 2.00  1.00  1.00 2.60  0.40  2.00 3.00  1.00
Final Sat.:  3200 6041   659  3200 3400  1600  1600 4353   647  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.21  0.22  0.02 0.09  0.24  0.15 0.15  0.16  0.02 0.31  0.13
OvlAdjV/S:                                                                 0.11
Crit Moves:  ****                      ****  ****                 ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #99 Red Hill Ave and Dyer Rd / barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.537
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  4  0  1    2  0  4  0  1    2  0  3  1  0    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     338 1270   327   241  408   192   172  637    84   110  839   245
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  338 1270   327   241  408   192   172  637    84   110  839   245
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   338 1270   327   241  408   192   172  637    84   110  839   245
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  338 1270   327   241  408   192   172  637    84   110  839   245
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  338 1270   327   241  408   192   172  637    84   110  839   245
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 4.00  1.00  2.00 4.00  1.00  2.00 3.53  0.47  2.00 4.00  1.00
Final Sat.:  3200 6800  1600  3200 6800  1600  3200 5954   746  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.19  0.20  0.08 0.06  0.12  0.05 0.11  0.11  0.03 0.12  0.15
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

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--------------------------------------------------------------------------------
                          Santa Ana Circulation Element
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #100 Red Hill Ave and Alton Pkwy
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          1.184
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:       180               Level Of Service:                    F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      26 1458   211   122  519     4   434 1065   545  1299  222   801
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   26 1458   211   122  519     4   434 1065   545  1299  222   801
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    26 1458   211   122  519     4   434 1065   545  1299  222   801
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   26 1458   211   122  519     4   434 1065   545  1299  222   801
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   26 1458   211   122  519     4   434 1065   545  1299  222   801
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 3400  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.29  0.13  0.08 0.10  0.00  0.27 0.31  0.34  0.41 0.13  0.50
Crit Moves:       ****        ****             ****                       ****
********************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #101 Red Hill Ave and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.702
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        37               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ignore           Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     175 1133    14   315  654  1148   499  230    35    39  810   568
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  175 1133    14   315  654  1148   499  230    35    39  810   568
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Volume:   175 1133    14   315  654     0   499  230    35    39  810     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  175 1133    14   315  654     0   499  230    35    39  810     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  175 1133    14   315  654     0   499  230    35    39  810     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.96  0.04  2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 4941    59  3200 5100  1600  3200 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.23  0.24  0.10 0.13  0.00  0.16 0.05  0.02  0.02 0.16  0.00
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:05                Page 104-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #102 Red Hill Ave and Main St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.813
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        55               Level Of Service:                    D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     436  941   254    88  640   348   200  714   193   277 1575    88
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  436  941   254    88  640   348   200  714   193   277 1575    88
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   436  941   254    88  640   348   200  714   193   277 1575    88
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  436  941   254    88  640   348   200  714   193   277 1575    88
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  436  941   254    88  640   348   200  714   193   277 1575    88
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.36  0.64  2.00 2.84  0.16
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 3979  1021  3200 4746   254
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.28  0.16  0.03 0.19  0.22  0.06 0.18  0.19  0.09 0.33  0.35
Crit Moves:  ****                     ****  ****                     ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #103 I-5 SB Ramps and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.487
Loss Time (sec):       5               Average Delay (sec/veh):         18.4
Optimal Cycle:        24               Level Of Service:                   B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   304    0    67   765  865     0     0  621   170
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   304    0    67   765  865     0     0  621   170
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   304    0    67   765  865     0     0  621   170
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   304    0    67   765  865     0     0  621   170
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   304    0    67   765  865     0     0  621   170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.85  0.92 0.91  1.00  1.00 0.88  0.88
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 2.36  0.64
Final Sat.:     0    0     0  3502    0  1615  3502 5187     0     0 3942  1079
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.09 0.00  0.04  0.22 0.17  0.00  0.00 0.16  0.16
Crit Moves:                   ****             ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.18 0.00  0.63  0.45 0.77  0.00  0.00 0.32  0.32
Volume/Cap:  0.00 0.00  0.00  0.49 0.00  0.07  0.49 0.22  0.00  0.00 0.49  0.49
Delay/Veh:    0.0  0.0   0.0  37.6  0.0   7.3  19.7  3.2   0.0   0.0 27.4  27.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

```
AdjDel/Veh:   0.0  0.0   0.0  37.6  0.0   7.3  19.7  3.2   0.0   0.0 27.4  27.4
LOS by Move:    A    A     A     D    A     A     B    A     A     A    C     C
HCM2k85thQ:     0    0     0     8    0     1    13    4     0     0   11    11
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:06              Page 106-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #104 Tustin Ranch Rd and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.645
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        32               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   553    0    38    65 2154     0     0  856   369
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   553    0    38    65 2154     0     0  856   369
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   553    0    38    65 2154     0     0  856   369
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   553    0    38    65 2154     0     0  856   369
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   553    0    38    65 2154     0     0  856   369
OvlAdjVol:                                                                  92
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3200    0  1600  3200 5100     0     0 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.17 0.00  0.02  0.02 0.42  0.00  0.00 0.17  0.23
OvlAdjV/S:                                                                  0.06
Crit Moves:                    ****                 ****        ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:07                Page 107-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #105 Von Karman Ave and Barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          1.228
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:       180               Level Of Service:                    F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  1  0    2  0  2  0  2    2  0  3  0  1    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     346 1992   434    80  407   280   765 1397   195   232  734   250
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  346 1992   434    80  407   280   765 1397   195   232  734   250
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   346 1992   434    80  407   280   765 1397   195   232  734   250
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  346 1992   434    80  407   280   765 1397   195   232  734   250
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  346 1992   434    80  407   280   765 1397   195   232  734   250
OvlAdjVol:                              0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 1.64  0.36  2.00 2.00  2.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 2728   572  3200 3400  3200  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.73  0.76  0.03 0.12  0.09  0.24 0.27  0.12  0.07 0.11  0.16
OvlAdjV/S:                              0.00
Crit Moves:             ****  ****            ****                          ****
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:07                Page 108-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #106 Red Hill Avenue and El Camino Real
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.779
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        48               Level Of Service:                    C
*******************************************************************************
Street Name:         Red Hill Avenue                   El Camino Real
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    1  0  2  1  0    1  0  1  0  1    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     421 1334   246    20  728    96    70  153   201   332  548    63
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  421 1334   246    20  728    96    70  153   201   332  548    63
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   421 1334   246    20  728    96    70  153   201   332  548    63
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  421 1334   246    20  728    96    70  153   201   332  548    63
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  421 1334   246    20  728    96    70  153   201   332  548    63
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       2.00 3.00  1.00  1.00 2.65  0.35  1.00 1.00  1.00  1.00 0.90  0.10
Final Sat.:  3200 5100  1600  1600 4441   559  1600 1700  1600  1600 1435   165
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.26  0.15  0.01 0.16  0.17  0.04 0.09  0.13  0.21 0.38  0.38
Crit Moves:  ****                ****  ****                     ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:08                Page 109-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #107 Red Hill Avenue and I-5 NB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.634
Loss Time (sec):       5               Average Delay (sec/veh):        23.7
Optimal Cycle:        33               Level Of Service:                  C
*******************************************************************************
Street Name:         Red Hill Avenue                    I-5 NB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  3  0  1    0  0  0  0  0    1  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     277 1585     0     0  921   186     0    0     0   264   99   428
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  277 1585     0     0  921   186     0    0     0   264   99   428
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   277 1585     0     0  921   186     0    0     0   264   99   428
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  277 1585     0     0  921   186     0    0     0   264   99   428
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  277 1585     0     0  921   186     0    0     0   264   99   428
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.85  1.00 1.00  1.00  0.83 0.83  0.83
Lanes:       1.00 3.00  0.00  0.00 3.00  1.00  0.00 0.00  0.00  1.45 0.55  1.00
Final Sat.:  1805 5187     0     0 5187  1615     0    0     0  2292  860  1576
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.31  0.00  0.00 0.18  0.12  0.00 0.00  0.00  0.12 0.12  0.27
Crit Moves:  ****                 ****                                     ****
Green/Cycle: 0.24 0.52  0.00  0.00 0.28  0.28  0.00 0.00  0.00  0.43 0.43  0.43
Volume/Cap:  0.63 0.59  0.00  0.00 0.63  0.41  0.00 0.00  0.00  0.27 0.27  0.63
Delay/Veh:   37.0 16.8   0.0   0.0 32.5  29.9   0.0  0.0   0.0  18.5 18.5  23.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

```
AdjDel/Veh:  37.0 16.8   0.0   0.0 32.5  29.9   0.0  0.0   0.0  18.5 18.5  23.5
LOS by Move:    D    B     A     A    C     C     A    A     A     B    B     C
HCM2k85thQ:    13   19     0     0   15     8     0    0     0     6    6    17
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:09              Page 110-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #108 Red Hill Avenue and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.695
Loss Time (sec):       5               Average Delay (sec/veh):        22.2
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 SB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    1  0  3  0  0    0  1  0  0  1    0  0  0  0  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       0 1551   492   334  802     0   296    3   265     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1551   492   334  802     0   296    3   265     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1551   492   334  802     0   296    3   265     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1551   492   334  802     0   296    3   265     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1551   492   334  802     0   296    3   265     0    0     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  0.95 0.91  1.00  0.92 0.92  0.85  1.00 1.00  1.00
Lanes:       0.00 4.00  1.00  1.00 3.00  0.00  0.99 0.01  1.00  0.00 0.00  0.00
Final Sat.:     0 6916  1615  1805 5187     0  1732   18  1615     0    0     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.22  0.30  0.19 0.15  0.00  0.17 0.17  0.16  0.00 0.00  0.00
Crit Moves:             ****  ****                 ****
Green/Cycle: 0.00 0.44  0.44  0.27 0.70  0.00  0.25 0.25  0.25  0.00 0.00  0.00
Volume/Cap:  0.00 0.51  0.70  0.70 0.22  0.00  0.70 0.70  0.67  0.00 0.00  0.00
Delay/Veh:    0.0 20.5  25.7  37.5  5.2   0.0  39.2 39.2  38.4   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 20.5  25.7  37.5  5.2   0.0  39.2 39.2  38.4   0.0  0.0   0.0
LOS by Move:    A    C     C     D    A     A     D    D     D     A    A     A
HCM2k85thQ:     0   15    20    16    5     0    15   15    13     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:10              Page 111-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #109 Red Hill Avenue and Nisson Road
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.693
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Street Name:         Red Hill Avenue                    Nisson Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      31 1614    33   146  750    75   247   90    40    48   83   141
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   31 1614    33   146  750    75   247   90    40    48   83   141
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    31 1614    33   146  750    75   247   90    40    48   83   141
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   31 1614    33   146  750    75   247   90    40    48   83   141
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   31 1614    33   146  750    75   247   90    40    48   83   141
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.92  0.08  1.00 2.73  0.27  1.00 0.69  0.31  1.00 0.37  0.63
Final Sat.:  1600 6572   128  1600 4564   436  1600 1108   492  1600  593  1007
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.25  0.26  0.09 0.16  0.17  0.15 0.08  0.08  0.03 0.14  0.14
Crit Moves:             ****  ****             ****                   ****
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:11                Page 112-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #110 Red Hill Avenue and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.739
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        42               Level Of Service:                    C
*******************************************************************************
Street Name:         Red Hill Avenue                   Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     273 1325    95   128  396   165    88  211    87   196  654   171
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  273 1325    95   128  396   165    88  211    87   196  654   171
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   273 1325    95   128  396   165    88  211    87   196  654   171
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  273 1325    95   128  396   165    88  211    87   196  654   171
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  273 1325    95   128  396   165    88  211    87   196  654   171
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.80  0.20  1.00 2.12  0.88  1.00 1.42  0.58  2.00 1.59  0.41
Final Sat.:  1600 4679   321  1600 3588  1412  1600 2366   934  3200 2637   663
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.28  0.30  0.08 0.11  0.12  0.06 0.09  0.09  0.06 0.25  0.26
Crit Moves:             ****  ****             ****                    ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:12              Page 113-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #111 Red Hill Avenue and Valencia Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.738
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                 Valencia Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  1  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     241 1791   295   109  438    49   100  270   119   291  422   279
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  241 1791   295   109  438    49   100  270   119   291  422   279
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   241 1791   295   109  438    49   100  270   119   291  422   279
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  241 1791   295   109  438    49   100  270   119   291  422   279
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  241 1791   295   109  438    49   100  270   119   291  422   279
OvlAdjVol:               213                                              170
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.43  0.57  1.00 2.70  0.30  1.00 1.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5795   905  1600 4517   483  1600 1700  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.31  0.33  0.07 0.10  0.10  0.06 0.16  0.07  0.09 0.25  0.17
OvlAdjV/S:               0.23                                             0.11
Crit Moves:       ****         ****              ****                  ****
******************************************************************************
```

```
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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:12              Page 114-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #112 Tustin Ranch Road and Warner Avenue North
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.885
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        79               Level Of Service:                  D
*******************************************************************************
Street Name:        Tustin Ranch Road               Warner Avenue North
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:            Ovl            Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    2  0  3  0  0    0  0  0  0  0    3  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1916  1128   415  610     0     0    0     0   682    0   616
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1916  1128   415  610     0     0    0     0   682    0   616
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1916  1128   415  610     0     0    0     0   682    0   616
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1916  1128   415  610     0     0    0     0   682    0   616
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1916  1128   415  610     0     0    0     0   682    0   616
OvlAdjVol:               901                                              201
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 3.00  1.00  2.00 3.00  0.00  0.00 0.00  0.00  3.00 0.00  2.00
Final Sat.:     0 5100  1600  3200 5100     0     0    0     0  4800    0  3200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.38  0.71  0.13 0.12  0.00  0.00 0.00  0.00  0.14 0.00  0.19
OvlAdjV/S:               0.56                                             0.06
Crit Moves:              ****  ****                                ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #113 Tustin Ranch Road and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.715
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Street Name:        Tustin Ranch Road                 Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     842 3666   385   550 1460   947   329  402   230   297 1703  1349
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  842 3666   385   550 1460   947   329  402   230   297 1703  1349
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   842 3666   385   550 1460   947   329  402   230   297 1703  1349
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  842 3666   385   550 1460   947   329  402   230   297 1703  1349
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  842 3666   385   550 1460   947   329  402   230   297 1703  1349
OvlAdjVol:               237              783                              1074
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 1.27  0.73  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 2135  1165  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.72  0.24  0.17 0.29  0.59  0.10 0.19  0.20  0.09 0.50  0.84
OvlAdjV/S:               0.15             0.49                              0.67
Crit Moves:       ****        ****             ****                        ****
*******************************************************************************
```

```
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2045 NP PM Peak Hour       Thu Oct 22, 2020 14:17:13              Page 116-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #114 SR-55 SB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.915
Loss Time (sec):       5               Average Delay (sec/veh):        25.6
Optimal Cycle:       100               Level Of Service:                 C
******************************************************************************
Street Name:          SR-55 SB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  1! 0  1    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   467    0   279     0  987   665   461 1324     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   467    0   279     0  987   665   461 1324     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   467    0   279     0  987   665   461 1324     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   467    0   279     0  987   665   461 1324     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   467    0   279     0  987   665   461 1324     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.74 1.00  0.73  1.00 0.86  0.86  0.95 0.91  1.00
Lanes:       0.00 0.00  0.00  1.62 0.00  1.38  0.00 2.00  1.00  1.00 3.00  0.00
Final Sat.:     0    0     0  2278    0  1915     0 3251  1625  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.20 0.00  0.15  0.00 0.30  0.41  0.26 0.26  0.00
Crit Moves:                    ****                          ****  ****
Green/Cycle: 0.00 0.00  0.00  0.22 0.00  0.45  0.00 0.45  0.45  0.28 0.73  0.00
Volume/Cap:  0.00 0.00  0.00  0.92 0.00  0.33  0.00 0.68  0.92  0.92 0.35  0.00
Delay/Veh:    0.0  0.0   0.0  52.8  0.0  17.9   0.0 22.7  33.6  56.2  5.1   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  52.8  0.0  17.9   0.0 22.7  33.6  56.2  5.1   0.0
LOS by Move:    A    A     A     D    A     B     A    C     C     E    A     A
```

```
HCM2k85thQ:     0    0     0    19    0     6     0   21    36    26    9     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #115 SR-55 NB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.932
Loss Time (sec):       5               Average Delay (sec/veh):        22.9
Optimal Cycle:       113               Level Of Service:                  C
******************************************************************************
Street Name:          SR-55 NB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:         Permitted       Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    1  0  3  0  0    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     367   18   333     0    0     0   254 1163     0     0 1336   845
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  367   18   333     0    0     0   254 1163     0     0 1336   845
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   367   18   333     0    0     0   254 1163     0     0 1336   845
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  367   18   333     0    0     0   254 1163     0     0 1336   845
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  367   18   333     0    0     0   254 1163     0     0 1336   845
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.86  0.86  1.00 1.00  1.00  0.95 0.91  1.00  1.00 0.86  0.86
Lanes:       1.50 0.05  1.45  0.00 0.00  0.00  1.00 3.00  0.00  0.00 2.00  1.00
Final Sat.:  2444   80  2369     0    0     0  1805 5187     0     0 3257  1629
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.23  0.14  0.00 0.00  0.00  0.14 0.22  0.00  0.00 0.41  0.52
Crit Moves:       ****                          ****                     ****
Green/Cycle: 0.24 0.24  0.24  0.00 0.00  0.00  0.15 0.71  0.00  0.00 0.56  0.56
Volume/Cap:  0.62 0.93  0.58  0.00 0.00  0.00  0.93 0.32  0.00  0.00 0.74  0.93
Delay/Veh:   34.8 55.0  34.1   0.0  0.0   0.0  78.6  5.6   0.0   0.0 17.6  27.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  34.8 55.0  34.1   0.0  0.0   0.0  78.6  5.6   0.0   0.0 17.6  27.9
LOS by Move:    C    D     C     A    A     A     E    A     A     A    B     C
HCM2k85thQ:    12   23    11     0    0     0    17    8     0     0   26    44
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

APPENDIX D.5

ANALYSIS WORKSHEETS –
2045 WP (AM Peak Hour)

Santa Ana Circulation Element

Scenario Report

Scenario:	2045 WP AM Peak Hour
Command:	Default Command
Volume:	2045 AM
Geometry:	SACE
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2045 WP AM Peak Hour Thu Oct 22, 2020 14:28:14 Page 2-1

Santa Ana Circulation Element

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in V/C
# 1 Euclid St and 1st St	C	xxxxx	0.789	C	xxxxx	0.789	+ 0.000 V/C
# 2 Euclid St and McFadden Ave	E	xxxxx	0.906	E	xxxxx	0.906	+ 0.000 V/C
# 3 Euclid St and Edinger Ave	F	xxxxx	1.008	F	xxxxx	1.008	+ 0.000 V/C
# 4 Newhope St and Hazard Ave	A	xxxxx	0.600	A	xxxxx	0.600	+ 0.000 V/C
# 5 Newhope St and McFadden Ave	C	xxxxx	0.728	C	xxxxx	0.728	+ 0.000 V/C
# 6 Harbor Blvd and SR-22 WB Off-R	C	28.5	0.715	C	28.5	0.715	+ 0.000 D/V
# 7 Trask Avenue and SR-22 EB On-R	B	11.0	0.389	B	11.0	0.389	+ 0.000 D/V
# 8 Harbor Blvd and Westminster Av	E	xxxxx	0.936	E	xxxxx	0.936	+ 0.000 V/C
# 9 Harbor Blvd and 1st St	C	xxxxx	0.749	C	xxxxx	0.749	+ 0.000 V/C
# 10 Harbor Blvd and McFadden Ave	C	xxxxx	0.729	C	xxxxx	0.729	+ 0.000 V/C
# 11 Harbor Blvd and Edinger Ave	D	xxxxx	0.857	D	xxxxx	0.857	+ 0.000 V/C
# 12 Harbor Blvd and Warner Ave	C	xxxxx	0.800	C	xxxxx	0.800	+ 0.000 V/C
# 13 Harbor Blvd and Segerstrom Ave	F	xxxxx	1.007	F	xxxxx	1.007	+ 0.000 V/C
# 14 MacArthur Blvd and Hyland Ave	B	xxxxx	0.615	B	xxxxx	0.615	+ 0.000 V/C
# 15 MacArthur Blvd and Harbor Blvd	C	xxxxx	0.747	C	xxxxx	0.747	+ 0.000 V/C
# 16 Harbor Blvd and Sunflower Ave	C	xxxxx	0.705	C	xxxxx	0.705	+ 0.000 V/C
# 17 Harbor Blvd and I-405 NB Off-R	B	17.9	0.573	B	17.9	0.573	+ 0.000 D/V
# 18 Harbor Blvd and I-405 SB Off-R	B	15.0	0.618	B	15.0	0.618	+ 0.000 D/V
# 19 Fairview St and Civic Center D	B	xxxxx	0.676	B	xxxxx	0.676	+ 0.000 V/C
# 20 Fairview St and 1st St	D	xxxxx	0.887	D	xxxxx	0.887	+ 0.000 V/C
# 21 Fairview St and McFadden Ave	D	xxxxx	0.800	D	xxxxx	0.800	+ 0.000 V/C
# 22 Fairview St and Edinger Ave	D	xxxxx	0.882	D	xxxxx	0.882	+ 0.000 V/C
# 23 Fairview St and Warner Ave	D	xxxxx	0.847	D	xxxxx	0.847	+ 0.000 V/C
# 24 Fairview St and MacArthur Blvd	B	xxxxx	0.690	B	xxxxx	0.690	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 25 Fairview Rd and Sunflower Ave	B	xxxxx	0.687	B	xxxxx	0.687	+ 0.000 V/C
# 26 Greenville St and Edinger Ave	C	xxxxx	0.742	C	xxxxx	0.742	+ 0.000 V/C
# 27 Greenville St and Segerstrom A	D	xxxxx	0.878	D	xxxxx	0.878	+ 0.000 V/C
# 28 Raitt St and McFadden Ave	C	xxxxx	0.704	C	xxxxx	0.704	+ 0.000 V/C
# 29 Raitt St and Edinger Ave	E	xxxxx	0.926	E	xxxxx	0.926	+ 0.000 V/C
# 30 Bear St and MacArthur Blvd	C	xxxxx	0.756	C	xxxxx	0.756	+ 0.000 V/C
# 31 Bristol St and 17th St	D	xxxxx	0.853	D	xxxxx	0.853	+ 0.000 V/C
# 32 Bristol St and Civic Center Dr	E	xxxxx	0.931	E	xxxxx	0.931	+ 0.000 V/C
# 33 Bristol St and Santa Ana Blvd	C	xxxxx	0.721	C	xxxxx	0.721	+ 0.000 V/C
# 34 Bristol St and 1st St	E	xxxxx	0.902	E	xxxxx	0.902	+ 0.000 V/C
# 35 Bristol St and McFadden Ave	E	xxxxx	0.947	E	xxxxx	0.947	+ 0.000 V/C
# 36 Bristol St and Warner Ave	E	xxxxx	0.956	E	xxxxx	0.956	+ 0.000 V/C
# 37 Bristol St and Segerstrom Ave	D	xxxxx	0.854	D	xxxxx	0.854	+ 0.000 V/C
# 38 Bristol St and Alton Ave	A	xxxxx	0.553	A	xxxxx	0.553	+ 0.000 V/C
# 39 Bristol St and MacArthur Blvd	C	xxxxx	0.759	C	xxxxx	0.759	+ 0.000 V/C
# 40 Bristol St and Sunflower Ave	B	xxxxx	0.682	B	xxxxx	0.682	+ 0.000 V/C
# 41 Bristol St and I-405 NB Ramps	C	20.9	0.568	C	20.9	0.568	+ 0.000 D/V
# 42 Bristol St and I-405 SB Ramps	C	23.6	0.697	C	23.6	0.697	+ 0.000 D/V
# 43 Flower St and Santa Ana Blvd	A	xxxxx	0.586	A	xxxxx	0.586	+ 0.000 V/C
# 44 Flower St and 1st St	E	xxxxx	0.926	E	xxxxx	0.926	+ 0.000 V/C
# 45 Flower St and McFadden Ave	D	xxxxx	0.807	D	xxxxx	0.807	+ 0.000 V/C
# 46 Flower St and Segerstrom Ave	D	xxxxx	0.818	D	xxxxx	0.818	+ 0.000 V/C
# 47 Flower St and MacArthur Blvd	C	xxxxx	0.710	C	xxxxx	0.710	+ 0.000 V/C
# 48 Main St and La Veta Ave	A	xxxxx	0.536	A	xxxxx	0.536	+ 0.000 V/C
# 49 Main St and Mainplace Dr / Mem	A	xxxxx	0.456	A	xxxxx	0.456	+ 0.000 V/C
# 50 Main St and 17th St	D	xxxxx	0.845	D	xxxxx	0.845	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 51 Main St and Civic Center Dr	D	xxxxx	0.848	D	xxxxx	0.848	+ 0.000 V/C
# 52 Main St and Santa Ana Blvd	C	xxxxx	0.791	C	xxxxx	0.791	+ 0.000 V/C
# 53 Main St and 4th St	A	xxxxx	0.441	A	xxxxx	0.441	+ 0.000 V/C
# 54 Main St and 1st St	C	xxxxx	0.754	C	xxxxx	0.754	+ 0.000 V/C
# 55 Main St and McFadden Ave	E	xxxxx	0.916	E	xxxxx	0.916	+ 0.000 V/C
# 56 Main St and Edinger Ave	D	xxxxx	0.876	D	xxxxx	0.876	+ 0.000 V/C
# 57 Main St and MacArthur Blvd	C	xxxxx	0.721	C	xxxxx	0.721	+ 0.000 V/C
# 58 Penn Wy and 17th St	B	12.1	0.648	B	12.1	0.648	+ 0.000 D/V
# 59 I-5 NB Off Ramps/17th Street	C	31.4	0.792	C	31.4	0.792	+ 0.000 D/V
# 60 Penn Wy and I-5 SB Ramps	B	19.5	0.462	B	19.5	0.462	+ 0.000 D/V
# 61 Santiago St and Civic Center D	F	62.6	1.147	F	62.6	1.147	+ 0.000 V/C
# 62 Santiago St and Santa Ana Blvd	F	xxxxx	1.444	F	xxxxx	1.444	+ 0.000 V/C
# 63 Standard Ave and 4th St	F	xxxxx	1.340	F	xxxxx	1.340	+ 0.000 V/C
# 64 Standard Ave and 1st St	F	xxxxx	1.515	F	xxxxx	1.515	+ 0.000 V/C
# 65 Standard Ave and Mcfadden Ave	D	xxxxx	0.843	D	xxxxx	0.843	+ 0.000 V/C
# 66 Halladay St and Warner Ave	B	xxxxx	0.692	B	xxxxx	0.692	+ 0.000 V/C
# 67 Halladay St and Dyer Rd	B	xxxxx	0.668	B	xxxxx	0.668	+ 0.000 V/C
# 68 SR-55 SB Ramps and MacArthur B	C	20.2	0.623	C	20.2	0.623	+ 0.000 D/V
# 69 SR-55 NB Ramps and MacArthur B	B	19.5	0.728	B	19.5	0.728	+ 0.000 D/V
# 70 SR-55 SB Ramps and Dyer Rd	C	25.9	0.610	C	25.9	0.610	+ 0.000 D/V
# 71 Glassell St and La Veta Ave	D	xxxxx	0.826	D	xxxxx	0.826	+ 0.000 V/C
# 72 Glassell St and SR-22 WB Ramps	C	30.1	0.841	C	30.1	0.841	+ 0.000 D/V
# 73 Grand Ave / Glassell St and SR	C	29.6	0.842	C	29.6	0.842	+ 0.000 D/V
# 74 Grand Ave and Fairhaven Ave	A	xxxxx	0.569	A	xxxxx	0.569	+ 0.000 V/C
# 75 Grand Ave and Santa Clara Ave	C	xxxxx	0.798	C	xxxxx	0.798	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 76 Grand Ave and 17th St	D	xxxxx	0.856	D	xxxxx	0.856	+ 0.000 V/C
# 77 Grand Ave and I-5 NB Ramps	B	15.3	0.845	B	15.3	0.845	+ 0.000 D/V
# 78 Grand Ave and Santa Ana Blvd	C	26.3	0.881	C	26.3	0.881	+ 0.000 D/V
# 79 Grand Ave and 1st St	D	xxxxx	0.827	D	xxxxx	0.827	+ 0.000 V/C
# 80 Grand Ave and Chestnut Ave	E	xxxxx	0.935	E	xxxxx	0.935	+ 0.000 V/C
# 81 Grand Ave and McFadden Ave	F	xxxxx	1.011	F	xxxxx	1.011	+ 0.000 V/C
# 82 Grand Ave and Edinger Ave	D	xxxxx	0.897	D	xxxxx	0.897	+ 0.000 V/C
# 83 Grand Ave and Warner Ave	B	xxxxx	0.664	B	xxxxx	0.664	+ 0.000 V/C
# 84 SR-55 NB Ramps and Dyer Rd	B	17.3	0.565	B	17.3	0.565	+ 0.000 D/V
# 85 Cambridge St and La Veta Ave	C	23.4	0.900	C	23.4	0.900	+ 0.000 V/C
# 86 Cambridge St and Fairhaven Ave	B	xxxxx	0.624	B	xxxxx	0.624	+ 0.000 V/C
# 87 Mabury St and 1st Street	C	27.4	0.755	C	27.4	0.755	+ 0.000 D/V
# 88 Tustin St and La Veta Ave	A	xxxxx	0.362	A	xxxxx	0.362	+ 0.000 V/C
# 89 Tustin St and SR-22 WB On-Ramp	B	13.2	0.575	B	13.2	0.575	+ 0.000 D/V
# 90 Tustin St and SR-22 EB Off-Ram	C	23.8	0.718	C	23.8	0.718	+ 0.000 D/V
# 91 Tustin Ave and Fairhaven Ave	F	xxxxx	1.242	F	xxxxx	1.242	+ 0.000 V/C
# 92 Tustin Ave and Santa Clara Ave	F	xxxxx	1.097	F	xxxxx	1.097	+ 0.000 V/C
# 93 Tustin Ave and 17th St	D	xxxxx	0.805	D	xxxxx	0.805	+ 0.000 V/C
# 94 Tustin Ave and 4th St	C	xxxxx	0.791	C	xxxxx	0.791	+ 0.000 V/C
# 95 SR-55 SB Ramps / Auto Mall Dr	C	25.1	0.653	C	25.1	0.653	+ 0.000 D/V
# 96 SR-55 NB Ramps / Del Amo Ave a	C	25.6	0.665	C	25.6	0.665	+ 0.000 D/V
# 97 Red Hill Ave and Edinger Ave	B	xxxxx	0.619	B	xxxxx	0.619	+ 0.000 V/C
# 98 Red Hill Ave and Warner Ave	A	xxxxx	0.580	A	xxxxx	0.580	+ 0.000 V/C
# 99 Red Hill Ave and Dyer Rd / bar	A	xxxxx	0.577	A	xxxxx	0.577	+ 0.000 V/C
#100 Red Hill Ave and Alton Pkwy	E	xxxxx	0.930	E	xxxxx	0.930	+ 0.000 V/C
#101 Red Hill Ave and MacArthur Blv	C	xxxxx	0.709	C	xxxxx	0.709	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
#102 Red Hill Ave and Main St	C	xxxxx	0.733	C	xxxxx	0.733	+ 0.000 V/C
#103 I-5 SB Ramps and Santa Ana Blv	B	17.8	0.480	B	17.8	0.480	+ 0.000 D/V
#104 Tustin Ranch Rd and Warner Ave	A	xxxxx	0.530	A	xxxxx	0.530	+ 0.000 V/C
#105 Von Karman Ave and Barranca Pk	E	xxxxx	0.930	E	xxxxx	0.930	+ 0.000 V/C
#106 Red Hill Avenue and El Camino	B	xxxxx	0.640	B	xxxxx	0.640	+ 0.000 V/C
#107 Red Hill Avenue and I-5 NB Ram	C	20.1	0.631	C	20.1	0.631	+ 0.000 D/V
#108 Red Hill Avenue and I-5 SB Ram	C	24.7	0.824	C	24.7	0.824	+ 0.000 D/V
#109 Red Hill Avenue and Nisson Roa	B	xxxxx	0.655	B	xxxxx	0.655	+ 0.000 V/C
#110 Red Hill Avenue and Walnut Ave	B	xxxxx	0.643	B	xxxxx	0.643	+ 0.000 V/C
#111 Red Hill Avenue and Valencia A	B	xxxxx	0.677	B	xxxxx	0.677	+ 0.000 V/C
#112 Tustin Ranch Road and Warner A	A	xxxxx	0.459	A	xxxxx	0.459	+ 0.000 V/C
#113 Tustin Ranch Road and Walnut A	F	xxxxx	1.313	F	xxxxx	1.313	+ 0.000 V/C
#114 SR-55 SB Ramps and Irvine Boul	E	55.4	1.176	E	55.4	1.176	+ 0.000 D/V
#115 SR-55 NB Ramps and Irvine Boul	C	20.3	0.824	C	20.3	0.824	+ 0.000 D/V

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:16                  Page 3-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #1 Euclid St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.789
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include        WideBypass       WideBypass
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     100  845   145   194 1725    97   194  721   136   190  606   194
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  100  845   145   194 1725    97   194  721   136   190  606   194
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   100  845   145   194 1725    97   194  721   136   190  606   194
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  100  845   145   194 1725    97   194  721   136   190  606   194
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  100  845   145   194 1725    97   194  721   136   190  606   194
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 2.56  0.44  1.00 2.84  0.16  1.00 2.52  0.48  1.00 2.27  0.73
Final Sat.:  1600 4297   703  1600 4744   256  1600 4238   762  1600 3836  1164
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.20  0.21  0.12 0.36  0.38  0.12 0.17  0.18  0.12 0.16  0.17
Crit Moves:  ****                ****              ****  ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:17                 Page 4-1
--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #2 Euclid St and McFadden Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.906
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        90               Level Of Service:                  E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     156 1185   141   146 2031   168   227  463   287   106  234    89
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  156 1185   141   146 2031   168   227  463   287   106  234    89
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   156 1185   141   146 2031   168   227  463   287   106  234    89
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  156 1185   141   146 2031   168   227  463   287   106  234    89
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  156 1185   141   146 2031   168   227  463   287   106  234    89
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       1.00 2.68  0.32  1.00 2.77  0.23  1.00 1.23  0.77  1.00 1.45  0.55
Final Sat.:  1600 4490   510  1600 4633   367  1600 2075  1225  1600 2418   882
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.26  0.28  0.09 0.44  0.46  0.14 0.22  0.23  0.07 0.10  0.10
Crit Moves:  ****                ****             ****  ****
********************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:17                 Page 5-1
--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #3 Euclid St and Edinger Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.008
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     127  801    68   180 2613   240   136  595   364   133  812   148
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  127  801    68   180 2613   240   136  595   364   133  812   148
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   127  801    68   180 2613   240   136  595   364   133  812   148
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  127  801    68   180 2613   240   136  595   364   133  812   148
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  127  801    68   180 2613   240   136  595   364   133  812   148
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.77  0.23  2.00 2.75  0.25  1.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3200 4624   376  3200 4596   404  1600 3400  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.06 0.57  0.59  0.09 0.17  0.23  0.08 0.24  0.09
Crit Moves:  ****                     ****  ****                     ****
********************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:18                  Page 6-1
--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Newhope St and Hazard Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.600
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        29               Level Of Service:                  A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      94  708   101    86 1262   116    17   44    33    17   57    23
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   94  708   101    86 1262   116    17   44    33    17   57    23
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    94  708   101    86 1262   116    17   44    33    17   57    23
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   94  708   101    86 1262   116    17   44    33    17   57    23
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   94  708   101    86 1262   116    17   44    33    17   57    23
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.75  0.25  1.00 1.83  0.17  1.00 0.57  0.43  1.00 0.71  0.29
Final Sat.:  1600 2900   400  1600 3031   269  1600  914   686  1600 1140   460
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.24  0.25  0.05 0.42  0.43  0.01 0.05  0.05  0.01 0.05  0.05
Crit Moves:  ****                ****  ****                ****
********************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:19                 Page 7-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #5 Newhope St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.728
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      77  342   120   116 1153   107   106  386   125   122  311    69
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   77  342   120   116 1153   107   106  386   125   122  311    69
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    77  342   120   116 1153   107   106  386   125   122  311    69
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   77  342   120   116 1153   107   106  386   125   122  311    69
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   77  342   120   116 1153   107   106  386   125   122  311    69
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 1.48  0.52  1.00 1.83  0.17  1.00 1.51  0.49  1.00 1.64  0.36
Final Sat.:  1600 2469   831  1600 3028   272  1600 2517   783  1600 2719   581
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.14  0.14  0.07 0.38  0.39  0.07 0.15  0.16  0.08 0.11  0.12
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:19                  Page 8-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #6 Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.715
Loss Time (sec):       5                Average Delay (sec/veh):        28.5
Optimal Cycle:        40                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  2  1  0    0  0  1! 0  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      83 1508     0     0 1354    18    81    0   133   836   44   117
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   83 1508     0     0 1354    18    81    0   133   836   44   117
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    83 1508     0     0 1354    18    81    0   133   836   44   117
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   83 1508     0     0 1354    18    81    0   133   836   44   117
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   83 1508     0     0 1354    18    81    0   133   836   44   117
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.90 1.00  0.90  0.96 0.96  0.85
Lanes:       1.00 3.00  0.00  0.00 2.96  0.04  0.38 0.00  0.62  1.90 0.10  1.00
Final Sat.:  1805 5187     0     0 5109    68   646    0  1061  3448  181  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.29  0.00  0.00 0.27  0.27  0.13 0.00  0.13  0.24 0.24  0.07
Crit Moves:  ****                 ****        ****                 ****
Green/Cycle: 0.06 0.44  0.00  0.00 0.37  0.37  0.18 0.00  0.18  0.34 0.34  0.34
Volume/Cap:  0.71 0.67  0.00  0.00 0.71  0.71  0.71 0.00  0.71  0.71 0.71  0.21
Delay/Veh:   64.8 23.3   0.0   0.0 28.2  28.2  46.8  0.0  46.8  30.8 30.8  23.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  64.8 23.3   0.0   0.0 28.2  28.2  46.8  0.0  46.8  30.8 30.8  23.7
LOS by Move:    E    C     A     A    C     C     D    A     D     C    C     C
HCM2k85thQ:     6   21     0     0   21    21    12    0    12    19   19     4
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:20                  Page 9-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 Trask Avenue and SR-22 EB On-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.389
Loss Time (sec):       5               Average Delay (sec/veh):        11.0
Optimal Cycle:        21               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  0  0  0    2  0  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0     0   558  699     0     0  624   117
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0     0   558  699     0     0  624   117
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     0    0     0   558  699     0     0  624   117
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0     0    0     0   558  699     0     0  624   117
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0     0    0     0   558  699     0     0  624   117
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  0.92 1.00  1.00  1.00 0.93  0.93
Lanes:       0.00 0.00  0.00  0.00 0.00  0.00  2.00 1.00  0.00  0.00 1.68  0.32
Final Sat.:     0    0     0     0    0     0  3502 1900     0     0 2967   556
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.00 0.00  0.00  0.16 0.37  0.00  0.00 0.21  0.21
Crit Moves:                                     ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.00 0.00  0.00  0.41 0.95  0.00  0.00 0.54  0.54
Volume/Cap:  0.00 0.00  0.00  0.00 0.00  0.00  0.39 0.39  0.00  0.00 0.39  0.39
Delay/Veh:    0.0  0.0   0.0   0.0  0.0   0.0  20.9  0.3   0.0   0.0 13.5  13.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0   0.0  0.0   0.0  20.9  0.3   0.0   0.0 13.5  13.5
LOS by Move:    A    A     A     A    A     A     C    A     A     A    B     B
HCM2k85thQ:     0    0     0     0    0     0    10    3     0     0   11    11
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:21                Page 10-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #8 Harbor Blvd and Westminster Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.936
Loss Time (sec):       0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  1  0    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     159 1045   224   251 1970   113   173  910    32   406 1100   299
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  159 1045   224   251 1970   113   173  910    32   406 1100   299
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   159 1045   224   251 1970   113   173  910    32   406 1100   299
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  159 1045   224   251 1970   113   173  910    32   406 1100   299
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  159 1045   224   251 1970   113   173  910    32   406 1100   299
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.90  0.10  1.00 3.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 4837   163  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.20  0.14  0.16 0.39  0.07  0.11 0.19  0.20  0.25 0.22  0.19
Crit Moves:  ****               ****                    ****  ****
*******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #9 Harbor Blvd and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.749
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	43	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	3 0	1	1 0	3 0	1	2 0	2 1	0	2 0	2 1	0
Volume Module:												
Base Vol:	102	816	176	223	1876	122	118	788	153	229	580	135
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	102	816	176	223	1876	122	118	788	153	229	580	135
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	102	816	176	223	1876	122	118	788	153	229	580	135
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	102	816	176	223	1876	122	118	788	153	229	580	135
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	102	816	176	223	1876	122	118	788	153	229	580	135
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	2.00	2.51	0.49	2.00	2.43	0.57
Final Sat.:	1600	5100	1600	1600	5100	1600	3200	4220	780	3200	4094	906
Capacity Analysis Module:												
Vol/Sat:	0.06	0.16	0.11	0.14	0.37	0.08	0.04	0.19	0.20	0.07	0.14	0.15
Crit Moves:	****			****					****	****		

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2045 WP AM Peak Hour Thu Oct 22, 2020 14:28:23 Page 12-1

Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #10 Harbor Blvd and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.729
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	40	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	2 1	0	1 0	1 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	101	1026	98	179	1891	63	136	353	106	85	193	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	101	1026	98	179	1891	63	136	353	106	85	193	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	101	1026	98	179	1891	63	136	353	106	85	193	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	101	1026	98	179	1891	63	136	353	106	85	193	55
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	101	1026	98	179	1891	63	136	353	106	85	193	55
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	2.90	0.10	1.00	1.54	0.46	1.00	0.78	0.22
Final Sat.:	3200	5100	1600	3200	4845	155	1600	2561	739	1600	1245	355
Capacity Analysis Module:												
Vol/Sat:	0.03	0.20	0.06	0.06	0.39	0.41	0.09	0.14	0.14	0.05	0.16	0.15
Crit Moves:	****					****	****				****	

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #11 Harbor Blvd and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.857
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	67	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	2 0	2 1	0	2 0	3 0	1
Volume Module:												
Base Vol:	95	713	135	212	2441	71	123	743	373	211	469	195
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	95	713	135	212	2441	71	123	743	373	211	469	195
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	95	713	135	212	2441	71	123	743	373	211	469	195
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	95	713	135	212	2441	71	123	743	373	211	469	195
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	95	713	135	212	2441	71	123	743	373	211	469	195
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	3200	3400	1600	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.03	0.14	0.08	0.07	0.48	0.04	0.04	0.22	0.23	0.07	0.09	0.12
Crit Moves:	****			****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #12 Harbor Blvd and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.800
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	52	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0 2	1 0		2 0 3	0 1		2 0 3	0 1		2 0 3	0 1	
Volume Module:												
Base Vol:	106	647	164	451	2034	122	100	1422	374	125	654	111
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	106	647	164	451	2034	122	100	1422	374	125	654	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	106	647	164	451	2034	122	100	1422	374	125	654	111
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	647	164	451	2034	122	100	1422	374	125	654	111
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	106	647	164	451	2034	122	100	1422	374	125	654	111
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	2.39	0.61	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	4029	971	3200	5100	1600	3200	5100	1600	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.03	0.16	0.17	0.14	0.40	0.08	0.03	0.28	0.23	0.04	0.13	0.07
Crit Moves:	****			****			****			****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #13 Harbor Blvd and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.007
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     107  759    48   173 2324    87    90  753   303   146  453   103
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  107  759    48   173 2324    87    90  753   303   146  453   103
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   107  759    48   173 2324    87    90  753   303   146  453   103
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  107  759    48   173 2324    87    90  753   303   146  453   103
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  107  759    48   173 2324    87    90  753   303   146  453   103
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 2.82  0.18  1.00 2.89  0.11  1.00 1.43  0.57  1.00 2.00  1.00
Final Sat.:  3200 4714   286  1600 4827   173  1600 2382   918  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.16  0.17  0.11 0.48  0.50  0.06 0.32  0.33  0.09 0.13  0.06
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #14 MacArthur Blvd and Hyland Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.615
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      86    4    24     8    2    19     7 1915   760    82  626    26
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   86    4    24     8    2    19     7 1915   760    82  626    26
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    86    4    24     8    2    19     7 1915   760    82  626    26
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   86    4    24     8    2    19     7 1915   760    82  626    26
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   86    4    24     8    2    19     7 1915   760    82  626    26
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 0.14  0.86  1.00 1.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200  229  1371  1600 1700  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.02  0.02  0.01 0.00  0.01  0.00 0.38  0.48  0.05 0.12  0.02
Crit Moves:  ****                      ****              ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #15 MacArthur Blvd and Harbor Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.747
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	43	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	3 0	1	1 0	3 0	1
Volume Module:												
Base Vol:	128	898	92	289	1662	115	133	1204	363	152	506	151
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	128	898	92	289	1662	115	133	1204	363	152	506	151
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	128	898	92	289	1662	115	133	1204	363	152	506	151
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	128	898	92	289	1662	115	133	1204	363	152	506	151
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	128	898	92	289	1662	115	133	1204	363	152	506	151
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	5100	1600	1600	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.04	0.18	0.06	0.09	0.33	0.07	0.08	0.24	0.23	0.10	0.10	0.09
Crit Moves:	****			****			****			****		

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #16 Harbor Blvd and Sunflower Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.705
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  1  1  0    1  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     221 1128   209   242 2284    56     9  109    42   149  190   107
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  221 1128   209   242 2284    56     9  109    42   149  190   107
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   221 1128   209   242 2284    56     9  109    42   149  190   107
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  221 1128   209   242 2284    56     9  109    42   149  190   107
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  221 1128   209   242 2284    56     9  109    42   149  190   107
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.00  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 1.44  0.56  1.00 1.28  0.72
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 2410   890  1604 2045  1151
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.22  0.13  0.08 0.45  0.04  0.01 0.05  0.05  0.09 0.09  0.09
Crit Moves:  ****               ****             ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #17 Harbor Blvd and I-405 NB Off-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.573
Loss Time (sec):       5               Average Delay (sec/veh):        17.9
Optimal Cycle:        29               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  0    0  0  4  0  0    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1915     0     0 2007     0     0    0     0   399    0   702
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1915     0     0 2007     0     0    0     0   399    0   702
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1915     0     0 2007     0     0    0     0   399    0   702
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1915     0     0 2007     0     0    0     0   399    0   702
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1915     0     0 2007     0     0    0     0   399    0   702
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  1.00 1.00  1.00  0.89 1.00  0.89
Lanes:       0.00 4.00  0.00  0.00 4.00  0.00  0.00 0.00  0.00  1.36 0.00  1.64
Final Sat.:     0 6916     0     0 6916     0     0    0     0  2298    0  2762
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.28  0.00  0.00 0.29  0.00  0.00 0.00  0.00  0.17 0.00  0.25
Crit Moves:  ****                ****                                     ****
Green/Cycle: 0.00 0.51  0.00  0.00 0.51  0.00  0.00 0.00  0.00  0.44 0.00  0.44
Volume/Cap:  0.00 0.55  0.00  0.00 0.57  0.00  0.00 0.00  0.00  0.39 0.00  0.57
Delay/Veh:    0.0 17.0   0.0   0.0 17.4   0.0   0.0  0.0   0.0  18.8  0.0  21.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 17.0   0.0   0.0 17.4   0.0   0.0  0.0   0.0  18.8  0.0  21.2
LOS by Move:    A    B     A     A    B     A     A    A     A     B    A     C
HCM2k85thQ:     0   17     0     0   18     0     0    0     0     9    0    15
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:30                Page 20-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #18 Harbor Blvd and I-405 SB Off-Ramp
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.618
Loss Time (sec):       5               Average Delay (sec/veh):        15.0
Optimal Cycle:        31               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    0  0  4  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1993     0     0 1278     0   475    0   529     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1993     0     0 1278     0   475    0   529     0    0     0
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1993     0     0 1278     0   475    0   529     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1993     0     0 1278     0   475    0   529     0    0     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1993     0     0 1278     0   475    0   529     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  1.00  1.00 0.91  1.00  0.90 1.00  0.90  1.00 1.00  1.00
Lanes:       0.00 3.00  1.00  0.00 4.00  0.00  1.47 0.00  1.53  0.00 0.00  0.00
Final Sat.:     0 5187  1900     0 6916     0  2519    0  2610     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.38  0.00  0.00 0.18  0.00  0.19 0.00  0.20  0.00 0.00  0.00
Crit Moves:       ****        ****                     ****
Green/Cycle: 0.00 0.62  0.00  0.00 0.62  0.00  0.33 0.00  0.33  0.00 0.00  0.00
Volume/Cap:  0.00 0.62  0.00  0.00 0.30  0.00  0.57 0.00  0.62  0.00 0.00  0.00
Delay/Veh:    0.0 12.0   0.0   0.0  8.8   0.0  28.3  0.0  29.0   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 12.0   0.0   0.0  8.8   0.0  28.3  0.0  29.0   0.0  0.0   0.0
LOS by Move:    A    B     A     A    A     A     C    A     C     A    A     A
HCM2k85thQ:     0   21     0     0    8     0    13    0    15     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:31                Page 21-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #19 Fairview St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.676
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    0  1  0  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       7 1435   465   314 1812     8     7   25    25    50    2    26
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    7 1435   465   314 1812     8     7   25    25    50    2    26
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     7 1435   465   314 1812     8     7   25    25    50    2    26
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    7 1435   465   314 1812     8     7   25    25    50    2    26
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    7 1435   465   314 1812     8     7   25    25    50    2    26
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.27  0.73  1.00 2.99  0.01  0.24 0.88  0.88  1.92 0.08  1.00
Final Sat.:  1600 3825  1175  1600 4979    21   393 1404  1404  3077  123  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.38  0.40  0.20 0.36  0.38  0.02 0.02  0.02  0.02 0.02  0.02
Crit Moves:             ****  ****                ****            ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:31                Page 22-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #20 Fairview St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.887
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        80               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     196 1508   284   272 1579   181   170  977   151   180  809   271
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  196 1508   284   272 1579   181   170  977   151   180  809   271
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   196 1508   284   272 1579   181   170  977   151   180  809   271
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  196 1508   284   272 1579   181   170  977   151   180  809   271
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  196 1508   284   272 1579   181   170  977   151   180  809   271
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 2.69  0.31  1.00 2.60  0.40  1.00 2.25  0.75
Final Sat.:  1600 5100  1600  1600 4506   494  1600 4357   643  1600 3796  1204
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.30  0.18  0.17 0.35  0.37  0.11 0.22  0.24  0.11 0.21  0.23
Crit Moves:  ****                     ****             ****  ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:32                Page 23-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #21 Fairview St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.800
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        52               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     138 1479   198   184 2242   162    92  216    50    93  240    19
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  138 1479   198   184 2242   162    92  216    50    93  240    19
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   138 1479   198   184 2242   162    92  216    50    93  240    19
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  138 1479   198   184 2242   162    92  216    50    93  240    19
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  138 1479   198   184 2242   162    92  216    50    93  240    19
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 0.81  0.19  1.00 0.93  0.07
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 1299   301  1600 1483   117
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.29  0.12  0.12 0.44  0.10  0.06 0.17  0.17  0.06 0.16  0.16
Crit Moves:  ****               ****             ****        ****
******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #22 Fairview St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.882
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	77	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0
Volume Module:												
Base Vol:	212	935	131	225	1576	133	361	1002	268	463	608	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	212	935	131	225	1576	133	361	1002	268	463	608	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	212	935	131	225	1576	133	361	1002	268	463	608	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	212	935	131	225	1576	133	361	1002	268	463	608	121
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	212	935	131	225	1576	133	361	1002	268	463	608	121
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	2.00	2.63	0.37	2.00	2.77	0.23	2.00	2.37	0.63	2.00	2.50	0.50
Final Sat.:	3200	4410	590	3200	4626	374	3200	3987	1013	3200	4203	797
Capacity Analysis Module:												
Vol/Sat:	0.07	0.21	0.22	0.07	0.34	0.36	0.11	0.25	0.26	0.14	0.14	0.15
Crit Moves:	****					****			****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #23 Fairview St and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.847
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	64	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0
Volume Module:												
Base Vol:	235	1039	136	205	1628	119	69	1010	301	277	836	271
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	235	1039	136	205	1628	119	69	1010	301	277	836	271
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	235	1039	136	205	1628	119	69	1010	301	277	836	271
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	235	1039	136	205	1628	119	69	1010	301	277	836	271
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	235	1039	136	205	1628	119	69	1010	301	277	836	271
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	2.00	2.65	0.35	2.00	2.80	0.20	2.00	2.31	0.69	2.00	2.27	0.73
Final Sat.:	3200	4444	556	3200	4673	327	3200	3898	1102	3200	3825	1175
Capacity Analysis Module:												
Vol/Sat:	0.07	0.23	0.24	0.06	0.35	0.36	0.02	0.26	0.27	0.09	0.22	0.23
Crit Moves:	****					****			****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #24 Fairview St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.690
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     280  870   100   269 1357   152   121  984   145   298  627   178
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  280  870   100   269 1357   152   121  984   145   298  627   178
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   280  870   100   269 1357   152   121  984   145   298  627   178
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  280  870   100   269 1357   152   121  984   145   298  627   178
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  280  870   100   269 1357   152   121  984   145   298  627   178
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.69  0.31  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4505   495  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.19  0.20  0.08 0.27  0.10  0.04 0.19  0.09  0.09 0.12  0.11
Crit Moves:  ****                ****             ****             ****
******************************************************************************
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:34                Page 27-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #25 Fairview Rd and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.687
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     182 1051   160   191 1627   104    44  286    58   357  299   154
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  182 1051   160   191 1627   104    44  286    58   357  299   154
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   182 1051   160   191 1627   104    44  286    58   357  299   154
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  182 1051   160   191 1627   104    44  286    58   357  299   154
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  182 1051   160   191 1627   104    44  286    58   357  299   154
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.82  0.18  2.00 1.66  0.34  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4712   288  3200 2760   540  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.21  0.10  0.06 0.35  0.36  0.01 0.10  0.11  0.11 0.09  0.10
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #26 Greenville St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.742
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	42	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	2	1 0	1 0	3	0 0
Volume Module:												
Base Vol:	140	0	188	0	0	0	0	1788	436	178	949	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	140	0	188	0	0	0	0	1788	436	178	949	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	140	0	188	0	0	0	0	1788	436	178	949	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	140	0	188	0	0	0	0	1788	436	178	949	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	140	0	188	0	0	0	0	1788	436	178	949	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	2.41	0.59	1.00	3.00	0.00
Final Sat.:	1600	0	1600	0	0	0	0	4059	941	1600	5100	0
Capacity Analysis Module:												
Vol/Sat:	0.09	0.00	0.12	0.00	0.00	0.00	0.00	0.44	0.46	0.11	0.19	0.00
Crit Moves:			****						****	****		

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:35                Page 29-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #27 Greenville St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.878
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        76               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      47  193    78   154  472   160    50 1127   180   210  847    97
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   47  193    78   154  472   160    50 1127   180   210  847    97
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    47  193    78   154  472   160    50 1127   180   210  847    97
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   47  193    78   154  472   160    50 1127   180   210  847    97
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   47  193    78   154  472   160    50 1127   180   210  847    97
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 0.71  0.29  1.00 0.75  0.25  1.00 2.59  0.41  1.00 2.69  0.31
Final Sat.:  1600 1139   461  1600 1195   405  1600 4339   661  1600 4507   493
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.17  0.17  0.10 0.39  0.40  0.03 0.26  0.27  0.13 0.19  0.20
Crit Moves:  ****                ****             ****  ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:36                Page 30-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #28 Raitt St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.704
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      34  309    49    69  528    72    52  313    40    60  190    34
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   34  309    49    69  528    72    52  313    40    60  190    34
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    34  309    49    69  528    72    52  313    40    60  190    34
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   34  309    49    69  528    72    52  313    40    60  190    34
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   34  309    49    69  528    72    52  313    40    60  190    34
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.86  0.14  1.00 0.88  0.12  1.00 0.89  0.11  1.00 0.85  0.15
Final Sat.:  1600 1381   219  1600 1408   192  1600 1419   181  1600 1357   243
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.22  0.22  0.04 0.38  0.38  0.03 0.22  0.22  0.04 0.14  0.14
Crit Moves:  ****               ****             ****             ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #29 Raitt St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.926
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	105	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	85	228	82	80	376	45	330	2016	290	127	992	59
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	85	228	82	80	376	45	330	2016	290	127	992	59
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	85	228	82	80	376	45	330	2016	290	127	992	59
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	85	228	82	80	376	45	330	2016	290	127	992	59
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	85	228	82	80	376	45	330	2016	290	127	992	59
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.04	1.00
Lanes:	1.00	0.74	0.26	1.00	0.89	0.11	1.00	2.62	0.38	1.00	2.83	0.17
Final Sat.:	1600	1177	423	1600	1429	171	1600	4396	604	1600	4731	269
Capacity Analysis Module:												
Vol/Sat:	0.05	0.19	0.19	0.05	0.26	0.26	0.21	0.46	0.48	0.08	0.21	0.22
Crit Moves:	****			****					****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #30 Bear St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.756
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  2  0  1    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      61  210    89   192  728   289    99 1690   116   103 1735   147
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   61  210    89   192  728   289    99 1690   116   103 1735   147
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    61  210    89   192  728   289    99 1690   116   103 1735   147
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   61  210    89   192  728   289    99 1690   116   103 1735   147
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   61  210    89   192  728   289    99 1690   116   103 1735   147
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 2.00  1.00  1.00 2.81  0.19  1.00 2.77  0.23
Final Sat.:  1600 3400  1600  1600 3400  1600  1600 4692   308  1600 4625   375
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.06  0.06  0.12 0.21  0.18  0.06 0.36  0.38  0.06 0.38  0.39
Crit Moves:  ****                ****        ****                        ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:38                Page 33-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #31 Bristol St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.853
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        66               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     241 1241   210   449 1845   243   341 1015   164   386  886   293
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  241 1241   210   449 1845   243   341 1015   164   386  886   293
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   241 1241   210   449 1845   243   341 1015   164   386  886   293
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  241 1241   210   449 1845   243   341 1015   164   386  886   293
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  241 1241   210   449 1845   243   341 1015   164   386  886   293
OvlAdjVol:                                                                  69
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.58  0.42  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4332   668  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.24  0.13  0.14 0.36  0.15  0.11 0.23  0.25  0.12 0.17  0.18
OvlAdjV/S:                                                                  0.04
Crit Moves:  ****                 ****                     ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #32 Bristol St and Civic Center Dr

Cycle (sec):	100	Critical Vol./Cap.(X):	0.931
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	109	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2	1 0	1 0	2	1 0	1 0	0	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	129	1141	101	396	1597	100	80	404	50	145	481	100
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	129	1141	101	396	1597	100	80	404	50	145	481	100
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	129	1141	101	396	1597	100	80	404	50	145	481	100
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	129	1141	101	396	1597	100	80	404	50	145	481	100
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	129	1141	101	396	1597	100	80	404	50	145	481	100
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.04	1.00
Lanes:	1.00	2.76	0.24	1.00	2.82	0.18	1.00	0.89	0.11	1.00	1.66	0.34
Final Sat.:	1600	4610	390	1600	4717	283	1600	1424	176	1600	2749	551
Capacity Analysis Module:												
Vol/Sat:	0.08	0.25	0.26	0.25	0.34	0.35	0.05	0.28	0.28	0.09	0.17	0.18
Crit Moves:			****	****				****		****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #33 Bristol St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.721
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      68 1482   206   172 1891    51    54  264    23    52  129    22
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   68 1482   206   172 1891    51    54  264    23    52  129    22
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    68 1482   206   172 1891    51    54  264    23    52  129    22
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   68 1482   206   172 1891    51    54  264    23    52  129    22
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   68 1482   206   172 1891    51    54  264    23    52  129    22
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.63  0.37  1.00 2.92  0.08  1.00 0.92  0.08  1.00 0.85  0.15
Final Sat.:  1600 4414   586  1600 4874   126  1600 1472   128  1600 1367   233
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.34  0.35  0.11 0.39  0.40  0.03 0.18  0.18  0.03 0.09  0.09
Crit Moves:             ****  ****                 ****        ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #34 Bristol St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.902
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	88	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	2 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	208	1451	184	315	1298	183	206	1268	128	126	949	139
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	208	1451	184	315	1298	183	206	1268	128	126	949	139
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	208	1451	184	315	1298	183	206	1268	128	126	949	139
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	208	1451	184	315	1298	183	206	1268	128	126	949	139
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	208	1451	184	315	1298	183	206	1268	128	126	949	139
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.04	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	2.72	0.28	1.00	1.74	0.26
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	4560	440	1600	2891	409
Capacity Analysis Module:												
Vol/Sat:	0.07	0.28	0.12	0.10	0.25	0.11	0.13	0.28	0.29	0.08	0.33	0.34
Crit Moves:	****			****			****					****

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #35 Bristol St and McFadden Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.947
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       126               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     130 1159    58   228 2223   229   155  266   131   145  405    47
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  130 1159    58   228 2223   229   155  266   131   145  405    47
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   130 1159    58   228 2223   229   155  266   131   145  405    47
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  130 1159    58   228 2223   229   155  266   131   145  405    47
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  130 1159    58   228 2223   229   155  266   131   145  405    47
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 0.67  0.33  1.00 0.90  0.10
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 1072   528  1600 1434   166
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.23  0.04  0.14 0.44  0.14  0.10 0.25  0.25  0.09 0.28  0.28
Crit Moves:  ****               ****        ****                   ****
*******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #36 Bristol St and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.956
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	139	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	2 1	0	1 0	3 0	1	1 0	3 0	1
Volume Module:												
Base Vol:	221	993	183	643	2178	247	172	958	238	231	1058	180
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	221	993	183	643	2178	247	172	958	238	231	1058	180
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	221	993	183	643	2178	247	172	958	238	231	1058	180
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	221	993	183	643	2178	247	172	958	238	231	1058	180
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	221	993	183	643	2178	247	172	958	238	231	1058	180
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	2.53	0.47	2.00	2.69	0.31	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	3200	4253	747	3200	4511	489	1600	5100	1600	1600	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.23	0.24	0.20	0.48	0.51	0.11	0.19	0.15	0.14	0.21	0.11
Crit Moves:	****					****		****		****		

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #37 Bristol St and Segerstrom Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.854
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        66               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70  778   146   283 1011   119   306 1480   136   157  712    91
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   70  778   146   283 1011   119   306 1480   136   157  712    91
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    70  778   146   283 1011   119   306 1480   136   157  712    91
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   70  778   146   283 1011   119   306 1480   136   157  712    91
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   70  778   146   283 1011   119   306 1480   136   157  712    91
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.53  0.47  1.00 2.68  0.32  1.00 2.75  0.25  1.00 2.66  0.34
Final Sat.:  1600 4242   758  1600 4495   505  1600 4596   404  1600 4456   544
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.18  0.19  0.18 0.22  0.24  0.19 0.32  0.34  0.10 0.16  0.17
Crit Moves:             ****  ****                           ****  ****
*******************************************************************************
```

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--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #38 Bristol St and Alton Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.553
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        26               Level Of Service:                  A
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  3  0  1    1  0  1  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      10  702    53   224 1551    36   190  117   244    41   87    31
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   10  702    53   224 1551    36   190  117   244    41   87    31
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    10  702    53   224 1551    36   190  117   244    41   87    31
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   10  702    53   224 1551    36   190  117   244    41   87    31
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   10  702    53   224 1551    36   190  117   244    41   87    31
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.79  0.21  1.00 3.00  1.00  1.00 1.00  1.00  1.00 0.74  0.26
Final Sat.:  1600 4663   337  1600 5100  1600  1600 1700  1600  1600 1180   420
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.15  0.16  0.14 0.30  0.02  0.12 0.07  0.15  0.03 0.07  0.07
Crit Moves:  ****                ****        ****                   ****
********************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #39 Bristol St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.759
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        45               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95  491   123   319 1389   145   211 1531   311   191  910   132
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95  491   123   319 1389   145   211 1531   311   191  910   132
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    95  491   123   319 1389   145   211 1531   311   191  910   132
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   95  491   123   319 1389   145   211 1531   311   191  910   132
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   95  491   123   319 1389   145   211 1531   311   191  910   132
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.72  0.28  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 4546   454  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.10  0.08  0.10 0.31  0.32  0.07 0.30  0.19  0.06 0.18  0.08
Crit Moves:  ****                ****        ****        ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #40 Bristol St and Sunflower Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.682
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	35	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 1	2 0	3	0 1	2 0	2	1 1	2 0	3	0 1
Volume Module:												
Base Vol:	119	583	172	232	1316	99	135	1115	451	295	480	166
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	119	583	172	232	1316	99	135	1115	451	295	480	166
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	119	583	172	232	1316	99	135	1115	451	295	480	166
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	119	583	172	232	1316	99	135	1115	451	295	480	166
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	119	583	172	232	1316	99	135	1115	451	295	480	166
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	2.85	1.15	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	5100	1600	3200	4757	1843	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.04	0.11	0.11	0.07	0.26	0.06	0.04	0.23	0.24	0.09	0.09	0.10
Crit Moves:	****			****					****	****		

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #41 Bristol St and I-405 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.568
Loss Time (sec):       5               Average Delay (sec/veh):        20.9
Optimal Cycle:        28               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    0  0  4  1  0    0  0  0  0  2    1  1  1  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1638   210     0 2088     8     0    0    36   147   89   807
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1638   210     0 2088     8     0    0    36   147   89   807
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1638   210     0 2088     8     0    0    36   147   89   807
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1638   210     0 2088     8     0    0    36   147   89   807
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1638   210     0 2088     8     0    0    36   147   89   807
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  1.00 0.91  0.91  1.00 1.00  0.75  0.92 0.92  0.75
Lanes:       0.00 4.00  1.00  0.00 4.98  0.02  0.00 0.00  2.00  1.87 1.13  2.00
Final Sat.:     0 6916  1615     0 8603    33     0    0  2842  3272 1981  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.24  0.13  0.00 0.24  0.24  0.00 0.00  0.01  0.04 0.04  0.28
Crit Moves:  ****                ****                     ****           ****
Green/Cycle: 0.00 0.43  0.43  0.00 0.43  0.43  0.00 0.00  0.02  0.50 0.50  0.50
Volume/Cap:  0.00 0.55  0.30  0.00 0.57  0.57  0.00 0.00  0.57  0.09 0.09  0.57
Delay/Veh:    0.0 21.7  19.1   0.0 21.8  21.8   0.0  0.0  60.0  13.1 13.1  18.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 21.7  19.1   0.0 21.8  21.8   0.0  0.0  60.0  13.1 13.1  18.0
LOS by Move:    A    C     B     A    C     C     A    A     E     B    B     B
HCM2k85thQ:     0   16     7     0   17    17     0    0     2     2    2    15
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #42 Bristol St and I-405 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.697
Loss Time (sec):       5               Average Delay (sec/veh):        23.6
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Ignore           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  4  0  0    0  0  2  1  1    3  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     122 1195     0     0 1097   943   675    0   618     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  122 1195     0     0 1097   943   675    0   618     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   122 1195     0     0 1097     0   675    0   618     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  122 1195     0     0 1097     0   675    0   618     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  122 1195     0     0 1097     0   675    0   618     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.92 1.00  0.85  1.00 1.00  1.00
Lanes:       1.00 4.00  0.00  0.00 3.00  1.00  3.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:  1805 6916     0     0 5187  1729  5253    0  1615     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.17  0.00  0.00 0.21  0.00  0.13 0.00  0.38  0.00 0.00  0.00
Crit Moves:  ****                 ****                    ****
Green/Cycle: 0.10 0.40  0.00  0.00 0.30  0.00  0.55 0.00  0.55  0.00 0.00  0.00
Volume/Cap:  0.70 0.43  0.00  0.00 0.70  0.00  0.23 0.00  0.70  0.00 0.00  0.00
Delay/Veh:   55.3 21.8   0.0   0.0 32.1   0.0  11.7  0.0  18.9   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  55.3 21.8   0.0   0.0 32.1   0.0  11.7  0.0  18.9   0.0  0.0   0.0
LOS by Move:    E    C     A     A    C     A     B    A     B     A    A     A
HCM2k85thQ:     8   11     0     0   18     0     6    0    22     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #43 Flower St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.586
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	28	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 0	1	1 0	2 0	1
Volume Module:												
Base Vol:	64	593	86	275	929	124	63	394	45	118	377	158
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	64	593	86	275	929	124	63	394	45	118	377	158
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	64	593	86	275	929	124	63	394	45	118	377	158
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	64	593	86	275	929	124	63	394	45	118	377	158
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	64	593	86	275	929	124	63	394	45	118	377	158
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	3400	1600	1600	3400	1600	1600	3400	1600	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.04	0.17	0.05	0.17	0.27	0.08	0.04	0.12	0.03	0.07	0.11	0.10
Crit Moves:		****		****				****		****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #44 Flower St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.926
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       105               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      89  387   102   366 1158   121   107  983    39   161  664    95
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   89  387   102   366 1158   121   107  983    39   161  664    95
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    89  387   102   366 1158   121   107  983    39   161  664    95
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   89  387   102   366 1158   121   107  983    39   161  664    95
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   89  387   102   366 1158   121   107  983    39   161  664    95
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 1.00  1.00  1.00 1.81  0.19  1.00 1.92  0.08  1.00 1.75  0.25
Final Sat.:  1600 1700  1600  1600 2997   303  1600 3178   122  1600 2899   401
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.23  0.06  0.23 0.39  0.40  0.07 0.31  0.32  0.10 0.23  0.24
Crit Moves:       ****        ****                          ****  ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:46                Page 47-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #45 Flower St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.807
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30  219    19    66  367    53    58  658    50    54  366    49
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30  219    19    66  367    53    58  658    50    54  366    49
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    30  219    19    66  367    53    58  658    50    54  366    49
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   30  219    19    66  367    53    58  658    50    54  366    49
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   30  219    19    66  367    53    58  658    50    54  366    49
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.92  0.08  1.00 0.87  0.13  1.00 0.93  0.07  1.00 0.88  0.12
Final Sat.:  1600 1472   128  1600 1398   202  1600 1487   113  1600 1411   189
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.15  0.15  0.04 0.26  0.26  0.04 0.44  0.44  0.03 0.26  0.26
Crit Moves:  ****               ****            ****            ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #46 Flower St and Segerstrom Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.818
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	56	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	86	451	100	98	544	120	237	1631	455	115	846	93
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	86	451	100	98	544	120	237	1631	455	115	846	93
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	86	451	100	98	544	120	237	1631	455	115	846	93
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	86	451	100	98	544	120	237	1631	455	115	846	93
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	86	451	100	98	544	120	237	1631	455	115	846	93
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	1.64	0.36	1.00	1.64	0.36	1.00	2.35	0.65	1.00	2.70	0.30
Final Sat.:	1600	2719	581	1600	2722	578	1600	3953	1047	1600	4525	475
Capacity Analysis Module:												
Vol/Sat:	0.05	0.17	0.17	0.06	0.20	0.21	0.15	0.41	0.43	0.07	0.19	0.20
Crit Moves:	****					****			****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #47 Flower St and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.710
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	38	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	26	170	88	163	352	264	163	1852	79	79	1329	85
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	170	88	163	352	264	163	1852	79	79	1329	85
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	26	170	88	163	352	264	163	1852	79	79	1329	85
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	26	170	88	163	352	264	163	1852	79	79	1329	85
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	26	170	88	163	352	264	163	1852	79	79	1329	85
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	1.32	0.68	1.00	1.14	0.86	1.00	2.88	0.12	1.00	2.82	0.18
Final Sat.:	1600	2209	1091	1600	1929	1371	1600	4804	196	1600	4711	289
Capacity Analysis Module:												
Vol/Sat:	0.02	0.08	0.08	0.10	0.18	0.19	0.10	0.39	0.40	0.05	0.28	0.29
Crit Moves:	****					****			****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #48 Main St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.536
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     123  844   438   161  843   141   350  495   215   334  291   243
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  123  844   438   161  843   141   350  495   215   334  291   243
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   123  844   438   161  843   141   350  495   215   334  291   243
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  123  844   438   161  843   141   350  495   215   334  291   243
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  123  844   438   161  843   141   350  495   215   334  291   243
OvlAdjVol:                271                                              163
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.57  0.43  2.00 2.09  0.91  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4312   688  3200 3546  1454  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.27  0.05 0.20  0.20  0.11 0.14  0.15  0.10 0.09  0.15
OvlAdjV/S:                0.17                                             0.10
Crit Moves:  ****                 ****                     ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #49 Main St and Mainplace Dr / Memory Ln

Cycle (sec):	100	Critical Vol./Cap.(X):	0.456
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	22	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0	2 0	2	0 1
Volume Module:												
Base Vol:	35	955	313	27	1066	223	123	194	13	264	301	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	35	955	313	27	1066	223	123	194	13	264	301	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	35	955	313	27	1066	223	123	194	13	264	301	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	35	955	313	27	1066	223	123	194	13	264	301	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	35	955	313	27	1066	223	123	194	13	264	301	20
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.06	1.00
Lanes:	2.00	2.26	0.74	2.00	2.48	0.52	2.00	2.81	0.19	2.00	2.00	1.00
Final Sat.:	3200	3815	1185	3200	4170	830	3200	4699	301	3200	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.01	0.25	0.26	0.01	0.26	0.27	0.04	0.04	0.04	0.08	0.09	0.01
Crit Moves:	****					****	****				****	

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #50 Main St and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.845
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        63               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     156  929   199   225 1251    81   114 1203    60   369 1475    22
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  156  929   199   225 1251    81   114 1203    60   369 1475    22
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   156  929   199   225 1251    81   114 1203    60   369 1475    22
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  156  929   199   225 1251    81   114 1203    60   369 1475    22
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  156  929   199   225 1251    81   114 1203    60   369 1475    22
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.86  0.14  2.00 2.96  0.04
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 4772   228  3200 4929    71
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.27  0.12  0.07 0.37  0.05  0.04 0.25  0.26  0.12 0.30  0.31
Crit Moves:  ****               ****                   ****  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #51 Main St and Civic Center Dr
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.848
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        64               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     138  901    79    69 1222   186    75  454    83    52  679    41
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  138  901    79    69 1222   186    75  454    83    52  679    41
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   138  901    79    69 1222   186    75  454    83    52  679    41
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  138  901    79    69 1222   186    75  454    83    52  679    41
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  138  901    79    69 1222   186    75  454    83    52  679    41
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.03  1.00
Lanes:       1.00 1.84  0.16  1.00 1.74  0.26  1.00 1.69  0.31  1.00 1.89  0.11
Final Sat.:  1600 3042   258  1600 2877   423  1600 2805   495  1600 3118   182
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.30  0.31  0.04 0.42  0.44  0.05 0.16  0.17  0.03 0.22  0.23
Crit Moves:  ****                     ****  ****                     ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #52 Main St and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.791
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  1  1  0    0  0  0  0  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      66 1050     0     0 1162   103     0    0     0    61  848    65
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   66 1050     0     0 1162   103     0    0     0    61  848    65
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    66 1050     0     0 1162   103     0    0     0    61  848    65
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   66 1050     0     0 1162   103     0    0     0    61  848    65
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   66 1050     0     0 1162   103     0    0     0    61  848    65
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  0.00  0.00 1.84  0.16  0.00 0.00  0.00  0.13 1.74  0.13
Final Sat.:  1600 3400     0     0 3039   261     0    0     0   200 2786   214
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.31  0.00  0.00 0.38  0.40  0.00 0.00  0.00  0.04 0.30  0.30
Crit Moves:  ****                     ****                          ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #53 Main St and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.441
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        21               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1  1  0    0  0  1  1  0    0  0  1  1  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1052    25     0 1098    27     0   93    14     0  105    26
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1052    25     0 1098    27     0   93    14     0  105    26
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1052    25     0 1098    27     0   93    14     0  105    26
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1052    25     0 1098    27     0   93    14     0  105    26
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1052    25     0 1098    27     0   93    14     0  105    26
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       0.00 1.95  0.05  0.00 1.95  0.05  0.00 1.74  0.26  0.00 1.60  0.40
Final Sat.:     0 3226    74     0 3223    77     0 2881   419     0 2665   635
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.33  0.34  0.00 0.34  0.35  0.00 0.03  0.03  0.00 0.04  0.04
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:52                Page 56-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #54 Main St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.754
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  2  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     103  532    54    94  937    69    69  805    85    78  972    54
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103  532    54    94  937    69    69  805    85    78  972    54
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   103  532    54    94  937    69    69  805    85    78  972    54
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103  532    54    94  937    69    69  805    85    78  972    54
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103  532    54    94  937    69    69  805    85    78  972    54
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.03  1.00
Lanes:       1.00 1.82  0.18  1.00 2.00  1.00  1.00 1.81  0.19  1.00 1.89  0.11
Final Sat.:  1600 3005   295  1600 3400  1600  1600 2994   306  1600 3132   168
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.18  0.18  0.06 0.28  0.04  0.04 0.27  0.28  0.05 0.31  0.32
Crit Moves:  ****                ****        ****                        ****
******************************************************************************
```

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```
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--------------------------------------------------------------------------------
                         Santa Ana Circulation Element
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #55 Main St and McFadden Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.916
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        97               Level Of Service:                  E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      93  874    44   184 1434    28    44  419    46    97  259    74
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   93  874    44   184 1434    28    44  419    46    97  259    74
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    93  874    44   184 1434    28    44  419    46    97  259    74
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   93  874    44   184 1434    28    44  419    46    97  259    74
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   93  874    44   184 1434    28    44  419    46    97  259    74
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.90  0.10  1.00 1.96  0.04  1.00 0.90  0.10  1.00 0.78  0.22
Final Sat.:  1600 3147   153  1600 3239    61  1600 1442   158  1600 1244   356
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.28  0.29  0.12 0.44  0.46  0.03 0.29  0.29  0.06 0.21  0.21
Crit Moves:  ****                ****        ****        ****
********************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #56 Main St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.876
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        75               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     104  589    64   239 1103    58    99 1288   174   149  867   106
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  104  589    64   239 1103    58    99 1288   174   149  867   106
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   104  589    64   239 1103    58    99 1288   174   149  867   106
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  104  589    64   239 1103    58    99 1288   174   149  867   106
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  104  589    64   239 1103    58    99 1288   174   149  867   106
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 1.80  0.20  1.00 1.90  0.10  1.00 2.64  0.36  1.00 2.67  0.33
Final Sat.:  1600 2986   314  1600 3140   160  1600 4429   571  1600 4477   523
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.20  0.20  0.15 0.35  0.36  0.06 0.29  0.30  0.09 0.19  0.20
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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```
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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #57 Main St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.721
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      60  344   292   539  709   160   230 1336   242   187  556   279
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   60  344   292   539  709   160   230 1336   242   187  556   279
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    60  344   292   539  709   160   230 1336   242   187  556   279
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   60  344   292   539  709   160   230 1336   242   187  556   279
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   60  344   292   539  709   160   230 1336   242   187  556   279
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.07  0.18  0.17 0.14  0.10  0.07 0.26  0.15  0.06 0.11  0.17
Crit Moves:             ****  ****                   ****        ****
******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:54                 Page 60-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #58 Penn Wy and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.648
Loss Time (sec):       5               Average Delay (sec/veh):        12.1
Optimal Cycle:        34               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  2    0  0  0  0  0    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      49    0   250     0    0     0     0 1279   652   236 1901     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   49    0   250     0    0     0     0 1279   652   236 1901     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    49    0   250     0    0     0     0 1279   652   236 1901     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   49    0   250     0    0     0     0 1279   652   236 1901     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   49    0   250     0    0     0     0 1279   652   236 1901     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.75  1.00 1.00  1.00  1.00 0.86  0.86  0.95 0.91  1.00
Lanes:       2.00 0.00  2.00  0.00 0.00  0.00  0.00 2.00  1.00  1.00 3.00  0.00
Final Sat.:  3502    0  2842     0    0     0     0 3282  1641  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.00  0.09  0.00 0.00  0.00  0.00 0.39  0.40  0.13 0.37  0.00
Crit Moves:             ****                                 ****  ****
Green/Cycle: 0.14 0.00  0.14  0.00 0.00  0.00  0.00 0.61  0.61  0.20 0.81  0.00
Volume/Cap:  0.10 0.00  0.65  0.00 0.00  0.00  0.00 0.64  0.65  0.65 0.45  0.00
Delay/Veh:   38.0  0.0  44.8   0.0  0.0   0.0   0.0 12.7  13.0  40.7  2.8   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  38.0  0.0  44.8   0.0  0.0   0.0   0.0 12.7  13.0  40.7  2.8   0.0
LOS by Move:    D    A     D     A    A     A     A    B     B     D    A     A
HCM2k85thQ:     1    0     8     0    0     0     0   21    22    12   10     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:55                Page 61-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #59 I-5 NB Off Ramps/17th Street
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.792
Loss Time (sec):       5               Average Delay (sec/veh):        31.4
Optimal Cycle:        53               Level Of Service:                  C
******************************************************************************
Street Name:         I-5 NB Off Ramps                    17th Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected         Permitted
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  1    1  0  0  0  1    1  0  3  0  1    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     720   33    21    60    0   312   101 1062   384     0 1508    24
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  720   33    21    60    0   312   101 1062   384     0 1508    24
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   720   33    21    60    0   312   101 1062     0     0 1508    24
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  720   33    21    60    0   312   101 1062     0     0 1508    24
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  720   33    21    60    0   312   101 1062     0     0 1508    24
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.85  0.95 1.00  0.85  0.95 0.91  1.00  1.00 0.91  0.91
Lanes:       1.91 0.09  1.00  1.00 0.00  1.00  1.00 3.00  1.00  0.00 2.95  0.05
Final Sat.:  3466  159  1615  1805    0  1615  1805 5187  1900     0 5096    81
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.21  0.01  0.03 0.00  0.19  0.06 0.20  0.00  0.00 0.30  0.30
Crit Moves:  ****                      ****  ****                    ****
Green/Cycle: 0.26 0.26  0.26  0.24 0.00  0.24  0.07 0.44  0.00  0.00 0.37  0.37
Volume/Cap:  0.79 0.79  0.05  0.14 0.00  0.79  0.79 0.46  0.00  0.00 0.79  0.79
Delay/Veh:   39.0 39.0  27.6  29.7  0.0  45.9  73.6 19.6   0.0   0.0 30.2  30.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  39.0 39.0  27.6  29.7  0.0  45.9  73.6 19.6   0.0   0.0 30.2  30.2
LOS by Move:    D    D     C     C    A     D     E    B     A     A    C     C
HCM2k85thQ:    19   19     1     2    0    17     8   13     0     0   25    25
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:56                Page 62-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #60 Penn Wy and I-5 SB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.462
Loss Time (sec):       5               Average Delay (sec/veh):        19.5
Optimal Cycle:        23               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    2  0  2  0  0    0  0  0  0  0    1  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  192   170   837  173     0     0    0     0   170    0    95
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  192   170   837  173     0     0    0     0   170    0    95
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  192   170   837  173     0     0    0     0   170    0    95
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  192   170   837  173     0     0    0     0   170    0    95
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  192   170   837  173     0     0    0     0   170    0    95
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.92 0.95  1.00  1.00 1.00  1.00  0.95 1.00  0.75
Lanes:       0.00 2.00  1.00  2.00 2.00  0.00  0.00 0.00  0.00  1.00 0.00  2.00
Final Sat.:     0 3610  1615  3502 3610     0     0    0     0  1805    0  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.05  0.11  0.24 0.05  0.00  0.00 0.00  0.00  0.09 0.00  0.03
Crit Moves:             ****  ****                               ****
Green/Cycle: 0.00 0.23  0.23  0.52 0.75  0.00  0.00 0.00  0.00  0.20 0.00  0.72
Volume/Cap:  0.00 0.23  0.46  0.46 0.06  0.00  0.00 0.00  0.00  0.46 0.00  0.05
Delay/Veh:    0.0 31.6  34.2  15.5  3.4   0.0   0.0  0.0   0.0  35.9  0.0   4.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 31.6  34.2  15.5  3.4   0.0   0.0  0.0   0.0  35.9  0.0   4.0
LOS by Move:    A    C     C     B    A     A     A    A     A     D    A     A
HCM2k85thQ:     0    4     8    13    1     0     0    0     0     8    0     1
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:57                Page 63-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #61 Santiago St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.147
Loss Time (sec):       5               Average Delay (sec/veh):        62.6
Optimal Cycle:         0               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     318  221    31     6  335    82   212   81   431   126  116    23
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  318  221    31     6  335    82   212   81   431   126  116    23
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   318  221    31     6  335    82   212   81   431   126  116    23
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  318  221    31     6  335    82   212   81   431   126  116    23
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  318  221    31     6  335    82   212   81   431   126  116    23
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.88  0.12  1.00 0.80  0.20  1.00 0.16  0.84  0.47 0.44  0.09
Final Sat.:   387  362    51   383  333    81   393   71   376   177  163    32
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.82 0.61  0.61  0.02 1.01  1.01  0.54 1.15  1.15  0.71 0.71  0.71
Crit Moves:  ****                ****             ****                     ****
Delay/Veh:   42.6 24.0  24.0  12.2 75.9  75.9  22.0  116 116.2  32.7 32.7  32.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  42.6 24.0  24.0  12.2 75.9  75.9  22.0  116 116.2  32.7 32.7  32.7
LOS by Move:    E    C     C     B    F     F     C    F     F     D    D     D
ApproachDel:       34.4             75.0             88.6             32.7
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:        34.4             75.0             88.6             32.7
LOS by Appr:          D                F                F                D
AllWayAvgQ:   3.3  1.4   1.4   0.0  7.4   7.4   1.1 13.1  13.1   2.1  2.1   2.1
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #62 Santiago St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.444
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1 0	1	1 0	1 0	1	1 0	0 1	0	1 0	2 0	1
Volume Module:												
Base Vol:	188	611	303	409	972	253	118	732	99	297	699	258
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	188	611	303	409	972	253	118	732	99	297	699	258
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	188	611	303	409	972	253	118	732	99	297	699	258
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	611	303	409	972	253	118	732	99	297	699	258
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	611	303	409	972	253	118	732	99	297	699	258
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.00	1.00	1.00	1.06	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.12	1.00	2.00	1.00
Final Sat.:	1600	1700	1600	1600	1700	1600	1600	1409	191	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.12	0.36	0.19	0.26	0.57	0.16	0.07	0.52	0.52	0.19	0.21	0.16
Crit Moves:	****			****			****			****		

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:58                Page 65-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #63 Standard Ave and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.340
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  1  0  1    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     191  473   248   431  604   332   298  624   219   250  550   340
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  191  473   248   431  604   332   298  624   219   250  550   340
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   191  473   248   431  604   332   298  624   219   250  550   340
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  191  473   248   431  604   332   298  624   219   250  550   340
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  191  473   248   431  604   332   298  624   219   250  550   340
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 0.74  0.26  1.00 0.62  0.38
Final Sat.:  1600 1700  1600  1600 1700  1600  1600 1184   416  1600  989   611
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.28  0.16  0.27 0.36  0.21  0.19 0.53  0.53  0.16 0.56  0.56
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:59                Page 66-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #64 Standard Ave and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.515
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      45  631   312   123  901    41   161 1959   121   194 1282   120
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   45  631   312   123  901    41   161 1959   121   194 1282   120
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    45  631   312   123  901    41   161 1959   121   194 1282   120
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   45  631   312   123  901    41   161 1959   121   194 1282   120
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   45  631   312   123  901    41   161 1959   121   194 1282   120
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.03  1.00  1.00 1.03  1.00
Lanes:       1.00 0.67  0.33  0.11 0.85  0.04  1.00 1.88  0.12  1.00 1.83  0.17
Final Sat.:  1600 1071   529   185 1354    62  1600 3114   186  1600 3026   274
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.59  0.59  0.08 0.67  0.67  0.10 0.63  0.65  0.12 0.42  0.44
Crit Moves:  ****                ****                     ****  ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:28:59                Page 67-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #65 Standard Ave and Mcfadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.843
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        63               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      44  170    77   123  297    21    21  736    89    81  214    48
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   44  170    77   123  297    21    21  736    89    81  214    48
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    44  170    77   123  297    21    21  736    89    81  214    48
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   44  170    77   123  297    21    21  736    89    81  214    48
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   44  170    77   123  297    21    21  736    89    81  214    48
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.69  0.31  1.00 0.93  0.07  1.00 0.89  0.11  1.00 0.82  0.18
Final Sat.:  1600 1101   499  1600 1494   106  1600 1427   173  1600 1307   293
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.15  0.15  0.08 0.20  0.20  0.01 0.52  0.52  0.05 0.16  0.16
Crit Moves:  ****               ****            ****            ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #66 Halladay St and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.692
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	36	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0	0 0 0	0	0	2 1 0	0	1	2 0 0
Volume Module:												
Base Vol:	69	0	160	0	0	0	0	1772	200	210	797	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	0	160	0	0	0	0	1772	200	210	797	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	69	0	160	0	0	0	0	1772	200	210	797	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	69	0	160	0	0	0	0	1772	200	210	797	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	69	0	160	0	0	0	0	1772	200	210	797	0
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	2.70	0.30	0.63	2.37	0.00
Final Sat.:	1600	0	1600	0	0	0	0	4513	487	1001	3999	0
Capacity Analysis Module:												
Vol/Sat:	0.04	0.00	0.10	0.00	0.00	0.00	0.00	0.39	0.41	0.13	0.20	0.00
Crit Moves:			****						****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #67 Halladay St and Dyer Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.668
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	34	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	16	26	71	155	31	33	54	1820	13	126	686	111
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	16	26	71	155	31	33	54	1820	13	126	686	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	16	26	71	155	31	33	54	1820	13	126	686	111
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	16	26	71	155	31	33	54	1820	13	126	686	111
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	16	26	71	155	31	33	54	1820	13	126	686	111
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.05	1.00
Lanes:	1.00	0.27	0.73	1.00	0.48	0.52	1.00	2.98	0.02	1.00	2.58	0.42
Final Sat.:	1600	429	1171	1600	775	825	1600	4966	34	1600	4331	669
Capacity Analysis Module:												
Vol/Sat:	0.01	0.06	0.06	0.10	0.04	0.04	0.03	0.37	0.38	0.08	0.16	0.17
Crit Moves:			****	****					****	****		

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:01                Page 70-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #68 SR-55 SB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.623
Loss Time (sec):       5               Average Delay (sec/veh):        20.2
Optimal Cycle:        32               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  2    0  0  2  1  1    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   998    0   903     0 1423  1014     0 1363   155
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   998    0   903     0 1423  1014     0 1363   155
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:     0    0     0   998    0   903     0 1423     0     0 1363     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   998    0   903     0 1423     0     0 1363     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:    0    0     0   998    0   903     0 1423     0     0 1363     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.75  1.00 0.91  0.91  1.00 0.91  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  2.00  0.00 3.00  1.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3502    0  2842     0 5187  1729     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.29 0.00  0.32  0.00 0.27  0.00  0.00 0.26  0.00
Crit Moves:                               ****        ****        ****
Green/Cycle: 0.00 0.00  0.00  0.51 0.00  0.51  0.00 0.44  0.00  0.00 0.44  0.00
Volume/Cap:  0.00 0.00  0.00  0.56 0.00  0.62  0.00 0.62  0.00  0.00 0.60  0.00
Delay/Veh:    0.0  0.0   0.0  17.2  0.0  18.5   0.0 22.1   0.0   0.0 21.7   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  17.2  0.0  18.5   0.0 22.1   0.0   0.0 21.7   0.0
LOS by Move:    A    A     A     B    A     B     A    C     A     A    C     A
HCM2k85thQ:     0    0     0    17    0    18     0   19     0     0   18     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:02                Page 71-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #69 SR-55 NB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.728
Loss Time (sec):       5               Average Delay (sec/veh):        19.5
Optimal Cycle:        42               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Ignore           Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  2  0  2    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     965    0  1037     0    0     0     0 1503   744     0  591   279
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  965    0  1037     0    0     0     0 1503   744     0  591   279
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   965    0     0     0    0     0     0 1503     0     0  591     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  965    0     0     0    0     0     0 1503     0     0  591     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  965    0     0     0    0     0     0 1503     0     0  591     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.88  1.00 0.91  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  2.00  0.00 3.00  1.00
Final Sat.:  3502    0  1900     0    0     0     0 3610  3344     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.28 0.00  0.00  0.00 0.00  0.00  0.00 0.42  0.00  0.00 0.11  0.00
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.38 0.00  0.00  0.00 0.00  0.00  0.00 0.57  0.00  0.00 0.57  0.00
Volume/Cap:  0.73 0.00  0.00  0.00 0.00  0.00  0.00 0.73  0.00  0.00 0.20  0.00
Delay/Veh:   28.7  0.0   0.0   0.0  0.0   0.0   0.0 17.1   0.0   0.0 10.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  28.7  0.0   0.0   0.0  0.0   0.0   0.0 17.1   0.0   0.0 10.4   0.0
LOS by Move:    C    A     A     A    A     A     A    B     A     A    B     A
HCM2k85thQ:    21    0     0     0    0     0     0   27     0     0    5     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:02                Page 72-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #70 SR-55 SB Ramps and Dyer Rd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.610
Loss Time (sec):       5               Average Delay (sec/veh):        25.9
Optimal Cycle:        31               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:            Ovl              Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    0  1  1  0  1    1  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     312   37   713    50  242    60    34 1282   273   418  663   111
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  312   37   713    50  242    60    34 1282   273   418  663   111
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   312   37   713    50  242    60    34 1282   273   418  663   111
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  312   37   713    50  242    60    34 1282   273   418  663   111
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  312   37   713    50  242    60    34 1282   273   418  663   111
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.75  0.94 0.94  0.85  0.95 0.91  0.85  0.92 0.91  0.85
Lanes:       1.79 0.21  2.00  0.34 1.66  1.00  1.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3251  386  2842   613 2968  1615  1805 5187  1615  3502 5187  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.10  0.25  0.08 0.08  0.04  0.02 0.25  0.17  0.12 0.13  0.07
Crit Moves:             ****        ****              ****        ****
Green/Cycle: 0.22 0.22  0.41  0.13 0.13  0.13  0.08 0.41  0.41  0.20 0.52  0.52
Volume/Cap:  0.45 0.45  0.61  0.61 0.61  0.28  0.24 0.61  0.42  0.61 0.24  0.13
Delay/Veh:   34.4 34.4  24.1  43.2 43.2  39.7  44.3 24.0  21.7  38.3 13.1  12.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  34.4 34.4  24.1  43.2 43.2  39.7  44.3 24.0  21.7  38.3 13.1  12.3
LOS by Move:    C    C     C     D    D     D     D    C     C     D    B     B
HCM2k85thQ:     8    8    16     8    8     3     2   18     9    11    6     3
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:03                Page 73-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #71 Glassell St and La Veta Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.826
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Ovl              Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  1  1  0    1  0  1  0  1    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     292  458   139    13  274    60    57  293   563   380  401    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  292  458   139    13  274    60    57  293   563   380  401    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   292  458   139    13  274    60    57  293   563   380  401    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  292  458   139    13  274    60    57  293   563   380  401    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  292  458   139    13  274    60    57  293   563   380  401    10
OvlAdjVol:                 0                                  417
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.03  1.00
Lanes:       2.00 1.00  1.00  1.00 1.64  0.36  1.00 1.00  1.00  1.00 1.95  0.05
Final Sat.:  3200 1700  1600  1600 2725   575  1600 1700  1600  1600 3222    78
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.27  0.09  0.01 0.10  0.10  0.04 0.17  0.35  0.24 0.12  0.13
OvlAdjV/S:               0.00                               0.26
Crit Moves:       ****        ****                          ****  ****
*******************************************************************************
```

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```
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:04                Page 74-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #72 Glassell St and SR-22 WB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.841
Loss Time (sec):       5               Average Delay (sec/veh):        30.1
Optimal Cycle:        65               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted      Split Phase      Split Phase
Rights:           Include           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  2  0  1    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     568  638     0     0 1017   473     0    0     0   247    4   369
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  568  638     0     0 1017   473     0    0     0   247    4   369
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   568  638     0     0 1017   473     0    0     0   247    4   369
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  568  638     0     0 1017   473     0    0     0   247    4   369
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  568  638     0     0 1017   473     0    0     0   247    4   369
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  1.00  1.00 0.95  0.85  1.00 1.00  1.00  0.86 0.86  0.86
Lanes:       1.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  1.40 0.01  1.59
Final Sat.:  1805 3610     0     0 3610  1615     0    0     0  2271   21  2589
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.31 0.18  0.00  0.00 0.28  0.29  0.00 0.00  0.00  0.11 0.19  0.14
Crit Moves:  ****                     ****                          ****
Green/Cycle: 0.37 0.72  0.00  0.00 0.35  0.35  0.00 0.00  0.00  0.23 0.23  0.23
Volume/Cap:  0.84 0.24  0.00  0.00 0.81  0.84  0.00 0.00  0.00  0.48 0.84  0.63
Delay/Veh:   37.9  4.7   0.0   0.0 33.6  41.0   0.0  0.0   0.0  33.7 45.5  36.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  37.9  4.7   0.0   0.0 33.6  41.0   0.0  0.0   0.0  33.7 45.5  36.0
LOS by Move:    D    A     A     A    C     D     A    A     A     C    D     D
HCM2k85thQ:    27    5     0     0   25    24     0    0     0     8   18    11
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:04                Page 75-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #73 Grand Ave / Glassell St and SR-22 EB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.842
Loss Time (sec):       5               Average Delay (sec/veh):        29.6
Optimal Cycle:        65               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted       Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  2  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  968   258   345  904     0   258    0  1012     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  968   258   345  904     0   258    0  1012     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  968   258   345  904     0   258    0  1012     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  968   258   345  904     0   258    0  1012     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  968   258   345  904     0   258    0  1012     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.95 0.95  1.00  0.87 1.00  0.87  1.00 1.00  1.00
Lanes:       0.00 2.00  1.00  1.00 2.00  0.00  1.20 0.00  1.80  0.00 0.00  0.00
Final Sat.:     0 3610  1615  1805 3610     0  1992    0  2974     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.27  0.16  0.19 0.25  0.00  0.13 0.00  0.34  0.00 0.00  0.00
Crit Moves:       ****        ****                     ****
Green/Cycle: 0.00 0.32  0.32  0.23 0.55  0.00  0.40 0.00  0.40  0.00 0.00  0.00
Volume/Cap:  0.00 0.84  0.50  0.84 0.46  0.00  0.32 0.00  0.84  0.00 0.00  0.00
Delay/Veh:    0.0 37.5  28.4  51.4 13.9   0.0  20.4  0.0  31.3   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 37.5  28.4  51.4 13.9   0.0  20.4  0.0  31.3   0.0  0.0   0.0
LOS by Move:    A    D     C     D    B     A     C    A     C     A    A     A
HCM2k85thQ:     0   25    10    19   13     0     7    0    27     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:05                Page 76-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #74 Grand Ave and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.569
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      25 1032   148   184 1531    34    99   60    59   152   17   137
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25 1032   148   184 1531    34    99   60    59   152   17   137
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25 1032   148   184 1531    34    99   60    59   152   17   137
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   25 1032   148   184 1531    34    99   60    59   152   17   137
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   25 1032   148   184 1531    34    99   60    59   152   17   137
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.62  0.38  1.00 2.93  0.07  1.00 1.01  0.99  1.00 0.11  0.89
Final Sat.:  1600 4398   602  1600 4896   104  1600 1713  1587  1600  177  1423
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.23  0.25  0.12 0.31  0.33  0.06 0.04  0.04  0.10 0.10  0.10
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:05                Page 77-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #75 Grand Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.798
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        52               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include        WideBypass          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      92  648   167   307 1503   338   179  291    60   140  270   246
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   92  648   167   307 1503   338   179  291    60   140  270   246
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    92  648   167   307 1503   338   179  291    60   140  270   246
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   92  648   167   307 1503   338   179  291    60   140  270   246
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   92  648   167   307 1503   338   179  291    60   140  270   246
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.39  0.61  1.00 2.45  0.55  1.00 0.83  0.17  1.00 1.00  1.00
Final Sat.:  1600 4016   984  1600 4119   881  1600 1326   274  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.16  0.17  0.19 0.36  0.38  0.11 0.22  0.22  0.09 0.16  0.15
Crit Moves:  ****                      ****       ****        ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:06                Page 78-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #76 Grand Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.856
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        67               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     228  666   458   303 1270   249   246  915   116   401 1047   114
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  228  666   458   303 1270   249   246  915   116   401 1047   114
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   228  666   458   303 1270   249   246  915   116   401 1047   114
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  228  666   458   303 1270   249   246  915   116   401 1047   114
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  228  666   458   303 1270   249   246  915   116   401 1047   114
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.00  1.00  1.00 2.51  0.49  2.00 2.66  0.34  2.00 2.71  0.29
Final Sat.:  1600 3400  1600  1600 4213   787  3200 4460   540  3200 4529   471
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.20  0.29  0.19 0.30  0.32  0.08 0.21  0.21  0.13 0.23  0.24
Crit Moves:             ****  ****                   ****        ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:07                Page 79-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #77 Grand Ave and I-5 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.845
Loss Time (sec):       5               Average Delay (sec/veh):        15.3
Optimal Cycle:        66               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  3  0  0    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1145   662   104 3338     0     0    0     0   557    0   154
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1145   662   104 3338     0     0    0     0   557    0   154
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1145     0   104 3338     0     0    0     0   557    0   154
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1145     0   104 3338     0     0    0     0   557    0   154
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1145     0   104 3338     0     0    0     0   557    0   154
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  1.00  0.95 0.91  1.00  1.00 1.00  1.00  0.92 1.00  0.85
Lanes:       0.00 2.00  1.00  1.00 3.00  0.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:     0 3610  1900  1805 5187     0     0    0     0  3502    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.32  0.00  0.06 0.64  0.00  0.00 0.00  0.00  0.16 0.00  0.10
Crit Moves:  ****                 ****                          ****
Green/Cycle: 0.00 0.64  0.00  0.12 0.76  0.00  0.00 0.00  0.00  0.19 0.00  0.19
Volume/Cap:  0.00 0.49  0.00  0.49 0.84  0.00  0.00 0.00  0.00  0.84 0.00  0.51
Delay/Veh:    0.0  9.4   0.0  43.2  9.8   0.0   0.0  0.0   0.0  49.0  0.0  37.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  9.4   0.0  43.2  9.8   0.0   0.0  0.0   0.0  49.0  0.0  37.8
LOS by Move:    A    A     A     D    A     A     A    A     A     D    A     D
HCM2k85thQ:     0   15     0     6   39     0     0    0     0    17    0     7
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:07                Page 80-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #78 Grand Ave and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.881
Loss Time (sec):       5                Average Delay (sec/veh):        26.3
Optimal Cycle:        80                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  2    2  0  1  0  2    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      79 1119    57   231 1908  1684   242  200   394     5  407    37
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   79 1119    57   231 1908  1684   242  200   394     5  407    37
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    79 1119    57   231 1908  1684   242  200   394     5  407    37
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   79 1119    57   231 1908  1684   242  200   394     5  407    37
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   79 1119    57   231 1908  1684   242  200   394     5  407    37
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.90  0.90  0.95 0.95  0.75  0.92 1.00  0.75  0.94 0.94  0.94
Lanes:       1.00 2.85  0.15  1.00 2.00  2.00  2.00 1.00  2.00  0.02 1.82  0.16
Final Sat.:  1805 4901   250  1805 3610  2842  3502 1900  2842    40 3230   294
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.23  0.23  0.13 0.53  0.59  0.07 0.11  0.14  0.13 0.13  0.13
Crit Moves:  ****                ****                     ****  ****
Green/Cycle: 0.05 0.42  0.42  0.23 0.60  0.76  0.16 0.16  0.16  0.14 0.14  0.14
Volume/Cap:  0.88 0.55  0.55  0.55 0.88  0.78  0.44 0.67  0.88  0.88 0.88  0.88
Delay/Veh:  105.1 22.4  22.4  35.2 21.6   9.2  38.7 45.4  59.3  58.3 58.3  58.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 105.1 22.4  22.4  35.2 21.6   9.2  38.7 45.4  59.3  58.3 58.3  58.3
LOS by Move:    F    C     C     D    C     A     D    D     E     E    E     E
HCM2k85thQ:     7   15    15    10   41    28     6   11    15    15   15    15
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:08                Page 81-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #79 Grand Ave and 1st St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.827
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        58               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  2  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     186  655    31   121 1753   213   318  760   216   268  939   107
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  186  655    31   121 1753   213   318  760   216   268  939   107
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   186  655    31   121 1753   213   318  760   216   268  939   107
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  186  655    31   121 1753   213   318  760   216   268  939   107
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  186  655    31   121 1753   213   318  760   216   268  939   107
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.86  0.14  2.00 3.00  1.00  2.00 2.00  1.00  2.00 2.00  1.00
Final Sat.:  3200 4783   217  3200 5100  1600  3200 3400  1600  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.14  0.14  0.04 0.34  0.13  0.10 0.22  0.14  0.08 0.28  0.07
Crit Moves:  ****                ****             ****                ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:09                Page 82-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #80 Grand Ave and Chestnut Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.935
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       113               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      53  737   163   174 2086    57    64  449   118    81  237   148
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   53  737   163   174 2086    57    64  449   118    81  237   148
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    53  737   163   174 2086    57    64  449   118    81  237   148
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   53  737   163   174 2086    57    64  449   118    81  237   148
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   53  737   163   174 2086    57    64  449   118    81  237   148
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.46  0.54  1.00 2.92  0.08  1.00 0.79  0.21  1.00 0.62  0.38
Final Sat.:  1600 4131   869  1600 4872   128  1600 1267   333  1600  985   615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.18  0.19  0.11 0.43  0.45  0.04 0.35  0.35  0.05 0.24  0.24
Crit Moves:  ****                      ****       ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #81 Grand Ave and McFadden Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.011
Loss Time (sec):       5                Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     262 1104   165   294 1974   192   109  352   107    95  340    86
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  262 1104   165   294 1974   192   109  352   107    95  340    86
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   262 1104   165   294 1974   192   109  352   107    95  340    86
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  262 1104   165   294 1974   192   109  352   107    95  340    86
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  262 1104   165   294 1974   192   109  352   107    95  340    86
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.04  1.00
Lanes:       1.00 2.61  0.39  1.00 2.73  0.27  1.00 0.77  0.23  1.00 1.60  0.40
Final Sat.:  1600 4376   624  1600 4575   425  1600 1227   373  1600 2654   646
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.25  0.26  0.18 0.43  0.45  0.07 0.29  0.29  0.06 0.13  0.13
Crit Moves:  ****                ****        ****        ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:10                Page 84-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #82 Grand Ave and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.897
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        85               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      65  649   127   253 1293   253   396 1654   159   170  651   142
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   65  649   127   253 1293   253   396 1654   159   170  651   142
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    65  649   127   253 1293   253   396 1654   159   170  651   142
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   65  649   127   253 1293   253   396 1654   159   170  651   142
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   65  649   127   253 1293   253   396 1654   159   170  651   142
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.51  0.49  1.00 2.51  0.49  1.00 2.74  0.26  1.00 2.46  0.54
Final Sat.:  1600 4214   786  1600 4214   786  1600 4579   421  1600 4140   860
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.15  0.16  0.16 0.31  0.32  0.25 0.36  0.38  0.11 0.16  0.17
Crit Moves:  ****                 ****             ****  ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:11                Page 85-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #83 Grand Ave and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.664
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  3  0  1    2  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     187  564   241   204  589   199   314 1120   440   140  617   208
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  187  564   241   204  589   199   314 1120   440   140  617   208
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   187  564   241   204  589   199   314 1120   440   140  617   208
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  187  564   241   204  589   199   314 1120   440   140  617   208
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  187  564   241   204  589   199   314 1120   440   140  617   208
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.10  0.90  1.00 2.24  0.76  2.00 3.00  1.00  2.00 2.24  0.76
Final Sat.:  1600 3563  1437  1600 3788  1212  3200 5100  1600  3200 3790  1210
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.16  0.17  0.13 0.16  0.16  0.10 0.22  0.28  0.04 0.16  0.17
Crit Moves:             ****  ****                          ****  ****
******************************************************************************
```

```
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:12                Page 86-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #84 SR-55 NB Ramps and Dyer Rd
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.565
Loss Time (sec):       5                Average Delay (sec/veh):        17.3
Optimal Cycle:        28                Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    0  0  3  0  1    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     637    0   521     0    0     0     0 1550   620     0  859   517
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  637    0   521     0    0     0     0 1550   620     0  859   517
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   637    0   521     0    0     0     0 1550     0     0  859     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  637    0   521     0    0     0     0 1550     0     0  859     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  637    0   521     0    0     0     0 1550     0     0  859     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.91 1.00  0.91  1.00 1.00  1.00  1.00 0.91  1.00  1.00 0.91  0.91
Lanes:       1.55 0.00  1.45  0.00 0.00  0.00  0.00 3.00  1.00  0.00 3.00  0.00
Final Sat.:  2674    0  2501     0    0     0     0 5187  1900     0 5187     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.24 0.00  0.21  0.00 0.00  0.00  0.00 0.30  0.00  0.00 0.17  0.00
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.42 0.00  0.42  0.00 0.00  0.00  0.00 0.53  0.00  0.00 0.53  0.00
Volume/Cap:  0.57 0.00  0.49  0.00 0.00  0.00  0.00 0.57  0.00  0.00 0.31  0.00
Delay/Veh:   22.3  0.0  21.3   0.0  0.0   0.0   0.0 16.1   0.0   0.0 13.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  22.3  0.0  21.3   0.0  0.0   0.0   0.0 16.1   0.0   0.0 13.4   0.0
LOS by Move:    C    A     C     A    A     A     A    B     A     A    B     A
HCM2k85thQ:    15    0    13     0    0     0     0   18     0     0    8     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:13                Page 87-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #85 Cambridge St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.900
Loss Time (sec):       5               Average Delay (sec/veh):        23.4
Optimal Cycle:         0               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0    0  0  1  0  1    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     185  235     0     0  480   245   195    0   312     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  185  235     0     0  480   245   195    0   312     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   185  235     0     0  480   245   195    0   312     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  185  235     0     0  480   245   195    0   312     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  185  235     0     0  480   245   195    0   312     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:   465  498     0     0  534   586   459    0   541     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.40 0.47  xxxx  xxxx 0.90  0.42  0.43 xxxx  0.58  xxxx xxxx  xxxx
Crit Moves:       ****             ****                   ****
Delay/Veh:   15.0 15.6   0.0   0.0 42.9  12.8  15.7  0.0  17.1   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  15.0 15.6   0.0   0.0 42.9  12.8  15.7  0.0  17.1   0.0  0.0   0.0
LOS by Move:    B    C     *     *    E     B     C    *     C     *    *     *
ApproachDel:       15.3             32.8             16.6           xxxxxx
Delay Adj:         1.00             1.00             1.00            xxxxx
ApprAdjDel:        15.3             32.8             16.6           xxxxxx
LOS by Appr:          C                D                C                *
AllWayAvgQ:   0.6  0.8   0.0   0.0  5.0   0.7   0.7  0.0   1.2   0.0  0.0   0.0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:14                Page 88-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #86 Cambridge St and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.624
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  1  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   618    0   199    69  185     0     0  130   101
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   618    0   199    69  185     0     0  130   101
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   618    0   199    69  185     0     0  130   101
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   618    0   199    69  185     0     0  130   101
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   618    0   199    69  185     0     0  130   101
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 0.56  0.44
Final Sat.:     0    0     0  1600    0  1600  1600 1700     0     0  900   700
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.39 0.00  0.12  0.04 0.11  0.00  0.00 0.14  0.14
Crit Moves:                   ****             ****                   ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:15                Page 89-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #87 Mabury St and 1st Street
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.755
Loss Time (sec):       5               Average Delay (sec/veh):        27.4
Optimal Cycle:        46               Level Of Service:                  C
*******************************************************************************
Street Name:              Mabury                          1st Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    1  0  1! 0  1    0  0  1  1  0    1  0  1  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       5    0   122   276  164   618     0  922    10    46  701     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    5    0   122   276  164   618     0  922    10    46  701     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     5    0   122   276  164   618     0  922    10    46  701     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    5    0   122   276  164   618     0  922    10    46  701     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    5    0   122   276  164   618     0  922    10    46  701     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 1.00  0.85  0.90 0.90  0.90  1.00 0.95  0.95  0.95 0.95  0.95
Lanes:       1.00 0.00  1.00  1.23 0.27  1.50  0.00 1.98  0.02  1.00 2.00  0.00
Final Sat.:  1805    0  1615  2097  459  2575     0 3564    39  1805 3610     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.08  0.13 0.36  0.24  0.00 0.26  0.26  0.03 0.19  0.00
Crit Moves:             ****       ****             ****        ****
Green/Cycle: 0.10 0.00  0.10  0.47 0.47  0.47  0.00 0.34  0.34  0.03 0.38  0.00
Volume/Cap:  0.03 0.00  0.75  0.28 0.75  0.51  0.00 0.75  0.75  0.75 0.52  0.00
Delay/Veh:   40.7  0.0  61.9  16.0 24.0  18.5   0.0 31.8  31.8  88.8 24.5   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  40.7  0.0  61.9  16.0 24.0  18.5   0.0 31.8  31.8  88.8 24.5   0.0
LOS by Move:    D    A     E     B    C     B     A    C     C     F    C     A
HCM2k85thQ:     0    0     8     7   25    14     0   22    22     5   14     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Attachment 8

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:16                Page 90-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #88 Tustin St and La Veta Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.362
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        19               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9  365   105    48  944     3     9   11    35   279    1    43
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    9  365   105    48  944     3     9   11    35   279    1    43
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     9  365   105    48  944     3     9   11    35   279    1    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    9  365   105    48  944     3     9   11    35   279    1    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    9  365   105    48  944     3     9   11    35   279    1    43
OvlAdjVol:                                                                   0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.33  0.67  1.00 2.99  0.01  1.00 1.00  1.00  1.99 0.01  1.00
Final Sat.:  1600 3928  1072  1600 4985    15  1600 1700  1600  3189   11  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.09  0.10  0.03 0.19  0.20  0.01 0.01  0.02  0.09 0.09  0.03
OvlAdjV/S:                                                                0.00
Crit Moves:  ****                      ****             ****       ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:17                Page 91-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #89 Tustin St and SR-22 WB On-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.575
Loss Time (sec):       5               Average Delay (sec/veh):        13.2
Optimal Cycle:        29               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include           Include         Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  0    0  0  2  1  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     762  708     0     0  897   536     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  762  708     0     0  897   536     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   762  708     0     0  897   536     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  762  708     0     0  897   536     0    0     0     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  762  708     0     0  897   536     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  1.00  1.00 0.86  0.86  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  0.00 0.00  0.00
Final Sat.:  3502 3610     0     0 3264  1632     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.22 0.20  0.00  0.00 0.27  0.33  0.00 0.00  0.00  0.00 0.00  0.00
Crit Moves:  ****                     ****
Green/Cycle: 0.38 0.95  0.00  0.00 0.57  0.57  0.00 0.00  0.00  0.00 0.00  0.00
Volume/Cap:  0.57 0.21  0.00  0.00 0.48  0.57  0.00 0.00  0.00  0.00 0.00  0.00
Delay/Veh:   25.3  0.2   0.0   0.0 12.8  14.0   0.0  0.0   0.0   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  25.3  0.2   0.0   0.0 12.8  14.0   0.0  0.0   0.0   0.0  0.0   0.0
LOS by Move:    C    A     A     A    B     B     A    A     A     A    A     A
HCM2k85thQ:    15    1     0     0   14    18     0    0     0     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:18                Page 92-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #90 Tustin St and SR-22 EB Off-Ramp / Seba Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.718
Loss Time (sec):       5                Average Delay (sec/veh):        23.8
Optimal Cycle:        41                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  1  0    1  0  3  0  0    1  0  1! 0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1213     6    13  779     0   252   25  1084     6    0    43
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1213     6    13  779     0   252   25  1084     6    0    43
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1213     6    13  779     0   252   25  1084     6    0    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1213     6    13  779     0   252   25  1084     6    0    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1213     6    13  779     0   252   25  1084     6    0    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.91  0.12 0.91  1.00  0.87 0.87  0.87  0.88 1.00  0.88
Lanes:       0.00 2.99  0.01  1.00 3.00  0.00  1.18 0.04  1.78  0.12 0.00  0.88
Final Sat.:     0 5156    26   232 5187     0  1960   60  2956   204    0  1460
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.24  0.24  0.06 0.15  0.00  0.13 0.42  0.37  0.03 0.00  0.03
Crit Moves:       ****                          ****        ****
Green/Cycle: 0.00 0.33  0.33  0.33 0.33  0.00  0.58 0.58  0.58  0.04 0.00  0.04
Volume/Cap:  0.00 0.72  0.72  0.17 0.46  0.00  0.22 0.72  0.63  0.72 0.00  0.72
Delay/Veh:    0.0 31.1  31.1  25.0 26.8   0.0  10.1 16.4  14.4  78.0  0.0  78.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 31.1  31.1  25.0 26.8   0.0  10.1 16.4  14.4  78.0  0.0  78.0
LOS by Move:    A    C     C     C    C     A     B    B     B     E    A     E
HCM2k85thQ:     0   20    20     1   11     0     5   24    19     5    0     5
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:19                Page 93-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #91 Tustin Ave and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.242
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     125  720   126   249 2148    42    78  297   511   306  338   442
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  125  720   126   249 2148    42    78  297   511   306  338   442
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   125  720   126   249 2148    42    78  297   511   306  338   442
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  125  720   126   249 2148    42    78  297   511   306  338   442
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  125  720   126   249 2148    42    78  297   511   306  338   442
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 2.55  0.45  2.00 2.94  0.06  1.00 0.37  0.63  1.00 0.43  0.57
Final Sat.:  3200 4285   715  3200 4908    92  1600  588  1012  1600  693   907
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.08 0.44  0.46  0.05 0.51  0.50  0.19 0.49  0.49
Crit Moves:  ****                     ****       ****        ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:19                Page 94-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #92 Tustin Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.097
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                 F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     102  556   104   135 2756    87   116  293   214   118  244   122
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  102  556   104   135 2756    87   116  293   214   118  244   122
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   102  556   104   135 2756    87   116  293   214   118  244   122
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  102  556   104   135 2756    87   116  293   214   118  244   122
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  102  556   104   135 2756    87   116  293   214   118  244   122
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.53  0.47  2.00 2.91  0.09  1.00 0.58  0.42  1.00 0.67  0.33
Final Sat.:  1600 4244   756  3200 4853   147  1600  925   675  1600 1067   533
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.13  0.14  0.04 0.57  0.59  0.07 0.32  0.32  0.07 0.23  0.23
Crit Moves:  ****                          ****       ****       ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:20                Page 95-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #93 Tustin Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.805
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     155  277   330   638 1841    20   215  849   145   488  770   188
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  155  277   330   638 1841    20   215  849   145   488  770   188
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   155  277   330   638 1841    20   215  849   145   488  770   188
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  155  277   330   638 1841    20   215  849   145   488  770   188
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  155  277   330   638 1841    20   215  849   145   488  770   188
OvlAdjVol:                 86                                                 0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.00  1.00  2.00 2.97  0.03  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 3400  1600  3200 4948    52  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.08  0.21  0.20 0.37  0.39  0.07 0.17  0.09  0.15 0.15  0.12
OvlAdjV/S:                 0.05                                               0.00
Crit Moves:  ****                          ****        ****        ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:21                Page 96-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #94 Tustin Ave and 4th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.791
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  0  1    1  0  2  1  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       40  204   183   743  946   293   159  942    39   129  727   472
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    40  204   183   743  946   293   159  942    39   129  727   472
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     40  204   183   743  946   293   159  942    39   129  727   472
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    40  204   183   743  946   293   159  942    39   129  727   472
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    40  204   183   743  946   293   159  942    39   129  727   472
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.00  1.00  2.00 2.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00
Final Sat.:  1600 3400  1600  3200 3400  1600  1600 5100  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.06  0.11  0.23 0.28  0.18  0.10 0.18  0.02  0.08 0.21  0.30
Crit Moves:             ****  ****             ****                       ****
*******************************************************************************
```

```
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:22                Page 97-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #95 SR-55 SB Ramps / Auto Mall Dr and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.653
Loss Time (sec):       5               Average Delay (sec/veh):        25.1
Optimal Cycle:        34               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    1  0  1  0  1    1  0  3  0  1    2  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     456   68   540    50   30     8    34 1334   493   510 1202   157
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  456   68   540    50   30     8    34 1334   493   510 1202   157
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   456   68   540    50   30     8    34 1334     0   510 1202   157
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  456   68   540    50   30     8    34 1334     0   510 1202   157
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  456   68   540    50   30     8    34 1334     0   510 1202   157
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.75  0.95 1.00  0.85  0.95 0.91  1.00  0.92 0.89  0.89
Lanes:       1.74 0.26  2.00  1.00 1.00  1.00  1.00 3.00  1.00  2.00 2.65  0.35
Final Sat.:  3168  472  2842  1805 1900  1615  1805 5187  1900  3502 4510   589
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.14  0.19  0.03 0.02  0.00  0.02 0.26  0.00  0.15 0.27  0.27
Crit Moves:             ****  ****                 ****        ****
Green/Cycle: 0.29 0.29  0.29  0.04 0.04  0.04  0.04 0.39  0.00  0.22 0.58  0.58
Volume/Cap:  0.49 0.49  0.65  0.65 0.37  0.12  0.46 0.65  0.00  0.65 0.46  0.46
Delay/Veh:   29.7 29.7  32.9  65.6 49.5  46.8  51.5 25.5   0.0  37.3 12.4  12.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  29.7 29.7  32.9  65.6 49.5  46.8  51.5 25.5   0.0  37.3 12.4  12.4
LOS by Move:    C    C     C     E    D     D     D    C     A     D    B     B
HCM2k85thQ:    11   11    14     4    2     1     3   19     0    13   13    13
```

```
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:23                Page 98-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #96 SR-55 NB Ramps / Del Amo Ave and Newport Avenue
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.665
Loss Time (sec):       5                Average Delay (sec/veh):        25.6
Optimal Cycle:        35                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  3  0  1    2  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     413  109    69    20  497   728   269  163   155     8  223     4
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  413  109    69    20  497   728   269  163   155     8  223     4
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   413  109    69    20  497   728   269  163   155     8  223     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  413  109    69    20  497   728   269  163   155     8  223     4
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  413  109    69    20  497   728   269  163   155     8  223     4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.86  0.86  0.95 0.91  0.85  0.92 0.88  0.88  0.95 0.95  0.95
Lanes:       2.00 2.00  1.00  1.00 3.00  1.00  2.00 1.03  0.97  1.00 1.96  0.04
Final Sat.:  3502 3257  1629  1805 5187  1615  3502 1715  1631  1805 3536    63
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.03  0.04  0.01 0.10  0.45  0.08 0.10  0.10  0.00 0.06  0.06
Crit Moves:  ****                        ****  ****                   ****
Green/Cycle: 0.18 0.59  0.59  0.15 0.56  0.68  0.12 0.20  0.20  0.01 0.09  0.09
Volume/Cap:  0.67 0.06  0.07  0.07 0.17  0.67  0.67 0.47  0.47  0.47 0.67  0.67
Delay/Veh:   41.1  8.9   8.9  36.4 10.6  11.0  46.5 35.8  35.8  68.7 48.6  48.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  41.1  8.9   8.9  36.4 10.6  11.0  46.5 35.8  35.8  68.7 48.6  48.6
LOS by Move:    D    A     A     D    B     B     D    D     D     E    D     D
HCM2k85thQ:    11    1     2     1    4    21     8    8     8     1    8     8
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:24                Page 99-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #97 Red Hill Ave and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.619
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Ovl            Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     122  449   128   203  861   403   397 1276   271   250 1213   170
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  122  449   128   203  861   403   397 1276   271   250 1213   170
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   122  449   128   203  861   403   397 1276   271   250 1213   170
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  122  449   128   203  861   403   397 1276   271   250 1213   170
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  122  449   128   203  861   403   397 1276   271   250 1213   170
OvlAdjVol:                                 205              210
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.09  0.08  0.06 0.17  0.25  0.12 0.25  0.17  0.08 0.24  0.11
OvlAdjV/S:                                 0.13             0.13
Crit Moves:  ****                  ****        ****                  ****
******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:25                Page 100-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #98 Red Hill Ave and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.580
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        28               Level Of Service:                    A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  1  0    2  0  2  1  0    1  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     118  716    97    20  949   191   239  407   300   152  543    96
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  118  716    97    20  949   191   239  407   300   152  543    96
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   118  716    97    20  949   191   239  407   300   152  543    96
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  118  716    97    20  949   191   239  407   300   152  543    96
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  118  716    97    20  949   191   239  407   300   152  543    96
OvlAdjVol:                                                                  86
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.52  0.48  2.00 2.50  0.50  1.00 2.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5936   764  3200 4196   804  1600 3400  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.12  0.13  0.01 0.23  0.24  0.15 0.12  0.19  0.05 0.11  0.06
OvlAdjV/S:                                                                  0.05
Crit Moves:  ****                      ****  ****                 ****
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:26                Page 101-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #99 Red Hill Ave and Dyer Rd / barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.577
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        27               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  4  0  1    2  0  4  0  1    2  0  3  1  0    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     184  458   151   184  809   106   126  758   300   522  583   114
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  184  458   151   184  809   106   126  758   300   522  583   114
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   184  458   151   184  809   106   126  758   300   522  583   114
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  184  458   151   184  809   106   126  758   300   522  583   114
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  184  458   151   184  809   106   126  758   300   522  583   114
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 4.00  1.00  2.00 4.00  1.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 6800  1600  3200 6800  1600  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.07  0.09  0.06 0.12  0.07  0.04 0.15  0.19  0.16 0.09  0.07
Crit Moves:  ****                 ****                 ****  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #100 Red Hill Ave and Alton Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.930
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       109               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     235  693   434   233 1059   170   185  574   574   335  284   159
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  235  693   434   233 1059   170   185  574   574   335  284   159
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   235  693   434   233 1059   170   185  574   574   335  284   159
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  235  693   434   233 1059   170   185  574   574   335  284   159
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  235  693   434   233 1059   170   185  574   574   335  284   159
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 3400  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.14  0.27  0.15 0.21  0.11  0.12 0.17  0.36  0.10 0.17  0.10
Crit Moves:             ****  ****                     ****  ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #101 Red Hill Ave and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.709
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        38               Level Of Service:                    C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ignore           Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       83  742    13   205  529   485  1194  617   101    34  329   843
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    83  742    13   205  529   485  1194  617   101    34  329   843
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Volume:     83  742    13   205  529     0  1194  617   101    34  329     0
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    83  742    13   205  529     0  1194  617   101    34  329     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:    83  742    13   205  529     0  1194  617   101    34  329     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.95  0.05  2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 4917    83  3200 5100  1600  3200 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.15  0.16  0.06 0.10  0.00  0.37 0.12  0.06  0.02 0.06  0.00
Crit Moves:             ****  ****           ****                 ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #102 Red Hill Ave and Main St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.733
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        41               Level Of Service:                    C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     201  691   449    78  365   126   139 1309   254   167  335    79
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  201  691   449    78  365   126   139 1309   254   167  335    79
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   201  691   449    78  365   126   139 1309   254   167  335    79
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  201  691   449    78  365   126   139 1309   254   167  335    79
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  201  691   449    78  365   126   139 1309   254   167  335    79
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.51  0.49  2.00 2.43  0.57
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 4220   780  3200 4084   916
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.20  0.28  0.02 0.11  0.08  0.04 0.31  0.33  0.05 0.08  0.09
Crit Moves:             ****  ****                          ****  ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #103 I-5 SB Ramps and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.480
Loss Time (sec):       5               Average Delay (sec/veh):        17.8
Optimal Cycle:        24               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   382    0    38   287  492     0     0 1027   300
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   382    0    38   287  492     0     0 1027   300
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   382    0    38   287  492     0     0 1027   300
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   382    0    38   287  492     0     0 1027   300
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   382    0    38   287  492     0     0 1027   300
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.85  0.92 0.91  1.00  1.00 0.88  0.88
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 2.32  0.68
Final Sat.:     0    0     0  3502    0  1615  3502 5187     0     0 3878  1133
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.11 0.00  0.02  0.08 0.09  0.00  0.00 0.26  0.26
Crit Moves:                   ****             ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.23 0.00  0.40  0.17 0.72  0.00  0.00 0.55  0.55
Volume/Cap:  0.00 0.00  0.00  0.48 0.00  0.06  0.48 0.13  0.00  0.00 0.48  0.48
Delay/Veh:    0.0  0.0   0.0  34.0  0.0  18.6  38.1  4.3   0.0   0.0 13.8  13.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

```
AdjDel/Veh:   0.0  0.0   0.0  34.0  0.0  18.6  38.1  4.3   0.0   0.0 13.8  13.8
LOS by Move:    A    A     A     C    A     B     D    A     A     A    B     B
HCM2k85thQ:     0    0     0     9    0     1     7    3     0     0   14    14
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:30                Page 106-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #104 Tustin Ranch Rd and Warner Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):          0.530
Loss Time (sec):       5                Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        25                Level Of Service:                    A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   174    0    22    27  357     0     0 2130   490
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   174    0    22    27  357     0     0 2130   490
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   174    0    22    27  357     0     0 2130   490
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   174    0    22    27  357     0     0 2130   490
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   174    0    22    27  357     0     0 2130   490
OvlAdjVol:                                                                 403
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3200    0  1600  3200 5100     0     0 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.05 0.00  0.01  0.01 0.07  0.00  0.00 0.42  0.31
OvlAdjV/S:                                                                 0.25
Crit Moves:                    ****             ****                 ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:30                Page 107-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #105 Von Karman Ave and Barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.930
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:       108               Level Of Service:                    E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  1  0    2  0  2  0  2    2  0  3  0  1    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     375  497   298    98  960   420   247  928   310   917 1506    47
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  375  497   298    98  960   420   247  928   310   917 1506    47
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   375  497   298    98  960   420   247  928   310   917 1506    47
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  375  497   298    98  960   420   247  928   310   917 1506    47
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  375  497   298    98  960   420   247  928   310   917 1506    47
OvlAdjVol:                              173
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 1.25  0.75  2.00 2.00  2.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 2101  1199  3200 3400  3200  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.24  0.25  0.03 0.28  0.13  0.08 0.18  0.19  0.29 0.22  0.03
OvlAdjV/S:                              0.05
Crit Moves:  ****                 ****                    ****  ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:31                Page 108-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #106 Red Hill Avenue and El Camino Real
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.640
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        32               Level Of Service:                    B
*******************************************************************************
Street Name:         Red Hill Avenue                   El Camino Real
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    1  0  2  1  0    1  0  1  0  1    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     222  569   183    20 1440    88    53  120   126   197  161    12
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  222  569   183    20 1440    88    53  120   126   197  161    12
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   222  569   183    20 1440    88    53  120   126   197  161    12
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  222  569   183    20 1440    88    53  120   126   197  161    12
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  222  569   183    20 1440    88    53  120   126   197  161    12
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       2.00 3.00  1.00  1.00 2.83  0.17  1.00 1.00  1.00  1.00 0.93  0.07
Final Sat.:  3200 5100  1600  1600 4724   276  1600 1700  1600  1600 1489   111
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.11  0.11  0.01 0.30  0.32  0.03 0.07  0.08  0.12 0.11  0.11
Crit Moves:  ****                     ****                ****  ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:31                Page 109-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #107 Red Hill Avenue and I-5 NB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.631
Loss Time (sec):       5               Average Delay (sec/veh):        20.1
Optimal Cycle:        32               Level Of Service:                 C
*******************************************************************************
Street Name:         Red Hill Avenue                    I-5 NB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  3  0  1    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     266  883     0     0 1217   458     0    0     0   238    0   272
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  266  883     0     0 1217   458     0    0     0   238    0   272
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   266  883     0     0 1217   458     0    0     0   238    0   272
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  266  883     0     0 1217   458     0    0     0   238    0   272
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  266  883     0     0 1217   458     0    0     0   238    0   272
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.85  1.00 1.00  1.00  0.60 1.00  0.85
Lanes:       1.00 3.00  0.00  0.00 3.00  1.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:  1805 5187     0     0 5187  1615     0    0     0  2271    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.17  0.00  0.00 0.23  0.28  0.00 0.00  0.00  0.10 0.00  0.17
Crit Moves:  ****                     ****                                 ****
Green/Cycle: 0.23 0.68  0.00  0.00 0.45  0.45  0.00 0.00  0.00  0.27 0.00  0.27
Volume/Cap:  0.63 0.25  0.00  0.00 0.52  0.63  0.00 0.00  0.00  0.39 0.00  0.63
Delay/Veh:   37.5  6.1   0.0   0.0 20.0  23.0   0.0  0.0   0.0  30.4  0.0  35.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

AdjDel/Veh:	37.5	6.1	0.0	0.0	20.0	23.0	0.0	0.0	0.0	30.4	0.0	35.3
LOS by Move:	D	A	A	A	C	C	A	A	A	C	A	D
HCM2k85thQ:	13	6	0	0	15	17	0	0	0	5	0	13

****

Note: Queue reported is the number of cars per lane.

****

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:32              Page 110-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #108 Red Hill Avenue and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.824
Loss Time (sec):       5               Average Delay (sec/veh):        24.7
Optimal Cycle:        60               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 SB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    1  0  3  0  0    0  1  0  0  1    0  0  0  0  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       0 1191   527   392 1125     0   210    5   386     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1191   527   392 1125     0   210    5   386     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1191   527   392 1125     0   210    5   386     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1191   527   392 1125     0   210    5   386     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1191   527   392 1125     0   210    5   386     0    0     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  0.95 0.91  1.00  0.95 0.95  0.85  1.00 1.00  1.00
Lanes:       0.00 4.00  1.00  1.00 3.00  0.00  0.98 0.02  1.00  0.00 0.00  0.00
Final Sat.:     0 6916  1615  1805 5187     0  1759   42  1615     0    0     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.17  0.33  0.22 0.22  0.00  0.12 0.12  0.24  0.00 0.00  0.00
Crit Moves:             ****  ****                     ****
Green/Cycle: 0.00 0.40  0.40  0.26 0.66  0.00  0.29 0.29  0.29  0.00 0.00  0.00
Volume/Cap:  0.00 0.43  0.82  0.82 0.33  0.00  0.41 0.41  0.82  0.00 0.00  0.00
Delay/Veh:    0.0 22.1  35.6  45.8  7.4   0.0  29.1 29.1  44.4   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 22.1  35.6  45.8  7.4   0.0  29.1 29.1  44.4   0.0  0.0   0.0
LOS by Move:    A    C     D     D    A     A     C    C     D     A    A     A
HCM2k85thQ:     0   11    25    20    8     0     9    9    20     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:33              Page 111-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #109 Red Hill Avenue and Nisson Road
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.655
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        33               Level Of Service:                  B
*******************************************************************************
Street Name:         Red Hill Avenue                    Nisson Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      16 1244    23   169 1274   134   242   59    48    49   26   215
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   16 1244    23   169 1274   134   242   59    48    49   26   215
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    16 1244    23   169 1274   134   242   59    48    49   26   215
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   16 1244    23   169 1274   134   242   59    48    49   26   215
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   16 1244    23   169 1274   134   242   59    48    49   26   215
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.93  0.07  1.00 2.71  0.29  1.00 0.55  0.45  1.00 0.11  0.89
Final Sat.:  1600 6584   116  1600 4543   457  1600  882   718  1600  173  1427
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.19  0.20  0.11 0.28  0.29  0.15 0.07  0.07  0.03 0.15  0.15
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:33                Page 112-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #110 Red Hill Avenue and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.643
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        32               Level Of Service:                  B
*******************************************************************************
Street Name:         Red Hill Avenue                   Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135  525    99   117 1180   132    99  247   244   263  348   166
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  135  525    99   117 1180   132    99  247   244   263  348   166
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   135  525    99   117 1180   132    99  247   244   263  348   166
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  135  525    99   117 1180   132    99  247   244   263  348   166
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  135  525    99   117 1180   132    99  247   244   263  348   166
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       1.00 2.52  0.48  1.00 2.70  0.30  1.00 1.01  0.99  2.00 1.35  0.65
Final Sat.:  1600 4238   762  1600 4517   483  1600 1710  1590  3200 2267  1033
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.12  0.13  0.07 0.26  0.27  0.06 0.14  0.15  0.08 0.15  0.16
Crit Moves:  ****                 ****            ****  ****
*******************************************************************************
```

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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:34                Page 113-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #111 Red Hill Avenue and Valencia Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.677
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
*******************************************************************************
Street Name:         Red Hill Avenue                  Valencia Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  1  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     128  542   175   132 1132    76    48  335   130   315  433   153
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  128  542   175   132 1132    76    48  335   130   315  433   153
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   128  542   175   132 1132    76    48  335   130   315  433   153
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  128  542   175   132 1132    76    48  335   130   315  433   153
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  128  542   175   132 1132    76    48  335   130   315  433   153
OvlAdjVol:                21                                                21
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.02  0.98  1.00 2.81  0.19  1.00 1.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5138  1562  1600 4698   302  1600 1700  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.11  0.11  0.08 0.24  0.25  0.03 0.20  0.08  0.10 0.25  0.10
OvlAdjV/S:                0.01                                              0.01
Crit Moves:  ****                      ****        ****        ****
*******************************************************************************
```

```
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:34              Page 114-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #112 Tustin Ranch Road and Warner Avenue North
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.459
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22               Level Of Service:                  A
*******************************************************************************
Street Name:        Tustin Ranch Road               Warner Avenue North
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    2  0  3  0  0    0  0  0  0  0    3  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  396   383   412 1165     0     0    0     0   865    0   255
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  396   383   412 1165     0     0    0     0   865    0   255
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  396   383   412 1165     0     0    0     0   865    0   255
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  396   383   412 1165     0     0    0     0   865    0   255
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  396   383   412 1165     0     0    0     0   865    0   255
OvlAdjVol:               95                                                  0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 3.00  1.00  2.00 3.00  0.00  0.00 0.00  0.00  3.00 0.00  2.00
Final Sat.:     0 5100  1600  3200 5100     0     0    0     0  4800    0  3200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.08  0.24  0.13 0.23  0.00  0.00 0.00  0.00  0.18 0.00  0.08
OvlAdjV/S:              0.06                                                0.00
Crit Moves:  ****               ****                          ****
*******************************************************************************
```

```
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:35              Page 115-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #113 Tustin Ranch Road and Walnut Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.313
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Street Name:        Tustin Ranch Road                 Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  1  1  0    2  0  2  0  1
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     103  630   314  1123 3139   418   856 1118   675   176  260   219
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103  630   314  1123 3139   418   856 1118   675   176  260   219
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   103  630   314  1123 3139   418   856 1118   675   176  260   219
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103  630   314  1123 3139   418   856 1118   675   176  260   219
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103  630   314  1123 3139   418   856 1118   675   176  260   219
OvlAdjVol:               226               0                                 0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 1.25  0.75  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 2095  1205  3200 3400  1600
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.12  0.20  0.35 0.62  0.26  0.27 0.53  0.56  0.06 0.08  0.14
OvlAdjV/S:               0.14              0.00                                0.00
Crit Moves:  ****                 ****                    ****  ****
******************************************************************************
```

```
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:36              Page 116-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #114 SR-55 SB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.176
Loss Time (sec):       5               Average Delay (sec/veh):        55.4
Optimal Cycle:       180               Level Of Service:                  E
******************************************************************************
Street Name:          SR-55 SB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  1! 0  1    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    64    0    70     0  719  1290   480 1201     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    64    0    70     0  719  1290   480 1201     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0    64    0    70     0  719  1290   480 1201     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    64    0    70     0  719  1290   480 1201     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    64    0    70     0  719  1290   480 1201     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.88 1.00  0.79  1.00 0.82  0.82  0.95 0.91  1.00
Lanes:       0.00 0.00  0.00  1.45 0.00  1.55  0.00 2.00  1.00  1.00 3.00  0.00
Final Sat.:     0    0     0  2426    0  2321     0 3126  1563  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.03 0.00  0.03  0.00 0.23  0.83  0.27 0.23  0.00
Crit Moves:                   ****                          ****  ****
Green/Cycle: 0.00 0.00  0.00  0.02 0.00  0.04  0.00 0.70  0.70  0.23 0.93  0.00
Volume/Cap:  0.00 0.00  0.00  0.89 0.00  0.69  0.00 0.33  1.18  1.18 0.25  0.00
Delay/Veh:    0.0  0.0   0.0  91.2  0.0  56.8   0.0  5.8 100.6 140.8  0.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  91.2  0.0  56.8   0.0  5.8 100.6 140.8  0.4   0.0
LOS by Move:    A    A     A     F    A     E     A    A     F     F    A     A
```

```
HCM2k85thQ:     0    0     0     5    0     4     0    7    95    38    2     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
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2045 WP AM Peak Hour       Thu Oct 22, 2020 14:29:36              Page 117-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #115 SR-55 NB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.824
Loss Time (sec):       5               Average Delay (sec/veh):        20.3
Optimal Cycle:        60               Level Of Service:                  C
******************************************************************************
Street Name:          SR-55 NB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:         Permitted       Protected        Protected        Protected
Rights:           Include         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    1  0  3  0  0    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     395    0   379     0    0     0   204  485     0     0 1133   788
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  395    0   379     0    0     0   204  485     0     0 1133   788
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   395    0   379     0    0     0   204  485     0     0 1133   788
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  395    0   379     0    0     0   204  485     0     0 1133   788
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  395    0   379     0    0     0   204  485     0     0 1133   788
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.75 1.00  0.74  1.00 1.00  1.00  0.95 0.91  1.00  1.00 0.85  0.85
Lanes:       1.51 0.00  1.49  0.00 0.00  0.00  1.00 3.00  0.00  0.00 2.00  1.00
Final Sat.:  2138    0  2097     0    0     0  1805 5187     0     0 3247  1624
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.00  0.18  0.00 0.00  0.00  0.11 0.09  0.00  0.00 0.35  0.49
Crit Moves:  ****                             ****                       ****
Green/Cycle: 0.22 0.00  0.45  0.00 0.00  0.00  0.14 0.73  0.00  0.00 0.59  0.59
Volume/Cap:  0.83 0.00  0.40  0.00 0.00  0.00  0.82 0.13  0.00  0.00 0.59  0.82
Delay/Veh:   43.0  0.0  18.8   0.0  0.0   0.0  61.5  4.2   0.0   0.0 13.3  18.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  43.0  0.0  18.8   0.0  0.0   0.0  61.5  4.2   0.0   0.0 13.3  18.9
LOS by Move:    D    A     B     A    A     A     E    A     A     A    B     B
HCM2k85thQ:    15    0     8     0    0     0    13    3     0     0   18    33
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

APPENDIX D.6

ANALYSIS WORKSHEETS –
2045 WP (PM Peak Hour)

Santa Ana Circulation Element

Scenario Report

Scenario:	2045 WP PM Peak Hour
Command:	Default Command
Volume:	2045 PM
Geometry:	SACE
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Path
Routes:	Default Route
Configuration:	Default Configuration

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2045 WP PM Peak Hour Thu Oct 22, 2020 14:44:05 Page 2-1

Santa Ana Circulation Element

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in V/C
# 1 Euclid St and 1st St	C	xxxxx	0.787	C	xxxxx	0.787	+ 0.000 V/C
# 2 Euclid St and McFadden Ave	C	xxxxx	0.793	C	xxxxx	0.793	+ 0.000 V/C
# 3 Euclid St and Edinger Ave	D	xxxxx	0.860	D	xxxxx	0.860	+ 0.000 V/C
# 4 Newhope St and Hazard Ave	A	xxxxx	0.516	A	xxxxx	0.516	+ 0.000 V/C
# 5 Newhope St and McFadden Ave	B	xxxxx	0.684	B	xxxxx	0.684	+ 0.000 V/C
# 6 Harbor Blvd and SR-22 WB Off-R	C	23.8	0.769	C	23.8	0.769	+ 0.000 D/V
# 7 Trask Avenue and SR-22 EB On-R	B	11.0	0.381	B	11.0	0.381	+ 0.000 D/V
# 8 Harbor Blvd and Westminster Av	D	xxxxx	0.842	D	xxxxx	0.842	+ 0.000 V/C
# 9 Harbor Blvd and 1st St	C	xxxxx	0.753	C	xxxxx	0.753	+ 0.000 V/C
# 10 Harbor Blvd and McFadden Ave	C	xxxxx	0.711	C	xxxxx	0.711	+ 0.000 V/C
# 11 Harbor Blvd and Edinger Ave	C	xxxxx	0.722	C	xxxxx	0.722	+ 0.000 V/C
# 12 Harbor Blvd and Warner Ave	F	xxxxx	1.539	F	xxxxx	1.539	+ 0.000 V/C
# 13 Harbor Blvd and Segerstrom Ave	E	xxxxx	0.934	E	xxxxx	0.934	+ 0.000 V/C
# 14 MacArthur Blvd and Hyland Ave	D	xxxxx	0.891	D	xxxxx	0.891	+ 0.000 V/C
# 15 MacArthur Blvd and Harbor Blvd	C	xxxxx	0.788	C	xxxxx	0.788	+ 0.000 V/C
# 16 Harbor Blvd and Sunflower Ave	C	xxxxx	0.711	C	xxxxx	0.711	+ 0.000 V/C
# 17 Harbor Blvd and I-405 NB Off-R	B	18.8	0.710	B	18.8	0.710	+ 0.000 D/V
# 18 Harbor Blvd and I-405 SB Off-R	B	18.1	0.673	B	18.1	0.673	+ 0.000 D/V
# 19 Fairview St and Civic Center D	C	xxxxx	0.707	C	xxxxx	0.707	+ 0.000 V/C
# 20 Fairview St and 1st St	D	xxxxx	0.894	D	xxxxx	0.894	+ 0.000 V/C
# 21 Fairview St and McFadden Ave	B	xxxxx	0.684	B	xxxxx	0.684	+ 0.000 V/C
# 22 Fairview St and Edinger Ave	E	xxxxx	0.920	E	xxxxx	0.920	+ 0.000 V/C
# 23 Fairview St and Warner Ave	D	xxxxx	0.805	D	xxxxx	0.805	+ 0.000 V/C
# 24 Fairview St and MacArthur Blvd	C	xxxxx	0.761	C	xxxxx	0.761	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 25 Fairview Rd and Sunflower Ave	B	xxxxx	0.691	B	xxxxx	0.691	+ 0.000 V/C
# 26 Greenville St and Edinger Ave	B	xxxxx	0.647	B	xxxxx	0.647	+ 0.000 V/C
# 27 Greenville St and Segerstrom A	C	xxxxx	0.797	C	xxxxx	0.797	+ 0.000 V/C
# 28 Raitt St and McFadden Ave	B	xxxxx	0.676	B	xxxxx	0.676	+ 0.000 V/C
# 29 Raitt St and Edinger Ave	E	xxxxx	0.988	E	xxxxx	0.988	+ 0.000 V/C
# 30 Bear St and MacArthur Blvd	E	xxxxx	0.904	E	xxxxx	0.904	+ 0.000 V/C
# 31 Bristol St and 17th St	D	xxxxx	0.811	D	xxxxx	0.811	+ 0.000 V/C
# 32 Bristol St and Civic Center Dr	D	xxxxx	0.898	D	xxxxx	0.898	+ 0.000 V/C
# 33 Bristol St and Santa Ana Blvd	C	xxxxx	0.732	C	xxxxx	0.732	+ 0.000 V/C
# 34 Bristol St and 1st St	E	xxxxx	0.972	E	xxxxx	0.972	+ 0.000 V/C
# 35 Bristol St and McFadden Ave	D	xxxxx	0.890	D	xxxxx	0.890	+ 0.000 V/C
# 36 Bristol St and Warner Ave	D	xxxxx	0.871	D	xxxxx	0.871	+ 0.000 V/C
# 37 Bristol St and Segerstrom Ave	E	xxxxx	0.915	E	xxxxx	0.915	+ 0.000 V/C
# 38 Bristol St and Alton Ave	A	xxxxx	0.583	A	xxxxx	0.583	+ 0.000 V/C
# 39 Bristol St and MacArthur Blvd	C	xxxxx	0.796	C	xxxxx	0.796	+ 0.000 V/C
# 40 Bristol St and Sunflower Ave	C	xxxxx	0.744	C	xxxxx	0.744	+ 0.000 V/C
# 41 Bristol St and I-405 NB Ramps	C	29.0	0.854	C	29.0	0.854	+ 0.000 D/V
# 42 Bristol St and I-405 SB Ramps	B	18.2	0.631	B	18.2	0.631	+ 0.000 D/V
# 43 Flower St and Santa Ana Blvd	B	xxxxx	0.668	B	xxxxx	0.668	+ 0.000 V/C
# 44 Flower St and 1st St	F	xxxxx	1.215	F	xxxxx	1.215	+ 0.000 V/C
# 45 Flower St and McFadden Ave	E	xxxxx	0.968	E	xxxxx	0.968	+ 0.000 V/C
# 46 Flower St and Segerstrom Ave	E	xxxxx	0.916	E	xxxxx	0.916	+ 0.000 V/C
# 47 Flower St and MacArthur Blvd	E	xxxxx	0.908	E	xxxxx	0.908	+ 0.000 V/C
# 48 Main St and La Veta Ave	C	xxxxx	0.764	C	xxxxx	0.764	+ 0.000 V/C
# 49 Main St and Mainplace Dr / Mem	A	xxxxx	0.504	A	xxxxx	0.504	+ 0.000 V/C
# 50 Main St and 17th St	C	xxxxx	0.799	C	xxxxx	0.799	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 51 Main St and Civic Center Dr	D	xxxxx	0.856	D	xxxxx	0.856	+ 0.000 V/C
# 52 Main St and Santa Ana Blvd	C	xxxxx	0.700	C	xxxxx	0.700	+ 0.000 V/C
# 53 Main St and 4th St	A	xxxxx	0.472	A	xxxxx	0.472	+ 0.000 V/C
# 54 Main St and 1st St	D	xxxxx	0.803	D	xxxxx	0.803	+ 0.000 V/C
# 55 Main St and McFadden Ave	E	xxxxx	0.935	E	xxxxx	0.935	+ 0.000 V/C
# 56 Main St and Edinger Ave	E	xxxxx	0.977	E	xxxxx	0.977	+ 0.000 V/C
# 57 Main St and MacArthur Blvd	C	xxxxx	0.781	C	xxxxx	0.781	+ 0.000 V/C
# 58 Penn Wy and 17th St	C	20.3	0.790	C	20.3	0.790	+ 0.000 D/V
# 59 I-5 NB Off Ramps/17th Street	C	20.3	0.630	C	20.3	0.630	+ 0.000 D/V
# 60 Penn Wy and I-5 SB Ramps	C	22.8	0.433	C	22.8	0.433	+ 0.000 D/V
# 61 Santiago St and Civic Center D	D	27.6	0.896	D	27.6	0.896	+ 0.000 V/C
# 62 Santiago St and Santa Ana Blvd	F	xxxxx	1.411	F	xxxxx	1.411	+ 0.000 V/C
# 63 Standard Ave and 4th St	F	xxxxx	1.341	F	xxxxx	1.341	+ 0.000 V/C
# 64 Standard Ave and 1st St	F	xxxxx	1.484	F	xxxxx	1.484	+ 0.000 V/C
# 65 Standard Ave and Mcfadden Ave	C	xxxxx	0.769	C	xxxxx	0.769	+ 0.000 V/C
# 66 Halladay St and Warner Ave	D	xxxxx	0.824	D	xxxxx	0.824	+ 0.000 V/C
# 67 Halladay St and Dyer Rd	E	xxxxx	0.945	E	xxxxx	0.945	+ 0.000 V/C
# 68 SR-55 SB Ramps and MacArthur B	B	18.4	0.602	B	18.4	0.602	+ 0.000 D/V
# 69 SR-55 NB Ramps and MacArthur B	B	16.2	0.511	B	16.2	0.511	+ 0.000 D/V
# 70 SR-55 SB Ramps and Dyer Rd	C	26.5	0.679	C	26.5	0.679	+ 0.000 D/V
# 71 Glassell St and La Veta Ave	C	xxxxx	0.766	C	xxxxx	0.766	+ 0.000 V/C
# 72 Glassell St and SR-22 WB Ramps	C	33.4	0.943	C	33.4	0.943	+ 0.000 D/V
# 73 Grand Ave / Glassell St and SR	C	31.8	0.927	C	31.8	0.927	+ 0.000 D/V
# 74 Grand Ave and Fairhaven Ave	B	xxxxx	0.665	B	xxxxx	0.665	+ 0.000 V/C
# 75 Grand Ave and Santa Clara Ave	C	xxxxx	0.731	C	xxxxx	0.731	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Del/ Veh	V/ C	Future LOS	Del/ Veh	V/ C	Change in
# 76 Grand Ave and 17th St	D	xxxxx	0.854	D	xxxxx	0.854	+ 0.000 V/C
# 77 Grand Ave and I-5 NB Ramps	B	11.3	0.764	B	11.3	0.764	+ 0.000 D/V
# 78 Grand Ave and Santa Ana Blvd	C	28.5	0.827	C	28.5	0.827	+ 0.000 D/V
# 79 Grand Ave and 1st St	C	xxxxx	0.718	C	xxxxx	0.718	+ 0.000 V/C
# 80 Grand Ave and Chestnut Ave	C	xxxxx	0.783	C	xxxxx	0.783	+ 0.000 V/C
# 81 Grand Ave and McFadden Ave	D	xxxxx	0.813	D	xxxxx	0.813	+ 0.000 V/C
# 82 Grand Ave and Edinger Ave	F	xxxxx	1.079	F	xxxxx	1.079	+ 0.000 V/C
# 83 Grand Ave and Warner Ave	D	xxxxx	0.899	D	xxxxx	0.899	+ 0.000 V/C
# 84 SR-55 NB Ramps and Dyer Rd	A	6.0	0.349	A	6.0	0.349	+ 0.000 D/V
# 85 Cambridge St and La Veta Ave	D	26.1	0.938	D	26.1	0.938	+ 0.000 V/C
# 86 Cambridge St and Fairhaven Ave	A	xxxxx	0.531	A	xxxxx	0.531	+ 0.000 V/C
# 87 Mabury St and 1st Street	C	27.2	0.752	C	27.2	0.752	+ 0.000 D/V
# 88 Tustin St and La Veta Ave	A	xxxxx	0.344	A	xxxxx	0.344	+ 0.000 V/C
# 89 Tustin St and SR-22 WB On-Ramp	A	7.7	0.321	A	7.7	0.321	+ 0.000 D/V
# 90 Tustin St and SR-22 EB Off-Ram	C	23.3	0.625	C	23.3	0.625	+ 0.000 D/V
# 91 Tustin Ave and Fairhaven Ave	C	xxxxx	0.757	C	xxxxx	0.757	+ 0.000 V/C
# 92 Tustin Ave and Santa Clara Ave	C	xxxxx	0.779	C	xxxxx	0.779	+ 0.000 V/C
# 93 Tustin Ave and 17th St	C	xxxxx	0.741	C	xxxxx	0.741	+ 0.000 V/C
# 94 Tustin Ave and 4th St	C	xxxxx	0.784	C	xxxxx	0.784	+ 0.000 V/C
# 95 SR-55 SB Ramps / Auto Mall Dr	C	25.4	0.687	C	25.4	0.687	+ 0.000 D/V
# 96 SR-55 NB Ramps / Del Amo Ave a	D	46.2	0.951	D	46.2	0.951	+ 0.000 D/V
# 97 Red Hill Ave and Edinger Ave	D	xxxxx	0.865	D	xxxxx	0.865	+ 0.000 V/C
# 98 Red Hill Ave and Warner Ave	E	xxxxx	0.952	E	xxxxx	0.952	+ 0.000 V/C
# 99 Red Hill Ave and Dyer Rd / bar	A	xxxxx	0.591	A	xxxxx	0.591	+ 0.000 V/C
#100 Red Hill Ave and Alton Pkwy	F	xxxxx	1.494	F	xxxxx	1.494	+ 0.000 V/C
#101 Red Hill Ave and MacArthur Blv	C	xxxxx	0.722	C	xxxxx	0.722	+ 0.000 V/C

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Santa Ana Circulation Element

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
#102 Red Hill Ave and Main St	D	xxxxx	0.836	D	xxxxx	0.836	+ 0.000 V/C
#103 I-5 SB Ramps and Santa Ana Blv	B	19.9	0.444	B	19.9	0.444	+ 0.000 D/V
#104 Tustin Ranch Rd and Warner Ave	B	xxxxx	0.671	B	xxxxx	0.671	+ 0.000 V/C
#105 Von Karman Ave and Barranca Pk	F	xxxxx	1.284	F	xxxxx	1.284	+ 0.000 V/C
#106 Red Hill Avenue and El Camino	B	xxxxx	0.696	B	xxxxx	0.696	+ 0.000 V/C
#107 Red Hill Avenue and I-5 NB Ram	C	23.6	0.623	C	23.6	0.623	+ 0.000 D/V
#108 Red Hill Avenue and I-5 SB Ram	C	21.8	0.713	C	21.8	0.713	+ 0.000 D/V
#109 Red Hill Avenue and Nisson Roa	C	xxxxx	0.715	C	xxxxx	0.715	+ 0.000 V/C
#110 Red Hill Avenue and Walnut Ave	C	xxxxx	0.749	C	xxxxx	0.749	+ 0.000 V/C
#111 Red Hill Avenue and Valencia A	C	xxxxx	0.753	C	xxxxx	0.753	+ 0.000 V/C
#112 Tustin Ranch Road and Warner A	E	xxxxx	0.924	E	xxxxx	0.924	+ 0.000 V/C
#113 Tustin Ranch Road and Walnut A	F	xxxxx	1.772	F	xxxxx	1.772	+ 0.000 V/C
#114 SR-55 SB Ramps and Irvine Boul	C	26.5	0.929	C	26.5	0.929	+ 0.000 D/V
#115 SR-55 NB Ramps and Irvine Boul	C	22.3	0.841	C	22.3	0.841	+ 0.000 D/V

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #1 Euclid St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.787
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include        WideBypass       WideBypass
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     165 1532   123   137  781   148   201  641   100   168  702   168
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  165 1532   123   137  781   148   201  641   100   168  702   168
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   165 1532   123   137  781   148   201  641   100   168  702   168
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  165 1532   123   137  781   148   201  641   100   168  702   168
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  165 1532   123   137  781   148   201  641   100   168  702   168
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.78  0.22  1.00 2.52  0.48  1.00 2.60  0.40  1.00 2.42  0.58
Final Sat.:  1600 4643   357  1600 4235   765  1600 4352   648  1600 4073   927
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.33  0.34  0.09 0.18  0.19  0.13 0.15  0.15  0.11 0.17  0.18
Crit Moves:             ****  ****            ****                     ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #2 Euclid St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.793
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     248 2020   130    87 1070   130   134  307   136    86  359   166
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  248 2020   130    87 1070   130   134  307   136    86  359   166
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   248 2020   130    87 1070   130   134  307   136    86  359   166
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  248 2020   130    87 1070   130   134  307   136    86  359   166
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  248 2020   130    87 1070   130   134  307   136    86  359   166
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.82  0.18  1.00 2.68  0.32  1.00 1.39  0.61  1.00 1.37  0.63
Final Sat.:  1600 4710   290  1600 4480   520  1600 2318   982  1600 2288  1012
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.43  0.45  0.05 0.24  0.25  0.08 0.13  0.14  0.05 0.16  0.16
Crit Moves:             ****  ****            ****                   ****
******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #3 Euclid St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.860
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	69	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	2 1	0	1 0	2 0	1	1 0	2 0	1
Volume Module:												
Base Vol:	551	1648	117	136	897	228	121	467	140	119	1103	179
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	551	1648	117	136	897	228	121	467	140	119	1103	179
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	551	1648	117	136	897	228	121	467	140	119	1103	179
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	551	1648	117	136	897	228	121	467	140	119	1103	179
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	551	1648	117	136	897	228	121	467	140	119	1103	179
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	2.80	0.20	2.00	2.39	0.61	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3200	4682	318	3200	4027	973	1600	3400	1600	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.17	0.35	0.37	0.04	0.22	0.23	0.08	0.14	0.09	0.07	0.32	0.11
Crit Moves:			****	****			****				****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #4 Newhope St and Hazard Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.516
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        24               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     102 1129    44    45  954   114    33   66    40     8   51    15
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  102 1129    44    45  954   114    33   66    40     8   51    15
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   102 1129    44    45  954   114    33   66    40     8   51    15
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  102 1129    44    45  954   114    33   66    40     8   51    15
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  102 1129    44    45  954   114    33   66    40     8   51    15
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.92  0.08  1.00 1.79  0.21  1.00 0.62  0.38  1.00 0.77  0.23
Final Sat.:  1600 3180   120  1600 2958   342  1600  996   604  1600 1236   364
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.36  0.37  0.03 0.32  0.33  0.02 0.07  0.07  0.01 0.04  0.04
Crit Moves:             ****  ****                 ****        ****
******************************************************************************
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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #5 Newhope St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.684
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	36	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	188	1009	177	121	539	104	45	273	40	72	398	113
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	188	1009	177	121	539	104	45	273	40	72	398	113
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	188	1009	177	121	539	104	45	273	40	72	398	113
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	1009	177	121	539	104	45	273	40	72	398	113
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	1009	177	121	539	104	45	273	40	72	398	113
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00	1.00	1.04	1.00
Lanes:	1.00	1.70	0.30	1.00	1.68	0.32	1.00	1.74	0.26	1.00	1.56	0.44
Final Sat.:	1600	2822	478	1600	2782	518	1600	2891	409	1600	2592	708
Capacity Analysis Module:												
Vol/Sat:	0.12	0.36	0.37	0.08	0.19	0.20	0.03	0.09	0.10	0.05	0.15	0.16
Crit Moves:			****	****			****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #6 Harbor Blvd and SR-22 WB Off-Ramp / Banner Dr
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.769
Loss Time (sec):       5                Average Delay (sec/veh):        23.8
Optimal Cycle:        48                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  2  1  0    0  0  1! 0  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     103 2324     0     0 1823    59   102    0    86   558   75   160
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103 2324     0     0 1823    59   102    0    86   558   75   160
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   103 2324     0     0 1823    59   102    0    86   558   75   160
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103 2324     0     0 1823    59   102    0    86   558   75   160
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103 2324     0     0 1823    59   102    0    86   558   75   160
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.91 1.00  0.91  0.96 0.96  0.85
Lanes:       1.00 3.00  0.00  0.00 2.91  0.09  0.54 0.00  0.46  1.76 0.24  1.00
Final Sat.:  1805 5187     0     0 4999   162   942    0   794  3209  431  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.45  0.00  0.00 0.36  0.36  0.11 0.00  0.11  0.17 0.17  0.10
Crit Moves:       ****        ****             ****                   ****
Green/Cycle: 0.08 0.58  0.00  0.00 0.50  0.50  0.14 0.00  0.14  0.23 0.23  0.23
Volume/Cap:  0.72 0.77  0.00  0.00 0.72  0.72  0.77 0.00  0.77  0.77 0.77  0.44
Delay/Veh:   61.7 17.0   0.0   0.0 20.4  20.4  55.1  0.0  55.1  40.7 40.7  34.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  61.7 17.0   0.0   0.0 20.4  20.4  55.1  0.0  55.1  40.7 40.7  34.1
LOS by Move:    E    B     A     A    C     C     E    A     E     D    D     C
HCM2k85thQ:     7   30     0     0   26    26    11    0    11    17   17     7
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #7 Trask Avenue and SR-22 EB On-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.381
Loss Time (sec):       5               Average Delay (sec/veh):        11.0
Optimal Cycle:        20               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  0  0  0    2  0  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0     0    0     0   785  588     0     0  449    42
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0     0    0     0   785  588     0     0  449    42
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0     0    0     0   785  588     0     0  449    42
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0     0    0     0   785  588     0     0  449    42
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0     0    0     0   785  588     0     0  449    42
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  0.92 1.00  1.00  1.00 0.94  0.94
Lanes:       0.00 0.00  0.00  0.00 0.00  0.00  2.00 1.00  0.00  0.00 1.83  0.17
Final Sat.:     0    0     0     0    0     0  3502 1900     0     0 3258   305
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.00 0.00  0.00  0.22 0.31  0.00  0.00 0.14  0.14
Crit Moves:                                     ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.00 0.00  0.00  0.59 0.95  0.00  0.00 0.36  0.36
Volume/Cap:  0.00 0.00  0.00  0.00 0.00  0.00  0.38 0.33  0.00  0.00 0.38  0.38
Delay/Veh:    0.0  0.0   0.0   0.0  0.0   0.0  11.0  0.3   0.0   0.0 23.8  23.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0   0.0  0.0   0.0  11.0  0.3   0.0   0.0 23.8  23.8
LOS by Move:    A    A     A     A    A     A     B    A     A     A    C     C
HCM2k85thQ:     0    0     0     0    0     0    10    3     0     0    9     9
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #8 Harbor Blvd and Westminster Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.842
Loss Time (sec):       0               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       145               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  1  0    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     222 1106   262   254 1752   202   227  808    39   294 1018   231
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  222 1106   262   254 1752   202   227  808    39   294 1018   231
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   222 1106   262   254 1752   202   227  808    39   294 1018   231
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  222 1106   262   254 1752   202   227  808    39   294 1018   231
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  222 1106   262   254 1752   202   227  808    39   294 1018   231
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.86  0.14  1.00 3.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 4779   221  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.22  0.16  0.16 0.34  0.13  0.14 0.17  0.18  0.18 0.20  0.14
Crit Moves:  ****               ****                    ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #9 Harbor Blvd and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.753
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	44	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	3 0	1	1 0	3 0	1	2 0	2 1	0	2 0	2 1	0
Volume Module:												
Base Vol:	280	1446	160	240	1053	142	192	784	148	185	865	141
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	280	1446	160	240	1053	142	192	784	148	185	865	141
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	280	1446	160	240	1053	142	192	784	148	185	865	141
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	280	1446	160	240	1053	142	192	784	148	185	865	141
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	280	1446	160	240	1053	142	192	784	148	185	865	141
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	3.00	1.00	1.00	3.00	1.00	2.00	2.52	0.48	2.00	2.58	0.42
Final Sat.:	1600	5100	1600	1600	5100	1600	3200	4238	762	3200	4327	673
Capacity Analysis Module:												
Vol/Sat:	0.17	0.28	0.10	0.15	0.21	0.09	0.06	0.19	0.19	0.06	0.20	0.21
Crit Moves:		****			****			****				****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #10 Harbor Blvd and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.711
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	38	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	2 1	0	1 0	1 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	182	1866	136	261	1114	101	147	358	45	63	151	43
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	182	1866	136	261	1114	101	147	358	45	63	151	43
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	182	1866	136	261	1114	101	147	358	45	63	151	43
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	182	1866	136	261	1114	101	147	358	45	63	151	43
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	182	1866	136	261	1114	101	147	358	45	63	151	43
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Lanes:	2.00	3.00	1.00	2.00	2.75	0.25	1.00	1.78	0.22	1.00	0.78	0.22
Final Sat.:	3200	5100	1600	3200	4601	399	1600	2943	357	1600	1245	355
Capacity Analysis Module:												
Vol/Sat:	0.06	0.37	0.09	0.08	0.24	0.25	0.09	0.12	0.13	0.04	0.12	0.12
Crit Moves:		****			****			****			****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #11 Harbor Blvd and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.722
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     262 1645   199   283  822    75   109  460    81   188 1089   363
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  262 1645   199   283  822    75   109  460    81   188 1089   363
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   262 1645   199   283  822    75   109  460    81   188 1089   363
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  262 1645   199   283  822    75   109  460    81   188 1089   363
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  262 1645   199   283  822    75   109  460    81   188 1089   363
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.55  0.45  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4281   719  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.32  0.12  0.09 0.16  0.05  0.03 0.11  0.11  0.06 0.21  0.23
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #12 Harbor Blvd and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.539
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	3 0	1	2 0	3 0	1	2 0	3 0	1
Volume Module:												
Base Vol:	768	3685	277	250	1389	166	198	1399	320	253	2626	838
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	768	3685	277	250	1389	166	198	1399	320	253	2626	838
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	768	3685	277	250	1389	166	198	1399	320	253	2626	838
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	768	3685	277	250	1389	166	198	1399	320	253	2626	838
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	768	3685	277	250	1389	166	198	1399	320	253	2626	838
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	2.79	0.21	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	4664	336	3200	5100	1600	3200	5100	1600	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.24	0.79	0.83	0.08	0.27	0.10	0.06	0.27	0.20	0.08	0.51	0.52
Crit Moves:			****	****			****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #13 Harbor Blvd and Segerstrom Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.934
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	113	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	1 0	2	1 0	1 0	1	1 0	1 0	2	0 1
Volume Module:												
Base Vol:	275	1732	55	86	973	86	118	585	192	121	1308	475
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	275	1732	55	86	973	86	118	585	192	121	1308	475
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	275	1732	55	86	973	86	118	585	192	121	1308	475
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	275	1732	55	86	973	86	118	585	192	121	1308	475
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	275	1732	55	86	973	86	118	585	192	121	1308	475
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.04	1.00	1.00	1.06	1.00
Lanes:	2.00	2.91	0.09	1.00	2.76	0.24	1.00	1.51	0.49	1.00	2.00	1.00
Final Sat.:	3200	4852	148	1600	4610	390	1600	2509	791	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.09	0.36	0.37	0.05	0.21	0.22	0.07	0.23	0.24	0.08	0.38	0.30
Crit Moves:			****	****			****				****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #14 MacArthur Blvd and Hyland Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.891
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        82               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    1  0  1  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    1139    7    66    12    4    14    35  869   156    25 2320    12
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse: 1139    7    66    12    4    14    35  869   156    25 2320    12
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:  1139    7    66    12    4    14    35  869   156    25 2320    12
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol: 1139    7    66    12    4    14    35  869   156    25 2320    12
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume: 1139    7    66    12    4    14    35  869   156    25 2320    12
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 0.10  0.90  1.00 1.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200  153  1447  1600 1700  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.36 0.05  0.05  0.01 0.00  0.01  0.02 0.17  0.10  0.02 0.45  0.01
Crit Moves:  ****                      ****  ****                    ****
******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #15 MacArthur Blvd and Harbor Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.788
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     527 1362    79   206 1039   170   143  501   185    85 1429   269
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  527 1362    79   206 1039   170   143  501   185    85 1429   269
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   527 1362    79   206 1039   170   143  501   185    85 1429   269
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  527 1362    79   206 1039   170   143  501   185    85 1429   269
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  527 1362    79   206 1039   170   143  501   185    85 1429   269
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.27  0.05  0.06 0.20  0.11  0.09 0.10  0.12  0.05 0.28  0.17
Crit Moves:  ****               ****        ****                   ****
*******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #16 Harbor Blvd and Sunflower Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.711
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	38	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	1 1	0	1 1	0 1	0
Volume Module:												
Base Vol:	156	1552	230	118	1464	44	85	230	239	282	592	221
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	156	1552	230	118	1464	44	85	230	239	282	592	221
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	156	1552	230	118	1464	44	85	230	239	282	592	221
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	156	1552	230	118	1464	44	85	230	239	282	592	221
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	156	1552	230	118	1464	44	85	230	239	282	592	221
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.04	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	1.00	1.00	1.00	1.39	0.61
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	1700	1600	1600	2322	974
Capacity Analysis Module:												
Vol/Sat:	0.05	0.30	0.14	0.04	0.29	0.03	0.05	0.14	0.15	0.18	0.25	0.23
Crit Moves:	****			****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #17 Harbor Blvd and I-405 NB Off-Ramp

Cycle (sec):	100	Critical Vol./Cap.(X):	0.710
Loss Time (sec):	5	Average Delay (sec/veh):	18.8
Optimal Cycle:	40	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0 4	0	0	0 4	0	0	0 0	0	1	0 1!	0 1
Volume Module:												
Base Vol:	0	1488	0	0	2570	0	0	0	0	513	0	828
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1488	0	0	2570	0	0	0	0	513	0	828
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1488	0	0	2570	0	0	0	0	513	0	828
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1488	0	0	2570	0	0	0	0	513	0	828
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1488	0	0	2570	0	0	0	0	513	0	828
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	4.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	1.38	0.00	1.62
Final Sat.:	0	6916	0	0	6916	0	0	0	0	2337	0	2734
Capacity Analysis Module:												
Vol/Sat:	0.00	0.22	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.22	0.00	0.30
Crit Moves:	****				****							****
Green/Cycle:	0.00	0.52	0.00	0.00	0.52	0.00	0.00	0.00	0.00	0.43	0.00	0.43
Volume/Cap:	0.00	0.41	0.00	0.00	0.71	0.00	0.00	0.00	0.00	0.51	0.00	0.71
Delay/Veh:	0.0	14.5	0.0	0.0	18.7	0.0	0.0	0.0	0.0	21.2	0.0	24.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	14.5	0.0	0.0	18.7	0.0	0.0	0.0	0.0	21.2	0.0	24.9
LOS by Move:	A	B	A	A	B	A	A	A	A	C	A	C
HCM2k85thQ:	0	12	0	0	25	0	0	0	0	13	0	21

Note: Queue reported is the number of cars per lane.

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Santa Ana Circulation Element

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #18 Harbor Blvd and I-405 SB Off-Ramp

Cycle (sec):	100	Critical Vol./Cap.(X):	0.673
Loss Time (sec):	5	Average Delay (sec/veh):	18.1
Optimal Cycle:	36	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Ignore			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0 3	0 1	0	0 4	0 0	1	0 1!	0 1	0	0 0	0 0
Volume Module:												
Base Vol:	0	1881	0	0	2254	0	181	0	833	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1881	0	0	2254	0	181	0	833	0	0	0
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1881	0	0	2254	0	181	0	833	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1881	0	0	2254	0	181	0	833	0	0	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1881	0	0	2254	0	181	0	833	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.91	1.00	1.00	0.91	1.00	0.87	1.00	0.87	1.00	1.00	1.00
Lanes:	0.00	3.00	1.00	0.00	4.00	0.00	1.18	0.00	1.82	0.00	0.00	0.00
Final Sat.:	0	5187	1900	0	6916	0	1946	0	3008	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.36	0.00	0.00	0.33	0.00	0.09	0.00	0.28	0.00	0.00	0.00
Crit Moves:		****			****				****			
Green/Cycle:	0.00	0.54	0.00	0.00	0.54	0.00	0.41	0.00	0.41	0.00	0.00	0.00
Volume/Cap:	0.00	0.67	0.00	0.00	0.61	0.00	0.23	0.00	0.67	0.00	0.00	0.00
Delay/Veh:	0.0	17.4	0.0	0.0	16.1	0.0	19.1	0.0	25.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	17.4	0.0	0.0	16.1	0.0	19.1	0.0	25.2	0.0	0.0	0.0
LOS by Move:	A	B	A	A	B	A	B	A	C	A	A	A
HCM2k85thQ:	0	23	0	0	20	0	5	0	18	0	0	0

Note: Queue reported is the number of cars per lane.

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #19 Fairview St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.707
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        38               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    0  1  0  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       6 1777   499   205 1903     0     2    6     4   164    0    61
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    6 1777   499   205 1903     0     2    6     4   164    0    61
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     6 1777   499   205 1903     0     2    6     4   164    0    61
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    6 1777   499   205 1903     0     2    6     4   164    0    61
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    6 1777   499   205 1903     0     2    6     4   164    0    61
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.34  0.66  1.00 3.00  0.00  0.33 1.00  0.67  2.00 0.00  1.00
Final Sat.:  1600 3948  1052  1600 5000     0   533 1600  1067  3200    0  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.45  0.47  0.13 0.38  0.00  0.00 0.00  0.00  0.05 0.00  0.04
Crit Moves:             ****  ****             ****             ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #20 Fairview St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.894
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        83               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     182 1339   121   236 1468   291   215  870   151   126  952   147
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  182 1339   121   236 1468   291   215  870   151   126  952   147
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   182 1339   121   236 1468   291   215  870   151   126  952   147
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  182 1339   121   236 1468   291   215  870   151   126  952   147
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  182 1339   121   236 1468   291   215  870   151   126  952   147
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 3.00  1.00  1.00 2.50  0.50  1.00 2.56  0.44  1.00 2.60  0.40
Final Sat.:  1600 5100  1600  1600 4206   794  1600 4290   710  1600 4358   642
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.26  0.08  0.15 0.35  0.37  0.13 0.20  0.21  0.08 0.22  0.23
Crit Moves:  ****                ****  ****                     ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #21 Fairview St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.684
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     174 1596   139   195 1577   246    79  214    53    51  177    43
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  174 1596   139   195 1577   246    79  214    53    51  177    43
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   174 1596   139   195 1577   246    79  214    53    51  177    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  174 1596   139   195 1577   246    79  214    53    51  177    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  174 1596   139   195 1577   246    79  214    53    51  177    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 0.80  0.20  1.00 0.80  0.20
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 1282   318  1600 1287   313
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.31  0.09  0.12 0.31  0.15  0.05 0.17  0.17  0.03 0.14  0.14
Crit Moves:       ****        ****                   ****        ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #22 Fairview St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.920
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	100	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	2 1	0	2 0	2 1	0	2 0	2 1	0
Volume Module:												
Base Vol:	190	1810	111	198	616	151	205	628	168	639	1353	297
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	190	1810	111	198	616	151	205	628	168	639	1353	297
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	190	1810	111	198	616	151	205	628	168	639	1353	297
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	190	1810	111	198	616	151	205	628	168	639	1353	297
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	190	1810	111	198	616	151	205	628	168	639	1353	297
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	2.00	2.83	0.17	2.00	2.41	0.59	2.00	2.37	0.63	2.00	2.46	0.54
Final Sat.:	3200	4723	277	3200	4055	945	3200	3987	1013	3200	4136	864
Capacity Analysis Module:												
Vol/Sat:	0.06	0.38	0.40	0.06	0.15	0.16	0.06	0.16	0.17	0.20	0.33	0.34
Crit Moves:			****	****			****					****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #23 Fairview St and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.805
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	53	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	2 1	0	2 0	2 1	0	2 0	2 1	0
Volume Module:												
Base Vol:	211	1679	156	179	906	92	163	792	123	178	1049	227
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	211	1679	156	179	906	92	163	792	123	178	1049	227
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	211	1679	156	179	906	92	163	792	123	178	1049	227
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	211	1679	156	179	906	92	163	792	123	178	1049	227
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	211	1679	156	179	906	92	163	792	123	178	1049	227
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	2.00	2.74	0.26	2.00	2.72	0.28	2.00	2.60	0.40	2.00	2.47	0.53
Final Sat.:	3200	4592	408	3200	4558	442	3200	4355	645	3200	4146	854
Capacity Analysis Module:												
Vol/Sat:	0.07	0.37	0.38	0.06	0.20	0.21	0.05	0.18	0.19	0.06	0.25	0.27
Crit Moves:			****	****			****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #24 Fairview St and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.761
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        45               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     228 1568    85   162  902    83   253  661   223   159 1210   212
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  228 1568    85   162  902    83   253  661   223   159 1210   212
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   228 1568    85   162  902    83   253  661   223   159 1210   212
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  228 1568    85   162  902    83   253  661   223   159 1210   212
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  228 1568    85   162  902    83   253  661   223   159 1210   212
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.85  0.15  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 4753   247  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.33  0.34  0.05 0.18  0.05  0.08 0.13  0.14  0.05 0.24  0.13
Crit Moves:             ****  ****            ****                 ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #25 Fairview Rd and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.691
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     190 1705   371   138 1145    79   245  520   115   208  522   136
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  190 1705   371   138 1145    79   245  520   115   208  522   136
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   190 1705   371   138 1145    79   245  520   115   208  522   136
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  190 1705   371   138 1145    79   245  520   115   208  522   136
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  190 1705   371   138 1145    79   245  520   115   208  522   136
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.81  0.19  2.00 1.64  0.36  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4690   310  3200 2720   580  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.33  0.23  0.04 0.24  0.26  0.08 0.19  0.20  0.07 0.15  0.09
Crit Moves:       ****        ****                     ****  ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #26 Greenville St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.647
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        32               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     327    0   218     0    0     0     0 1178   240   155 1840     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  327    0   218     0    0     0     0 1178   240   155 1840     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   327    0   218     0    0     0     0 1178   240   155 1840     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  327    0   218     0    0     0     0 1178   240   155 1840     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  327    0   218     0    0     0     0 1178   240   155 1840     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 0.00  1.00  0.00 0.00  0.00  0.00 2.49  0.51  1.00 3.00  0.00
Final Sat.:  1600    0  1600     0    0     0     0 4188   812  1600 5100     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.20 0.00  0.14  0.00 0.00  0.00  0.00 0.28  0.30  0.10 0.36  0.00
Crit Moves:  ****                                          ****  ****
******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:04                Page 29-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #27 Greenville St and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.797
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        51               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      50  414    31    44  143    44   138 1049    60    39 1490   213
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   50  414    31    44  143    44   138 1049    60    39 1490   213
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    50  414    31    44  143    44   138 1049    60    39 1490   213
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   50  414    31    44  143    44   138 1049    60    39 1490   213
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   50  414    31    44  143    44   138 1049    60    39 1490   213
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 0.93  0.07  1.00 0.76  0.24  1.00 2.84  0.16  1.00 2.62  0.38
Final Sat.:  1600 1489   111  1600 1224   376  1600 4740   260  1600 4400   600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.28  0.28  0.03 0.12  0.12  0.09 0.22  0.23  0.02 0.34  0.35
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:05                Page 30-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #28 Raitt St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.676
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      34  482    75    24  252    40    59  347    30    38  318    44
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   34  482    75    24  252    40    59  347    30    38  318    44
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    34  482    75    24  252    40    59  347    30    38  318    44
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   34  482    75    24  252    40    59  347    30    38  318    44
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   34  482    75    24  252    40    59  347    30    38  318    44
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.87  0.13  1.00 0.86  0.14  1.00 0.92  0.08  1.00 0.88  0.12
Final Sat.:  1600 1385   215  1600 1381   219  1600 1473   127  1600 1406   194
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.35  0.35  0.02 0.18  0.18  0.04 0.24  0.24  0.02 0.23  0.23
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #29 Raitt St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.988
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	84	361	101	61	209	52	177	1226	175	195	2203	197
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	84	361	101	61	209	52	177	1226	175	195	2203	197
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	84	361	101	61	209	52	177	1226	175	195	2203	197
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	84	361	101	61	209	52	177	1226	175	195	2203	197
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	84	361	101	61	209	52	177	1226	175	195	2203	197
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	0.78	0.22	1.00	0.80	0.20	1.00	2.63	0.37	1.00	2.75	0.25
Final Sat.:	1600	1250	350	1600	1281	319	1600	4400	600	1600	4606	394
Capacity Analysis Module:												
Vol/Sat:	0.05	0.29	0.29	0.04	0.16	0.16	0.11	0.28	0.29	0.12	0.48	0.50
Crit Moves:		****			****			****				****

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #30 Bear St and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.904
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	89	Level Of Service:	E

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	1	0 2	0	1	1	0 2	0	1	1	0 2	1	0	1	0 2	1	0
Volume Module:																
Base Vol:	262	1258	328		115	278	84		90	847	88		82	1475	235	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	262	1258	328		115	278	84		90	847	88		82	1475	235	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Volume:	262	1258	328		115	278	84		90	847	88		82	1475	235	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	262	1258	328		115	278	84		90	847	88		82	1475	235	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	262	1258	328		115	278	84		90	847	88		82	1475	235	
Saturation Flow Module:																
Sat/Lane:	1600	1600	1600		1600	1600	1600		1600	1600	1600		1600	1600	1600	
Adjustment:	1.00	1.06	1.00		1.00	1.06	1.00		1.00	1.05	1.00		1.00	1.05	1.00	
Lanes:	1.00	2.00	1.00		1.00	2.00	1.00		1.00	2.72	0.28		1.00	2.59	0.41	
Final Sat.:	1600	3400	1600		1600	3400	1600		1600	4548	452		1600	4340	660	
Capacity Analysis Module:																
Vol/Sat:	0.16	0.37	0.21		0.07	0.08	0.05		0.06	0.19	0.19		0.05	0.34	0.36	
Crit Moves:		****				****				****					****	

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:08                Page 33-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #31 Bristol St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.811
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        54               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     370 1801   300   347 1847   314   243  543    98   280 1055   357
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  370 1801   300   347 1847   314   243  543    98   280 1055   357
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   370 1801   300   347 1847   314   243  543    98   280 1055   357
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  370 1801   300   347 1847   314   243  543    98   280 1055   357
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  370 1801   300   347 1847   314   243  543    98   280 1055   357
OvlAdjVol:                                                              183
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.54  0.46  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4266   734  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.35  0.19  0.11 0.36  0.20  0.08 0.13  0.13  0.09 0.21  0.22
OvlAdjV/S:                                                              0.11
Crit Moves:  ****                 ****        ****                  ****
******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:09                Page 34-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #32 Bristol St and Civic Center Dr
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.898
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        85               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     214 1494    78   173 1589   163   130  366    43   149  635    72
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  214 1494    78   173 1589   163   130  366    43   149  635    72
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   214 1494    78   173 1589   163   130  366    43   149  635    72
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  214 1494    78   173 1589   163   130  366    43   149  635    72
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  214 1494    78   173 1589   163   130  366    43   149  635    72
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.03  1.00
Lanes:       1.00 2.85  0.15  1.00 2.72  0.28  1.00 0.89  0.11  1.00 1.80  0.20
Final Sat.:  1600 4762   238  1600 4553   447  1600 1432   168  1600 2974   326
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.31  0.33  0.11 0.35  0.37  0.08 0.26  0.26  0.09 0.21  0.22
Crit Moves:  ****                ****        ****        ****
*******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:10                Page 35-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #33 Bristol St and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.732
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      85 1722    98   120 1597    60    70  194    45   125  199    54
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   85 1722    98   120 1597    60    70  194    45   125  199    54
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    85 1722    98   120 1597    60    70  194    45   125  199    54
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   85 1722    98   120 1597    60    70  194    45   125  199    54
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   85 1722    98   120 1597    60    70  194    45   125  199    54
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.84  0.16  1.00 2.89  0.11  1.00 0.81  0.19  1.00 0.79  0.21
Final Sat.:  1600 4742   258  1600 4826   174  1600 1299   301  1600 1258   342
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.05 0.36  0.38  0.08 0.33  0.35  0.04 0.15  0.15  0.08 0.16  0.16
Crit Moves:             ****  ****                ****        ****
*******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #34 Bristol St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.972
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	167	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	3 0	1	1 0	2 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	434	1872	276	216	1169	264	259	1454	186	155	953	90
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	434	1872	276	216	1169	264	259	1454	186	155	953	90
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	434	1872	276	216	1169	264	259	1454	186	155	953	90
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	434	1872	276	216	1169	264	259	1454	186	155	953	90
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	434	1872	276	216	1169	264	259	1454	186	155	953	90
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.03	1.00
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	1.00	2.66	0.34	1.00	1.83	0.17
Final Sat.:	3200	5100	1600	3200	5100	1600	1600	4456	544	1600	3024	276
Capacity Analysis Module:												
Vol/Sat:	0.14	0.37	0.17	0.07	0.23	0.17	0.16	0.33	0.34	0.10	0.32	0.33
Crit Moves:		****			****			****				****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #35 Bristol St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.890
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        81               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Prot+Permit      Prot+Permit
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     249 1833    99   116 1618   373   114  222    44    82  424    50
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  249 1833    99   116 1618   373   114  222    44    82  424    50
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   249 1833    99   116 1618   373   114  222    44    82  424    50
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  249 1833    99   116 1618   373   114  222    44    82  424    50
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  249 1833    99   116 1618   373   114  222    44    82  424    50
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 0.83  0.17  1.00 0.89  0.11
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 1335   265  1600 1431   169
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.36  0.06  0.07 0.32  0.23  0.07 0.17  0.17  0.05 0.30  0.30
Crit Moves:  ****               ****        ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #36 Bristol St and Warner Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.871
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	72	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2 1	0	2 0	2 1	0	1 0	3 0	1	1 0	3 0	1
Volume Module:												
Base Vol:	312	1170	213	343	1144	223	159	715	126	282	1662	487
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	312	1170	213	343	1144	223	159	715	126	282	1662	487
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	312	1170	213	343	1144	223	159	715	126	282	1662	487
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	312	1170	213	343	1144	223	159	715	126	282	1662	487
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	312	1170	213	343	1144	223	159	715	126	282	1662	487
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	2.54	0.46	2.00	2.51	0.49	1.00	3.00	1.00	1.00	3.00	1.00
Final Sat.:	3200	4261	739	3200	4217	783	1600	5100	1600	1600	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.10	0.27	0.29	0.11	0.27	0.28	0.10	0.14	0.08	0.18	0.33	0.30
Crit Moves:		****	****				****				****	

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #37 Bristol St and Segerstrom Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.915
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        96               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     177 1309   231    98  894   187   279  998    79   156 1408    71
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  177 1309   231    98  894   187   279  998    79   156 1408    71
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   177 1309   231    98  894   187   279  998    79   156 1408    71
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  177 1309   231    98  894   187   279  998    79   156 1408    71
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  177 1309   231    98  894   187   279  998    79   156 1408    71
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.55  0.45  1.00 2.48  0.52  1.00 2.78  0.22  1.00 2.86  0.14
Final Sat.:  1600 4280   720  1600 4170   830  1600 4648   352  1600 4770   230
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.31  0.32  0.06 0.21  0.23  0.17 0.21  0.22  0.10 0.30  0.31
Crit Moves:             ****  ****            ****                     ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #38 Bristol St and Alton Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.583
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        28               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:         WideBypass         Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  3  0  1    1  0  1  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      43 1667   157   114  858    54    50   70   130     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   43 1667   157   114  858    54    50   70   130     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    43 1667   157   114  858    54    50   70   130     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   43 1667   157   114  858    54    50   70   130     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   43 1667   157   114  858    54    50   70   130     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.74  0.26  1.00 3.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
Final Sat.:  1600 4587   413  1600 5100  1600  1600 1700  1600  1600 1600     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.36  0.38  0.07 0.17  0.03  0.03 0.04  0.08  0.00 0.00  0.00
Crit Moves:             ****  ****                     ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #39 Bristol St and MacArthur Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.796
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	51	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	3 0	1	2 0	2 1	0	2 0	3 0	1	2 0	3 0	1
Volume Module:												
Base Vol:	335	1428	260	237	871	137	357	796	169	247	1432	270
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	335	1428	260	237	871	137	357	796	169	247	1432	270
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	335	1428	260	237	871	137	357	796	169	247	1432	270
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	335	1428	260	237	871	137	357	796	169	247	1432	270
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	335	1428	260	237	871	137	357	796	169	247	1432	270
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	3.00	1.00	2.00	2.59	0.41	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	5100	1600	3200	4348	652	3200	5100	1600	3200	5100	1600
Capacity Analysis Module:												
Vol/Sat:	0.10	0.28	0.16	0.07	0.20	0.21	0.11	0.16	0.11	0.08	0.28	0.17
Crit Moves:		****			****			****			****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #40 Bristol St and Sunflower Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.744
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  1    2  0  3  0  1    2  0  2  1  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     687 1452   234   226  844   242   391  764   296   254  976   311
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  687 1452   234   226  844   242   391  764   296   254  976   311
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   687 1452   234   226  844   242   391  764   296   254  976   311
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  687 1452   234   226  844   242   391  764   296   254  976   311
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  687 1452   234   226  844   242   391  764   296   254  976   311
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.88  1.12  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 4813  1787  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.28  0.15  0.07 0.17  0.15  0.12 0.16  0.17  0.08 0.19  0.19
Crit Moves:  ****               ****        ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #41 Bristol St and I-405 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.854
Loss Time (sec):       5               Average Delay (sec/veh):        29.0
Optimal Cycle:        69               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    0  0  4  1  0    0  0  0  0  2    1  1  1  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 2235   195     0 2458    23     0    0   204   357  306  1184
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 2235   195     0 2458    23     0    0   204   357  306  1184
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 2235   195     0 2458    23     0    0   204   357  306  1184
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 2235   195     0 2458    23     0    0   204   357  306  1184
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 2235   195     0 2458    23     0    0   204   357  306  1184
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  1.00 0.91  0.91  1.00 1.00  0.75  0.93 0.93  0.75
Lanes:       0.00 4.00  1.00  0.00 4.95  0.05  0.00 0.00  2.00  1.62 1.38  2.00
Final Sat.:     0 6916  1615     0 8556    80     0    0  2842  2840 2434  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.32  0.12  0.00 0.29  0.29  0.00 0.00  0.07  0.13 0.13  0.42
Crit Moves:       ****        ****                         ****            ****
Green/Cycle: 0.00 0.38  0.38  0.00 0.38  0.38  0.00 0.00  0.08  0.49 0.49  0.49
Volume/Cap:  0.00 0.85  0.32  0.00 0.76  0.76  0.00 0.00  0.85  0.26 0.26  0.85
Delay/Veh:    0.0 31.5  22.3   0.0 28.2  28.2   0.0  0.0  69.8  15.1 15.1  27.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 31.5  22.3   0.0 28.2  28.2   0.0  0.0  69.8  15.1 15.1  27.9
LOS by Move:    A    C     C     A    C     C     A    A     E     B    B     C
HCM2k85thQ:     0   29     7     0   24    24     0    0     9     6    6    30
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:22                Page 44-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #42 Bristol St and I-405 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.631
Loss Time (sec):       5               Average Delay (sec/veh):        18.2
Optimal Cycle:        32               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Ignore           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  4  0  0    0  0  2  1  1    3  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135 1647     0     0 1657   968   740    0   331     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  135 1647     0     0 1657   968   740    0   331     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   135 1647     0     0 1657     0   740    0   331     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  135 1647     0     0 1657     0   740    0   331     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  135 1647     0     0 1657     0   740    0   331     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.91  0.92 1.00  0.85  1.00 1.00  1.00
Lanes:       1.00 4.00  0.00  0.00 3.00  1.00  3.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:  1805 6916     0     0 5187  1729  5253    0  1615     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.24  0.00  0.00 0.32  0.00  0.14 0.00  0.20  0.00 0.00  0.00
Crit Moves:  ****                 ****                    ****
Green/Cycle: 0.12 0.63  0.00  0.00 0.51  0.00  0.32 0.00  0.32  0.00 0.00  0.00
Volume/Cap:  0.63 0.38  0.00  0.00 0.63  0.00  0.43 0.00  0.63  0.00 0.00  0.00
Delay/Veh:   47.9  9.3   0.0   0.0 18.4   0.0  26.7  0.0  31.1   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  47.9  9.3   0.0   0.0 18.4   0.0  26.7  0.0  31.1   0.0  0.0   0.0
LOS by Move:    D    A     A     A    B     A     C    A     C     A    A     A
HCM2k85thQ:     8   10     0     0   21     0    10    0    14     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #43 Flower St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.668
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	34	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Prot+Permit			Prot+Permit			Prot+Permit			Prot+Permit		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	2 0	1	1 0	2 0	1	1 0	2 0	1	1 0	2 0	1
Volume Module:												
Base Vol:	215	1307	107	95	486	44	104	300	49	106	371	110
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	215	1307	107	95	486	44	104	300	49	106	371	110
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	215	1307	107	95	486	44	104	300	49	106	371	110
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	215	1307	107	95	486	44	104	300	49	106	371	110
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	215	1307	107	95	486	44	104	300	49	106	371	110
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1600	3400	1600	1600	3400	1600	1600	3400	1600	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.13	0.38	0.07	0.06	0.14	0.03	0.07	0.09	0.03	0.07	0.11	0.07
Crit Moves:		****			****			****			****	

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #44 Flower St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.215
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     211 1000   238   140  383   111   135 1181    98   144  969   101
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  211 1000   238   140  383   111   135 1181    98   144  969   101
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   211 1000   238   140  383   111   135 1181    98   144  969   101
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  211 1000   238   140  383   111   135 1181    98   144  969   101
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  211 1000   238   140  383   111   135 1181    98   144  969   101
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.03  1.00
Lanes:       1.00 1.00  1.00  1.00 1.55  0.45  1.00 1.85  0.15  1.00 1.81  0.19
Final Sat.:  1600 1700  1600  1600 2581   719  1600 3055   245  1600 2998   302
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.59  0.15  0.09 0.15  0.15  0.08 0.39  0.40  0.09 0.32  0.33
Crit Moves:       ****        ****                          ****  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #45 Flower St and McFadden Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.968
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	159	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0
Volume Module:												
Base Vol:	54	734	45	26	201	33	56	422	17	43	532	76
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	54	734	45	26	201	33	56	422	17	43	532	76
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	54	734	45	26	201	33	56	422	17	43	532	76
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	54	734	45	26	201	33	56	422	17	43	532	76
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	54	734	45	26	201	33	56	422	17	43	532	76
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.94	0.06	1.00	0.86	0.14	1.00	0.96	0.04	1.00	0.88	0.12
Final Sat.:	1600	1508	92	1600	1374	226	1600	1538	62	1600	1400	200
Capacity Analysis Module:												
Vol/Sat:	0.03	0.49	0.49	0.02	0.15	0.15	0.04	0.27	0.27	0.03	0.38	0.38
Crit Moves:		****			****			****			****	

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #46 Flower St and Segerstrom Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.916
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	97	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	120	843	80	80	449	129	241	1198	126	101	1699	109
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	120	843	80	80	449	129	241	1198	126	101	1699	109
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	120	843	80	80	449	129	241	1198	126	101	1699	109
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	120	843	80	80	449	129	241	1198	126	101	1699	109
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	120	843	80	80	449	129	241	1198	126	101	1699	109
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.04	1.00
Lanes:	1.00	1.83	0.17	1.00	1.55	0.45	1.00	2.71	0.29	1.00	2.82	0.18
Final Sat.:	1600	3023	277	1600	2586	714	1600	4543	457	1600	4711	289
Capacity Analysis Module:												
Vol/Sat:	0.08	0.28	0.29	0.05	0.17	0.18	0.15	0.26	0.28	0.06	0.36	0.38
Crit Moves:			****	****			****					****

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #47 Flower St and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.908
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        92               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     116  553    65    97  233   224   264 1254    80    61 1967   175
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  116  553    65    97  233   224   264 1254    80    61 1967   175
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   116  553    65    97  233   224   264 1254    80    61 1967   175
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  116  553    65    97  233   224   264 1254    80    61 1967   175
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  116  553    65    97  233   224   264 1254    80    61 1967   175
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 1.79  0.21  1.00 1.02  0.98  1.00 2.82  0.18  1.00 2.75  0.25
Final Sat.:  1600 2963   337  1600 1732  1568  1600 4712   288  1600 4608   392
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.19  0.19  0.06 0.13  0.14  0.17 0.27  0.28  0.04 0.43  0.45
Crit Moves:       ****        ****             ****                     ****
*******************************************************************************
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:29                Page 50-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #48 Main St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.764
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        45               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  2  1  0    2  0  2  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     310  948   444   191 1199   309   347  495   222   332  662   266
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  310  948   444   191 1199   309   347  495   222   332  662   266
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   310  948   444   191 1199   309   347  495   222   332  662   266
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  310  948   444   191 1199   309   347  495   222   332  662   266
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  310  948   444   191 1199   309   347  495   222   332  662   266
OvlAdjVol:                278                                              171
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 2.39  0.61  2.00 2.07  0.93  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 4016   984  3200 3514  1486  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.10 0.19  0.28  0.06 0.30  0.31  0.11 0.14  0.15  0.10 0.19  0.17
OvlAdjV/S:              0.17                                              0.11
Crit Moves:  ****                      ****  ****                  ****
******************************************************************************
```

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2045 WP PM Peak Hour Thu Oct 22, 2020 14:45:29 Page 51-1

Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #49 Main St and Mainplace Dr / Memory Ln

Cycle (sec):	100	Critical Vol./Cap.(X):	0.504
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	24	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	2 0	2	1 0	2 0	2	1 0	2 0	2	0 1
Volume Module:												
Base Vol:	102	1075	204	48	999	132	195	217	58	370	302	146
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	102	1075	204	48	999	132	195	217	58	370	302	146
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	102	1075	204	48	999	132	195	217	58	370	302	146
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	102	1075	204	48	999	132	195	217	58	370	302	146
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	102	1075	204	48	999	132	195	217	58	370	302	146
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.05	1.00	1.00	1.06	1.00
Lanes:	2.00	2.52	0.48	2.00	2.65	0.35	2.00	2.37	0.63	2.00	2.00	1.00
Final Sat.:	3200	4234	766	3200	4440	560	3200	3988	1012	3200	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.03	0.25	0.27	0.02	0.23	0.24	0.06	0.05	0.06	0.12	0.09	0.09
Crit Moves:			****	****					****	****		

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:30                Page 52-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #50 Main St and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.799
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        52               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     239 1237   270   243 1062   164   174  975    58   187 1147    76
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  239 1237   270   243 1062   164   174  975    58   187 1147    76
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   239 1237   270   243 1062   164   174  975    58   187 1147    76
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  239 1237   270   243 1062   164   174  975    58   187 1147    76
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  239 1237   270   243 1062   164   174  975    58   187 1147    76
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.83  0.17  2.00 2.81  0.19
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 4730   270  3200 4702   298
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.36  0.17  0.08 0.31  0.10  0.05 0.21  0.22  0.06 0.24  0.25
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #51 Main St and Civic Center Dr

Cycle (sec):	100	Critical Vol./Cap.(X):	0.856
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	67	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	98	1234	103	63	1031	65	168	930	111	38	384	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	98	1234	103	63	1031	65	168	930	111	38	384	39
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	98	1234	103	63	1031	65	168	930	111	38	384	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	98	1234	103	63	1031	65	168	930	111	38	384	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	98	1234	103	63	1031	65	168	930	111	38	384	39
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.03	1.00	1.00	1.03	1.00	1.00	1.03	1.00
Lanes:	1.00	1.85	0.15	1.00	1.88	0.12	1.00	1.79	0.21	1.00	1.82	0.18
Final Sat.:	1600	3053	247	1600	3110	190	1600	2959	341	1600	3005	295
Capacity Analysis Module:												
Vol/Sat:	0.06	0.40	0.42	0.04	0.33	0.34	0.11	0.31	0.33	0.02	0.13	0.13
Crit Moves:			****	****					****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #52 Main St and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.700
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        37               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  1  1  0    0  0  0  0  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      56 1280     0     0 1108    54     0    0     0    65  656    85
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   56 1280     0     0 1108    54     0    0     0    65  656    85
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    56 1280     0     0 1108    54     0    0     0    65  656    85
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   56 1280     0     0 1108    54     0    0     0    65  656    85
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   56 1280     0     0 1108    54     0    0     0    65  656    85
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.00  0.00  0.00 1.91  0.09  0.00 0.00  0.00  0.16 1.63  0.21
Final Sat.:  1600 3400     0     0 3151   149     0    0     0   258 2604   337
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.38  0.00  0.00 0.35  0.36  0.00 0.00  0.00  0.04 0.25  0.25
Crit Moves:  ****                 ****                           ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #53 Main St and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.472
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1  1  0    0  0  1  1  0    0  0  1  1  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1108    53     0  951    43     0  112    63     0  157    40
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1108    53     0  951    43     0  112    63     0  157    40
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1108    53     0  951    43     0  112    63     0  157    40
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1108    53     0  951    43     0  112    63     0  157    40
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1108    53     0  951    43     0  112    63     0  157    40
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       0.00 1.91  0.09  0.00 1.91  0.09  0.00 1.28  0.72  0.00 1.59  0.41
Final Sat.:     0 3154   146     0 3162   138     0 2148  1152     0 2650   650
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.35  0.36  0.00 0.30  0.31  0.00 0.05  0.05  0.00 0.06  0.06
Crit Moves:             ****  ****            ****                  ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #54 Main St and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.803
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	53	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	2	0 1	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	179	875	76	160	615	131	91	921	68	75	834	58
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	179	875	76	160	615	131	91	921	68	75	834	58
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	179	875	76	160	615	131	91	921	68	75	834	58
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	179	875	76	160	615	131	91	921	68	75	834	58
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	179	875	76	160	615	131	91	921	68	75	834	58
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.06	1.00	1.00	1.03	1.00	1.00	1.03	1.00
Lanes:	1.00	1.84	0.16	1.00	2.00	1.00	1.00	1.86	0.14	1.00	1.87	0.13
Final Sat.:	1600	3044	256	1600	3400	1600	1600	3080	220	1600	3092	208
Capacity Analysis Module:												
Vol/Sat:	0.11	0.29	0.30	0.10	0.18	0.08	0.06	0.30	0.31	0.05	0.27	0.28
Crit Moves:		****	****						****	****		

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #55 Main St and McFadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.935
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       113               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Prot+Permit      Prot+Permit       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     149 1169    72   138  933    68    78  345    42    71  400   180
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  149 1169    72   138  933    68    78  345    42    71  400   180
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   149 1169    72   138  933    68    78  345    42    71  400   180
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  149 1169    72   138  933    68    78  345    42    71  400   180
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  149 1169    72   138  933    68    78  345    42    71  400   180
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.88  0.12  1.00 1.86  0.14  1.00 0.89  0.11  1.00 0.69  0.31
Final Sat.:  1600 3114   186  1600 3083   217  1600 1426   174  1600 1103   497
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.38  0.39  0.09 0.30  0.31  0.05 0.24  0.24  0.04 0.36  0.36
Crit Moves:             ****  ****            ****                   ****
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #56 Main St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.977
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	177	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1	1 0	1 0	1	1 0	1 0	2	1 0	1 0	2	1 0
Volume Module:												
Base Vol:	111	1181	54	129	646	88	159	940	105	117	1569	162
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	111	1181	54	129	646	88	159	940	105	117	1569	162
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	111	1181	54	129	646	88	159	940	105	117	1569	162
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	111	1181	54	129	646	88	159	940	105	117	1569	162
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	111	1181	54	129	646	88	159	940	105	117	1569	162
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.03	1.00	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.05	1.00
Lanes:	1.00	1.91	0.09	1.00	1.76	0.24	1.00	2.70	0.30	1.00	2.72	0.28
Final Sat.:	1600	3160	140	1600	2916	384	1600	4518	482	1600	4551	449
Capacity Analysis Module:												
Vol/Sat:	0.07	0.37	0.39	0.08	0.22	0.23	0.10	0.21	0.22	0.07	0.34	0.36
Crit Moves:		****	****				****					****

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:35                Page 59-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #57 Main St and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.781
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        48               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     488 1169   321   271  352   266   385  792    76   188 1488   432
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  488 1169   321   271  352   266   385  792    76   188 1488   432
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   488 1169   321   271  352   266   385  792    76   188 1488   432
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  488 1169   321   271  352   266   385  792    76   188 1488   432
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  488 1169   321   271  352   266   385  792    76   188 1488   432
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.23  0.20  0.08 0.07  0.17  0.12 0.16  0.05  0.06 0.29  0.27
Crit Moves:  ****                      ****  ****                   ****
*******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:36                Page 60-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #58 Penn Wy and 17th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.790
Loss Time (sec):       5               Average Delay (sec/veh):        20.3
Optimal Cycle:        52               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  2    0  0  0  0  0    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     795    0   388     0    0     0     0 1712   552   126 1480     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  795    0   388     0    0     0     0 1712   552   126 1480     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   795    0   388     0    0     0     0 1712   552   126 1480     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  795    0   388     0    0     0     0 1712   552   126 1480     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  795    0   388     0    0     0     0 1712   552   126 1480     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.75  1.00 1.00  1.00  1.00 0.88  0.88  0.95 0.91  1.00
Lanes:       2.00 0.00  2.00  0.00 0.00  0.00  0.00 2.27  0.73  1.00 3.00  0.00
Final Sat.:  3502    0  2842     0    0     0     0 3777  1218  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.00  0.14  0.00 0.00  0.00  0.00 0.45  0.45  0.07 0.29  0.00
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.29 0.00  0.29  0.00 0.00  0.00  0.00 0.57  0.57  0.09 0.66  0.00
Volume/Cap:  0.79 0.00  0.47  0.00 0.00  0.00  0.00 0.79  0.79  0.79 0.43  0.00
Delay/Veh:   37.1  0.0  29.8   0.0  0.0   0.0   0.0 18.1  18.1  67.4  8.1   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  37.1  0.0  29.8   0.0  0.0   0.0   0.0 18.1  18.1  67.4  8.1   0.0
LOS by Move:    D    A     C     A    A     A     A    B     B     E    A     A
HCM2k85thQ:    20    0     9     0    0     0     0   31    31     9   12     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:37                Page 61-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #59 I-5 NB Off Ramps/17th Street
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.630
Loss Time (sec):       5               Average Delay (sec/veh):        20.3
Optimal Cycle:        32               Level Of Service:                  C
******************************************************************************
Street Name:         I-5 NB Off Ramps                    17th Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected         Permitted
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  1    1  0  0  0  1    1  0  3  0  1    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     375   50    20    55    0   142   128 1168   767     0 1622    44
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  375   50    20    55    0   142   128 1168   767     0 1622    44
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   375   50    20    55    0   142   128 1168     0     0 1622    44
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  375   50    20    55    0   142   128 1168     0     0 1622    44
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  375   50    20    55    0   142   128 1168     0     0 1622    44
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.85  0.95 1.00  0.85  0.95 0.91  1.00  1.00 0.91  0.91
Lanes:       1.76 0.24  1.00  1.00 0.00  1.00  1.00 3.00  1.00  0.00 2.92  0.08
Final Sat.:  3212  428  1615  1805    0  1615  1805 5187  1900     0 5030   136
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.12  0.01  0.03 0.00  0.09  0.07 0.23  0.00  0.00 0.32  0.32
Crit Moves:       ****                     ****  ****                 ****
Green/Cycle: 0.19 0.19  0.19  0.14 0.00  0.14  0.11 0.62  0.00  0.00 0.51  0.51
Volume/Cap:  0.63 0.63  0.07  0.22 0.00  0.63  0.63 0.36  0.00  0.00 0.63  0.63
Delay/Veh:   39.5 39.5  33.7  38.6  0.0  46.2  48.6  9.1   0.0   0.0 18.1  18.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  39.5 39.5  33.7  38.6  0.0  46.2  48.6  9.1   0.0   0.0 18.1  18.1
LOS by Move:    D    D     C     D    A     D     D    A     A     A    B     B
HCM2k85thQ:    11   11     1     3    0     8     8   10     0     0   21    21
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:38                Page 62-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #60 Penn Wy and I-5 SB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.433
Loss Time (sec):       5               Average Delay (sec/veh):        22.8
Optimal Cycle:        22               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    2  0  2  0  0    0  0  0  0  0    1  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  363   238   508  117     0     0    0     0   214    0   183
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  363   238   508  117     0     0    0     0   214    0   183
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  363   238   508  117     0     0    0     0   214    0   183
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  363   238   508  117     0     0    0     0   214    0   183
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  363   238   508  117     0     0    0     0   214    0   183
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.92 0.95  1.00  1.00 1.00  1.00  0.95 1.00  0.75
Lanes:       0.00 2.00  1.00  2.00 2.00  0.00  0.00 0.00  0.00  1.00 0.00  2.00
Final Sat.:     0 3610  1615  3502 3610     0     0    0     0  1805    0  2842
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.10  0.15  0.15 0.03  0.00  0.00 0.00  0.00  0.12 0.00  0.06
Crit Moves:             ****  ****                               ****
Green/Cycle: 0.00 0.34  0.34  0.34 0.68  0.00  0.00 0.00  0.00  0.27 0.00  0.61
Volume/Cap:  0.00 0.30  0.43  0.43 0.05  0.00  0.00 0.00  0.00  0.43 0.00  0.11
Delay/Veh:    0.0 24.3  26.0  26.1  5.4   0.0   0.0  0.0   0.0  30.5  0.0   8.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 24.3  26.0  26.1  5.4   0.0   0.0  0.0   0.0  30.5  0.0   8.2
LOS by Move:    A    C     C     C    A     A     A    A     A     C    A     A
HCM2k85thQ:     0    7     9    10    1     0     0    0     0     9    0     2
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:39                Page 63-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
******************************************************************************
Intersection #61 Santiago St and Civic Center Dr
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.896
Loss Time (sec):       5               Average Delay (sec/veh):        27.6
Optimal Cycle:         0               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    0  0  1! 0  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     133  411    41    20  281    72   266   76   269    14   19    18
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  133  411    41    20  281    72   266   76   269    14   19    18
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   133  411    41    20  281    72   266   76   269    14   19    18
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  133  411    41    20  281    72   266   76   269    14   19    18
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  133  411    41    20  281    72   266   76   269    14   19    18
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.91  0.09  1.00 0.80  0.20  1.00 0.22  0.78  0.27 0.38  0.35
Final Sat.:   462  459    46   437  385    99   452  115   406   107  145   138
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.29 0.90  0.90  0.05 0.73  0.73  0.59 0.66  0.66  0.13 0.13  0.13
Crit Moves:             ****       ****                    ****       ****
Delay/Veh:   13.4 44.0  44.0  11.0 26.6  26.6  20.7 21.2  21.2  12.7 12.7  12.7
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  13.4 44.0  44.0  11.0 26.6  26.6  20.7 21.2  21.2  12.7 12.7  12.7
LOS by Move:    B    E     E     B    D     D     C    C     C     B    B     B
ApproachDel:       37.0             25.8             21.0             12.7
Delay Adj:         1.00             1.00             1.00             1.00
ApprAdjDel:        37.0             25.8             21.0             12.7
LOS by Appr:          E                D                C                B
AllWayAvgQ:   0.4  4.8   4.8   0.0  2.2   2.2   1.3  1.7   1.7   0.1  0.1   0.1
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #62 Santiago St and Santa Ana Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.411
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1 0	1	1 0	1 0	1	1 0	0 1	0	1 0	2 0	1
Volume Module:												
Base Vol:	135	833	236	378	639	103	164	673	87	255	546	347
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	135	833	236	378	639	103	164	673	87	255	546	347
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	135	833	236	378	639	103	164	673	87	255	546	347
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	135	833	236	378	639	103	164	673	87	255	546	347
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	135	833	236	378	639	103	164	673	87	255	546	347
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.00	1.00	1.00	1.06	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.11	1.00	2.00	1.00
Final Sat.:	1600	1700	1600	1600	1700	1600	1600	1417	183	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.08	0.49	0.15	0.24	0.38	0.06	0.10	0.47	0.48	0.16	0.16	0.22
Crit Moves:		****		****					****	****		

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #63 Standard Ave and 4th St

Cycle (sec):	100	Critical Vol./Cap.(X):	1.341
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	1 0	1	1 0	1 0	1	1 0	0 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	251	543	214	254	428	297	302	477	201	233	648	351
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	251	543	214	254	428	297	302	477	201	233	648	351
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	251	543	214	254	428	297	302	477	201	233	648	351
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	251	543	214	254	428	297	302	477	201	233	648	351
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	251	543	214	254	428	297	302	477	201	233	648	351
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.06	1.00	1.00	1.06	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.30	1.00	0.65	0.35
Final Sat.:	1600	1700	1600	1600	1700	1600	1600	1126	474	1600	1038	562
Capacity Analysis Module:												
Vol/Sat:	0.16	0.32	0.13	0.16	0.25	0.19	0.19	0.42	0.42	0.15	0.62	0.62
Crit Moves:		****			****			****			****	

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Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)

Intersection #64 Standard Ave and 1st St

Cycle (sec):	100	Critical Vol./Cap.(X):	1.484
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	0 0	1! 0	0	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	109	724	259	142	679	47	168	1279	65	264	1888	116
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	109	724	259	142	679	47	168	1279	65	264	1888	116
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	109	724	259	142	679	47	168	1279	65	264	1888	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	109	724	259	142	679	47	168	1279	65	264	1888	116
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	109	724	259	142	679	47	168	1279	65	264	1888	116
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.00	1.00	1.03	1.00
Lanes:	1.00	0.74	0.26	0.16	0.79	0.05	1.00	1.90	0.10	1.00	1.88	0.12
Final Sat.:	1600	1178	422	262	1252	87	1600	3145	155	1600	3115	185
Capacity Analysis Module:												
Vol/Sat:	0.07	0.61	0.61	0.09	0.54	0.54	0.11	0.41	0.42	0.17	0.61	0.63
Crit Moves:	****			****			****					****

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #65 Standard Ave and Mcfadden Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.769
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     103  407    50   110  240    42    53  351    60    68  412   119
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103  407    50   110  240    42    53  351    60    68  412   119
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   103  407    50   110  240    42    53  351    60    68  412   119
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103  407    50   110  240    42    53  351    60    68  412   119
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  103  407    50   110  240    42    53  351    60    68  412   119
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 0.89  0.11  1.00 0.85  0.15  1.00 0.85  0.15  1.00 0.78  0.22
Final Sat.:  1600 1425   175  1600 1362   238  1600 1366   234  1600 1241   359
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.29  0.29  0.07 0.18  0.18  0.03 0.26  0.26  0.04 0.33  0.33
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #66 Halladay St and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.824
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        57               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    0  0  0  0  0    0  1  1  1  0    0  1  2  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     200    0   417     0    0     0     2  955    96   287 2284     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  200    0   417     0    0     0     2  955    96   287 2284     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   200    0   417     0    0     0     2  955    96   287 2284     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  200    0   417     0    0     0     2  955    96   287 2284     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  200    0   417     0    0     0     2  955    96   287 2284     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.02  1.00  1.00 1.05  1.00
Lanes:       1.00 0.00  1.00  0.00 0.00  0.00  0.01 2.72  0.27  0.33 2.67  0.00
Final Sat.:  1600    0  1600     0    0     0     9 4453   438   536 4464     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.00  0.26  0.00 0.00  0.00  0.00 0.21  0.22  0.18 0.51  0.00
Crit Moves:             ****                     ****                   ****
******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #67 Halladay St and Dyer Rd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.945
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       124               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    1  0  0  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      57  249   287   125   17    35   166 1433    10    52 1680   134
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   57  249   287   125   17    35   166 1433    10    52 1680   134
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    57  249   287   125   17    35   166 1433    10    52 1680   134
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   57  249   287   125   17    35   166 1433    10    52 1680   134
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   57  249   287   125   17    35   166 1433    10    52 1680   134
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 0.46  0.54  1.00 0.33  0.67  1.00 2.98  0.02  1.00 2.78  0.22
Final Sat.:  1600  743   857  1600  523  1077  1600 4967    33  1600 4645   355
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.34  0.33  0.08 0.03  0.03  0.10 0.29  0.30  0.03 0.36  0.38
Crit Moves:       ****        ****             ****                       ****
******************************************************************************

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #68 SR-55 SB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.602
Loss Time (sec):       5               Average Delay (sec/veh):        18.4
Optimal Cycle:        30               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  2    0  0  2  1  1    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   321    0   777     0 1305  1163     0 1547   608
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   321    0   777     0 1305  1163     0 1547   608
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:     0    0     0   321    0   777     0 1305     0     0 1547     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   321    0   777     0 1305     0     0 1547     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:    0    0     0   321    0   777     0 1305     0     0 1547     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.75  1.00 0.91  0.91  1.00 0.91  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  2.00  0.00 3.00  1.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3502    0  2842     0 5187  1729     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.09 0.00  0.27  0.00 0.25  0.00  0.00 0.30  0.00
Crit Moves:                               ****  ****                 ****
Green/Cycle: 0.00 0.00  0.00  0.45 0.00  0.45  0.00 0.50  0.00  0.00 0.50  0.00
Volume/Cap:  0.00 0.00  0.00  0.20 0.00  0.60  0.00 0.51  0.00  0.00 0.60  0.00
Delay/Veh:    0.0  0.0   0.0  16.5  0.0  21.3   0.0 17.2   0.0   0.0 18.5   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  16.5  0.0  21.3   0.0 17.2   0.0   0.0 18.5   0.0
LOS by Move:    A    A     A     B    A     C     A    B     A     A    B     A
HCM2k85thQ:     0    0     0     5    0    16     0   15     0     0   19     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:47                Page 71-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #69 SR-55 NB Ramps and MacArthur Blvd
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.511
Loss Time (sec):       5               Average Delay (sec/veh):        16.2
Optimal Cycle:        25               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Ignore           Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  0  1    0  0  0  0  0    0  0  2  0  2    0  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     726    0   483     0    0     0     0  764   785     0 1444  1040
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  726    0   483     0    0     0     0  764   785     0 1444  1040
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   726    0     0     0    0     0     0  764     0     0 1444     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  726    0     0     0    0     0     0  764     0     0 1444     0
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  726    0     0     0    0     0     0  764     0     0 1444     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  1.00  1.00 1.00  1.00  1.00 0.95  0.88  1.00 0.91  1.00
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  2.00  0.00 3.00  1.00
Final Sat.:  3502    0  1900     0    0     0     0 3610  3344     0 5187  1900
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.00  0.00  0.00 0.00  0.00  0.00 0.21  0.00  0.00 0.28  0.00
Crit Moves:  ****                              ****                   ****
Green/Cycle: 0.41 0.00  0.00  0.00 0.00  0.00  0.00 0.54  0.00  0.00 0.54  0.00
Volume/Cap:  0.51 0.00  0.00  0.00 0.00  0.00  0.00 0.39  0.00  0.00 0.51  0.00
Delay/Veh:   22.6  0.0   0.0   0.0  0.0   0.0   0.0 13.3   0.0   0.0 14.5   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  22.6  0.0   0.0   0.0  0.0   0.0   0.0 13.3   0.0   0.0 14.5   0.0
LOS by Move:    C    A     A     A    A     A     A    B     A     A    B     A
HCM2k85thQ:    13    0     0     0    0     0     0   11     0     0   16     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:48                Page 72-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #70 SR-55 SB Ramps and Dyer Rd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.679
Loss Time (sec):       5               Average Delay (sec/veh):        26.5
Optimal Cycle:        37               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:            Ovl              Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    0  1  1  0  1    1  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     386   12   291   103  226   110    66 1544   210   507  904    58
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  386   12   291   103  226   110    66 1544   210   507  904    58
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   386   12   291   103  226   110    66 1544   210   507  904    58
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  386   12   291   103  226   110    66 1544   210   507  904    58
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  386   12   291   103  226   110    66 1544   210   507  904    58
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.75  0.94 0.94  0.85  0.95 0.91  0.85  0.92 0.91  0.85
Lanes:       1.94 0.06  2.00  0.63 1.37  1.00  1.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3516  109  2842  1113 2443  1615  1805 5187  1615  3502 5187  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11  0.10  0.09 0.09  0.07  0.04 0.30  0.13  0.14 0.17  0.04
Crit Moves:       ****             ****             ****             ****
Green/Cycle: 0.16 0.16  0.38  0.14 0.14  0.14  0.11 0.44  0.44  0.21 0.54  0.54
Volume/Cap:  0.68 0.68  0.27  0.68 0.68  0.50  0.32 0.68  0.30  0.68 0.32  0.07
Delay/Veh:   42.7 42.7  21.9  45.0 45.0  41.8  41.8 23.3  18.4  38.7 12.9  11.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  42.7 42.7  21.9  45.0 45.0  41.8  41.8 23.3  18.4  38.7 12.9  11.1
LOS by Move:    D    D     C     D    D     D     D    C     B     D    B     B
HCM2k85thQ:    11   11     6    10   10     6     3   22     7    13    9     1
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:48                Page 73-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #71 Glassell St and La Veta Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.766
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Ovl              Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  1  1  0    1  0  1  0  1    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     573  595   194    15  499    37   112  367   631   225  407    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  573  595   194    15  499    37   112  367   631   225  407    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   573  595   194    15  499    37   112  367   631   225  407    16
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  573  595   194    15  499    37   112  367   631   225  407    16
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  573  595   194    15  499    37   112  367   631   225  407    16
OvlAdjVol:                 0                                  344
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.06  1.00  1.00 1.03  1.00
Lanes:       2.00 1.00  1.00  1.00 1.86  0.14  1.00 1.00  1.00  1.00 1.92  0.08
Final Sat.:  3200 1700  1600  1600 3079   221  1600 1700  1600  1600 3179   121
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.35  0.12  0.01 0.16  0.17  0.07 0.22  0.39  0.14 0.13  0.13
OvlAdjV/S:                 0.00                                  0.22
Crit Moves:        ****             ****                   ****             ****
******************************************************************************
```

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```
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:49                Page 74-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #72 Glassell St and SR-22 WB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.943
Loss Time (sec):       5               Average Delay (sec/veh):        33.4
Optimal Cycle:       125               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted      Split Phase      Split Phase
Rights:           Include           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  0    0  0  2  0  1    0  0  0  0  0    1  0  1! 0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     640 1045     0     0 1110   323     0    0     0   268    9   476
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  640 1045     0     0 1110   323     0    0     0   268    9   476
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   640 1045     0     0 1110   323     0    0     0   268    9   476
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  640 1045     0     0 1110   323     0    0     0   268    9   476
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  640 1045     0     0 1110   323     0    0     0   268    9   476
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  1.00  1.00 0.95  0.85  1.00 1.00  1.00  0.86 0.86  0.86
Lanes:       1.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  1.35 0.02  1.63
Final Sat.:  1805 3610     0     0 3610  1615     0    0     0  2201   38  2646
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.35 0.29  0.00  0.00 0.31  0.20  0.00 0.00  0.00  0.12 0.23  0.18
Crit Moves:  ****                 ****                                 ****
Green/Cycle: 0.38 0.70  0.00  0.00 0.33  0.33  0.00 0.00  0.00  0.25 0.25  0.25
Volume/Cap:  0.94 0.41  0.00  0.00 0.94  0.61  0.00 0.00  0.00  0.49 0.94  0.73
Delay/Veh:   51.9  6.4   0.0   0.0 47.5  30.5   0.0  0.0   0.0  32.4 56.2  37.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  51.9  6.4   0.0   0.0 47.5  30.5   0.0  0.0   0.0  32.4 56.2  37.0
LOS by Move:    D    A     A     A    D     C     A    A     A     C    E     D
HCM2k85thQ:    34   11     0     0   32    14     0    0     0     9   24    15
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:50                Page 75-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #73 Grand Ave / Glassell St and SR-22 EB Ramps
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.927
Loss Time (sec):       5               Average Delay (sec/veh):        31.8
Optimal Cycle:       109               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted       Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  2  0  0    1  0  1! 0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1316   336   505  903     0   238    4   522     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1316   336   505  903     0   238    4   522     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1316   336   505  903     0   238    4   522     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1316   336   505  903     0   238    4   522     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1316   336   505  903     0   238    4   522     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  0.85  0.95 0.95  1.00  0.86 0.86  0.86  1.00 1.00  1.00
Lanes:       0.00 2.00  1.00  1.00 2.00  0.00  1.31 0.01  1.68  0.00 0.00  0.00
Final Sat.:     0 3610  1615  1805 3610     0  2130   17  2731     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.36  0.21  0.28 0.25  0.00  0.11 0.24  0.19  0.00 0.00  0.00
Crit Moves:       ****        ****                ****
Green/Cycle: 0.00 0.39  0.39  0.30 0.70  0.00  0.25 0.25  0.25  0.00 0.00  0.00
Volume/Cap:  0.00 0.93  0.53  0.93 0.36  0.00  0.44 0.93  0.75  0.00 0.00  0.00
Delay/Veh:    0.0 39.7  24.1  55.9  6.3   0.0  31.4 52.7  37.5   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 39.7  24.1  55.9  6.3   0.0  31.4 52.7  37.5   0.0  0.0   0.0
LOS by Move:    A    D     C     E    A     A     C    D     D     A    A     A
HCM2k85thQ:     0   36    13    28    9     0     8   23    16     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:51                Page 76-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #74 Grand Ave and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.665
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        34               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      50 1311   262   242  974    89    79   45    33   153   29   109
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   50 1311   262   242  974    89    79   45    33   153   29   109
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    50 1311   262   242  974    89    79   45    33   153   29   109
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   50 1311   262   242  974    89    79   45    33   153   29   109
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   50 1311   262   242  974    89    79   45    33   153   29   109
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00
Lanes:       1.00 2.50  0.50  1.00 2.75  0.25  1.00 1.15  0.85  1.00 0.21  0.79
Final Sat.:  1600 4201   799  1600 4598   402  1600 1946  1354  1600  336  1264
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.31  0.33  0.15 0.21  0.22  0.05 0.02  0.02  0.10 0.09  0.09
Crit Moves:             ****  ****            ****                 ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:52                Page 77-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #75 Grand Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.731
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        41               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include        WideBypass          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      95 1280   266   240  946   240   114  139    26   115  206   220
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   95 1280   266   240  946   240   114  139    26   115  206   220
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    95 1280   266   240  946   240   114  139    26   115  206   220
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   95 1280   266   240  946   240   114  139    26   115  206   220
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   95 1280   266   240  946   240   114  139    26   115  206   220
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 2.48  0.52  1.00 2.39  0.61  1.00 0.84  0.16  1.00 1.00  1.00
Final Sat.:  1600 4174   826  1600 4029   971  1600 1348   252  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.31  0.32  0.15 0.23  0.25  0.07 0.10  0.10  0.07 0.12  0.14
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:52                Page 78-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #76 Grand Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.854
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        66               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     266  947   239   294  634   140   371  949   160   284 1046   190
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  266  947   239   294  634   140   371  949   160   284 1046   190
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   266  947   239   294  634   140   371  949   160   284 1046   190
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  266  947   239   294  634   140   371  949   160   284 1046   190
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  266  947   239   294  634   140   371  949   160   284 1046   190
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.40  0.60  1.00 2.46  0.54  2.00 2.57  0.43  2.00 2.54  0.46
Final Sat.:  1600 4033   967  1600 4132   868  3200 4307   693  3200 4262   738
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.23  0.25  0.18 0.15  0.16  0.12 0.22  0.23  0.09 0.25  0.26
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:53                Page 79-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #77 Grand Ave and I-5 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.764
Loss Time (sec):       5               Average Delay (sec/veh):        11.3
Optimal Cycle:        47               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Ignore           Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  0  1    1  0  3  0  0    0  0  0  0  0    2  0  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 2036  1571    67 1623     0     0    0     0   168    0   202
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 2036  1571    67 1623     0     0    0     0   168    0   202
User Adj:    1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 2036     0    67 1623     0     0    0     0   168    0   202
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 2036     0    67 1623     0     0    0     0   168    0   202
PCE Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 2036     0    67 1623     0     0    0     0   168    0   202
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.95  1.00  0.95 0.91  1.00  1.00 1.00  1.00  0.92 1.00  0.85
Lanes:       0.00 2.00  1.00  1.00 3.00  0.00  0.00 0.00  0.00  2.00 0.00  1.00
Final Sat.:     0 3610  1900  1805 5187     0     0    0     0  3502    0  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.56  0.00  0.04 0.31  0.00  0.00 0.00  0.00  0.05 0.00  0.13
Crit Moves:       ****        ****                                       ****
Green/Cycle: 0.00 0.74  0.00  0.05 0.79  0.00  0.00 0.00  0.00  0.16 0.00  0.16
Volume/Cap:  0.00 0.76  0.00  0.76 0.40  0.00  0.00 0.00  0.00  0.29 0.00  0.76
Delay/Veh:    0.0  9.2   0.0  79.2  3.4   0.0   0.0  0.0   0.0  37.0  0.0  52.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  9.2   0.0  79.2  3.4   0.0   0.0  0.0   0.0  37.0  0.0  52.4
LOS by Move:    A    A     A     E    A     A     A    A     A     D    A     D
HCM2k85thQ:     0   30     0     6    9     0     0    0     0     4    0    12
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:54                Page 80-1
------------------------------------------------------------------------------
                          Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #78 Grand Ave and Santa Ana Blvd
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.827
Loss Time (sec):       5                Average Delay (sec/veh):        28.5
Optimal Cycle:        61                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  0  2    2  0  1  0  2    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     213 2411    40    44  964   684   370  226   356    44  295   213
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  213 2411    40    44  964   684   370  226   356    44  295   213
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   213 2411    40    44  964   684   370  226   356    44  295   213
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  213 2411    40    44  964   684   370  226   356    44  295   213
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  213 2411    40    44  964   684   370  226   356    44  295   213
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  0.91  0.95 0.95  0.75  0.92 1.00  0.75  0.89 0.89  0.89
Lanes:       1.00 2.95  0.05  1.00 2.00  2.00  2.00 1.00  2.00  0.16 1.07  0.77
Final Sat.:  1805 5092    84  1805 3610  2842  3502 1900  2842   270 1810  1307
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.47  0.47  0.02 0.27  0.24  0.11 0.12  0.13  0.16 0.16  0.16
Crit Moves:       ****        ****                      ****        ****
Green/Cycle: 0.18 0.57  0.57  0.03 0.42  0.57  0.15 0.15  0.15  0.20 0.20  0.20
Volume/Cap:  0.64 0.83  0.83  0.83 0.64  0.42  0.70 0.79  0.83  0.83 0.83  0.83
Delay/Veh:   41.9 19.4  19.4 112.6 24.1  12.4  44.4 54.2  53.7  47.0 47.0  47.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  41.9 19.4  19.4 112.6 24.1  12.4  44.4 54.2  53.7  47.0 47.0  47.0
LOS by Move:    D    B     B     F    C     B     D    D     D     D    D     D
HCM2k85thQ:    11   35    35     5   19    11    11   13    13    17   17    17
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:55                Page 81-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #79 Grand Ave and 1st St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.718
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        39               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  2  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     195 1493    45   133  784   313   272  900    89   121  753   138
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  195 1493    45   133  784   313   272  900    89   121  753   138
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   195 1493    45   133  784   313   272  900    89   121  753   138
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  195 1493    45   133  784   313   272  900    89   121  753   138
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  195 1493    45   133  784   313   272  900    89   121  753   138
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.91  0.09  2.00 3.00  1.00  2.00 2.00  1.00  2.00 2.00  1.00
Final Sat.:  3200 4860   140  3200 5100  1600  3200 3400  1600  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.31  0.32  0.04 0.15  0.20  0.09 0.26  0.06  0.04 0.22  0.09
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:56                Page 82-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #80 Grand Ave and Chestnut Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.783
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     180 1352   234   149  664   112    47  143    31    91  283   165
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  180 1352   234   149  664   112    47  143    31    91  283   165
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   180 1352   234   149  664   112    47  143    31    91  283   165
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  180 1352   234   149  664   112    47  143    31    91  283   165
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  180 1352   234   149  664   112    47  143    31    91  283   165
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.56  0.44  1.00 2.57  0.43  1.00 0.82  0.18  1.00 0.63  0.37
Final Sat.:  1600 4292   708  1600 4307   693  1600 1315   285  1600 1011   589
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.32  0.33  0.09 0.15  0.16  0.03 0.11  0.11  0.06 0.28  0.28
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:56                Page 83-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #81 Grand Ave and McFadden Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.813
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        55               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  0  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     232 1320   227   176  800   215    64  238    42    96  762   168
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  232 1320   227   176  800   215    64  238    42    96  762   168
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   232 1320   227   176  800   215    64  238    42    96  762   168
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  232 1320   227   176  800   215    64  238    42    96  762   168
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  232 1320   227   176  800   215    64  238    42    96  762   168
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.04  1.00
Lanes:       1.00 2.56  0.44  1.00 2.36  0.64  1.00 0.85  0.15  1.00 1.64  0.36
Final Sat.:  1600 4296   704  1600 3983  1017  1600 1360   240  1600 2722   578
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.31  0.32  0.11 0.20  0.21  0.04 0.17  0.17  0.06 0.28  0.29
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:57                Page 84-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #82 Grand Ave and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.079
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     259 1494   129   236  583   327   207  895    72    98 1758   228
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  259 1494   129   236  583   327   207  895    72    98 1758   228
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   259 1494   129   236  583   327   207  895    72    98 1758   228
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  259 1494   129   236  583   327   207  895    72    98 1758   228
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  259 1494   129   236  583   327   207  895    72    98 1758   228
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.76  0.24  1.00 2.00  1.00  1.00 2.78  0.22  1.00 2.66  0.34
Final Sat.:  1600 4618   382  1600 3400  1600  1600 4643   357  1600 4449   551
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.32  0.34  0.15 0.17  0.20  0.13 0.19  0.20  0.06 0.40  0.41
Crit Moves:             ****  ****             ****                     ****
*******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:57                Page 85-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #83 Grand Ave and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.899
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        86               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    2  0  3  0  1    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     218  788   174   178  575   265   342  656   142   244 1556   510
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  218  788   174   178  575   265   342  656   142   244 1556   510
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   218  788   174   178  575   265   342  656   142   244 1556   510
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  218  788   174   178  575   265   342  656   142   244 1556   510
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  218  788   174   178  575   265   342  656   142   244 1556   510
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.46  0.54  1.00 2.05  0.95  2.00 3.00  1.00  2.00 2.26  0.74
Final Sat.:  1600 4132   868  1600 3486  1514  3200 5100  1600  3200 3815  1185
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.19  0.20  0.11 0.16  0.18  0.11 0.13  0.09  0.08 0.41  0.43
Crit Moves:  ****                     ****  ****                     ****
*******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:58                Page 86-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #84 SR-55 NB Ramps and Dyer Rd
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.349
Loss Time (sec):       5                Average Delay (sec/veh):         6.0
Optimal Cycle:        19                Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    0  0  3  0  1    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     188    0    51     0    0     0     0 1355   689     0 1411   882
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  188    0    51     0    0     0     0 1355   689     0 1411   882
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
PHF Volume:   188    0    51     0    0     0     0 1355     0     0 1411     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  188    0    51     0    0     0     0 1355     0     0 1411     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  0.00
FinalVolume:  188    0    51     0    0     0     0 1355     0     0 1411     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.93 1.00  0.93  1.00 1.00  1.00  1.00 0.91  1.00  1.00 0.91  0.91
Lanes:       1.79 0.00  1.21  0.00 0.00  0.00  0.00 3.00  1.00  0.00 3.00  0.00
Final Sat.:  3161    0  2147     0    0     0     0 5187  1900     0 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.00  0.02  0.00 0.00  0.00  0.00 0.26  0.00  0.00 0.27  0.00
Crit Moves:  ****                              ****                   ****
Green/Cycle: 0.17 0.00  0.17  0.00 0.00  0.00  0.00 0.78  0.00  0.00 0.78  0.00
Volume/Cap:  0.35 0.00  0.14  0.00 0.00  0.00  0.00 0.34  0.00  0.00 0.35  0.00
Delay/Veh:   36.9  0.0  35.3   0.0  0.0   0.0   0.0  3.3   0.0   0.0  3.4   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  36.9  0.0  35.3   0.0  0.0   0.0   0.0  3.3   0.0   0.0  3.4   0.0
LOS by Move:    D    A     D     A    A     A     A    A     A     A    A     A
HCM2k85thQ:     5    0     2     0    0     0     0    7     0     0    8     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:59                Page 87-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM 4-Way Stop Method (Base Volume Alternative)
*******************************************************************************
Intersection #85 Cambridge St and La Veta Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.938
Loss Time (sec):       5               Average Delay (sec/veh):        26.1
Optimal Cycle:         0               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  0  0    0  0  1  0  1    1  0  0  0  1    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     176  246     0     0  206   191   469    0   309     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  176  246     0     0  206   191   469    0   309     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   176  246     0     0  206   191   469    0   309     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  176  246     0     0  206   191   469    0   309     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  176  246     0     0  206   191   469    0   309     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Final Sat.:   454  486     0     0  479   528   500    0   592     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.39 0.51  xxxx  xxxx 0.43  0.36  0.94 xxxx  0.52  xxxx xxxx  xxxx
Crit Moves:       ****             ****        ****
Delay/Veh:   15.1 16.9   0.0   0.0 15.3  12.9  52.4  0.0  14.9   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  15.1 16.9   0.0   0.0 15.3  12.9  52.4  0.0  14.9   0.0  0.0   0.0
LOS by Move:    C    C     *     *    C     B     F    *     B     *    *     *
ApproachDel:       16.2             14.1             37.5           xxxxxx
Delay Adj:         1.00             1.00             1.00            xxxxx
ApprAdjDel:        16.2             14.1             37.5           xxxxxx
LOS by Appr:          C                B                E                *
AllWayAvgQ:   0.6  0.9   0.0   0.0  0.7   0.5   5.9  0.0   1.0   0.0  0.0   0.0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:45:59                Page 88-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #86 Cambridge St and Fairhaven Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.531
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        25               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  0  0  1    1  0  1  0  0    0  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   195    0    68    85  148     0     0  218   272
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   195    0    68    85  148     0     0  218   272
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   195    0    68    85  148     0     0  218   272
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   195    0    68    85  148     0     0  218   272
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   195    0    68    85  148     0     0  218   272
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 0.44  0.56
Final Sat.:     0    0     0  1600    0  1600  1600 1700     0     0  712   888
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.12 0.00  0.04  0.05 0.09  0.00  0.00 0.31  0.31
Crit Moves:                   ****             ****                   ****
*******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:00                Page 89-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #87 Mabury St and 1st Street
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.752
Loss Time (sec):       5               Average Delay (sec/veh):        27.2
Optimal Cycle:        46               Level Of Service:                  C
*******************************************************************************
Street Name:              Mabury                          1st Street
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  0  1    1  0  1! 0  1    0  0  1  1  0    1  0  1  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:      25    0   256   164   70   310     0 1275    20    31  423     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   25    0   256   164   70   310     0 1275    20    31  423     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    25    0   256   164   70   310     0 1275    20    31  423     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   25    0   256   164   70   310     0 1275    20    31  423     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   25    0   256   164   70   310     0 1275    20    31  423     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 1.00  0.85  0.90 0.90  0.90  1.00 0.95  0.95  0.95 0.95  0.95
Lanes:       1.00 0.00  1.00  1.27 0.23  1.50  0.00 1.97  0.03  1.00 2.00  0.00
Final Sat.:  1805    0  1615  2170  390  2577     0 3547    56  1805 3610     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.00  0.16  0.08 0.18  0.12  0.00 0.36  0.36  0.02 0.12  0.00
Crit Moves:             ****        ****              ****        ****
Green/Cycle: 0.21 0.00  0.21  0.24 0.24  0.24  0.00 0.48  0.48  0.02 0.50  0.00
Volume/Cap:  0.07 0.00  0.75  0.32 0.75  0.50  0.00 0.75  0.75  0.75 0.23  0.00
Delay/Veh:   31.7  0.0  46.1  31.5 39.8  33.4   0.0 23.2  23.2 103.1 14.2   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.7  0.0  46.1  31.5 39.8  33.4   0.0 23.2  23.2 103.1 14.2   0.0
LOS by Move:    C    A     D     C    D     C     A    C     C     F    B     A
HCM2k85thQ:     1    0    14     5   16     9     0   27    27     4    6     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Attachment 8

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:01                Page 90-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #88 Tustin St and La Veta Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.344
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        18               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      31  693   164    96  851    16    13    5    20   134    4    82
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   31  693   164    96  851    16    13    5    20   134    4    82
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    31  693   164    96  851    16    13    5    20   134    4    82
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   31  693   164    96  851    16    13    5    20   134    4    82
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   31  693   164    96  851    16    13    5    20   134    4    82
OvlAdjVol:                                                                   0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       1.00 2.43  0.57  1.00 2.94  0.06  1.00 1.00  1.00  1.94 0.06  1.00
Final Sat.:  1600 4081   919  1600 4911    89  1600 1700  1600  3107   93  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.17  0.18  0.06 0.17  0.18  0.01 0.00  0.01  0.04 0.04  0.05
OvlAdjV/S:                                                                0.00
Crit Moves:             ****  ****                          ****       ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:01                Page 91-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #89 Tustin St and SR-22 WB On-Ramp
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.321
Loss Time (sec):       5               Average Delay (sec/veh):         7.7
Optimal Cycle:        19               Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  0    0  0  2  1  0    0  0  0  0  0    0  0  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     383 1100     0     0  642   330     0    0     0     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  383 1100     0     0  642   330     0    0     0     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   383 1100     0     0  642   330     0    0     0     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  383 1100     0     0  642   330     0    0     0     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  383 1100     0     0  642   330     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.95  1.00  1.00 0.86  0.86  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 2.00  0.00  0.00 2.00  1.00  0.00 0.00  0.00  0.00 0.00  0.00
Final Sat.:  3502 3610     0     0 3282  1641     0    0     0     0    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.30  0.00  0.00 0.20  0.20  0.00 0.00  0.00  0.00 0.00  0.00
Crit Moves:  ****                 ****
Green/Cycle: 0.34 0.95  0.00  0.00 0.61  0.61  0.00 0.00  0.00  0.00 0.00  0.00
Volume/Cap:  0.32 0.32  0.00  0.00 0.32  0.33  0.00 0.00  0.00  0.00 0.00  0.00
Delay/Veh:   24.6  0.2   0.0   0.0  9.6   9.6   0.0  0.0   0.0   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  24.6  0.2   0.0   0.0  9.6   9.6   0.0  0.0   0.0   0.0  0.0   0.0
LOS by Move:    C    A     A     A    A     A     A    A     A     A    A     A
HCM2k85thQ:     7    3     0     0    8     8     0    0     0     0    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

Attachment 8

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:02                Page 92-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #90 Tustin St and SR-22 EB Off-Ramp / Seba Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.625
Loss Time (sec):       5                Average Delay (sec/veh):        23.3
Optimal Cycle:        32                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted      Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  2  1  0    1  0  3  0  0    1  0  1! 0  1    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1155     3    43  589     0   440   39   558    28    0    67
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1155     3    43  589     0   440   39   558    28    0    67
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1155     3    43  589     0   440   39   558    28    0    67
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1155     3    43  589     0   440   39   558    28    0    67
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1155     3    43  589     0   440   39   558    28    0    67
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.91  0.11 0.91  1.00  0.90 0.90  0.90  0.89 1.00  0.89
Lanes:       0.00 2.99  0.01  1.00 3.00  0.00  1.41 0.07  1.52  0.29 0.00  0.71
Final Sat.:     0 5174    13   217 5187     0  2408  124  2596   499    0  1195
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.22  0.22  0.20 0.11  0.00  0.18 0.31  0.21  0.06 0.00  0.06
Crit Moves:       ****                          ****        ****
Green/Cycle: 0.00 0.36  0.36  0.36 0.36  0.00  0.50 0.50  0.50  0.09 0.00  0.09
Volume/Cap:  0.00 0.63  0.63  0.56 0.32  0.00  0.36 0.63  0.43  0.63 0.00  0.63
Delay/Veh:    0.0 27.3  27.3  34.4 23.4   0.0  15.2 18.8  15.8  51.8  0.0  51.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 27.3  27.3  34.4 23.4   0.0  15.2 18.8  15.8  51.8  0.0  51.8
LOS by Move:    A    C     C     C    C     A     B    B     B     D    A     D
HCM2k85thQ:     0   17    17     3    7     0     9   19    11     6    0     6
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:03                Page 93-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #91 Tustin Ave and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.757
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     258 1377   122   356  940   108    82  185   151    86  191   180
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  258 1377   122   356  940   108    82  185   151    86  191   180
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   258 1377   122   356  940   108    82  185   151    86  191   180
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  258 1377   122   356  940   108    82  185   151    86  191   180
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  258 1377   122   356  940   108    82  185   151    86  191   180
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 2.76  0.24  2.00 2.69  0.31  1.00 0.55  0.45  1.00 0.51  0.49
Final Sat.:  3200 4609   391  3200 4505   495  1600  881   719  1600  824   776
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.30  0.31  0.11 0.21  0.22  0.05 0.21  0.21  0.05 0.23  0.23
Crit Moves:             ****  ****             ****                   ****
******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:03                Page 94-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #92 Tustin Ave and Santa Clara Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.779
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        48               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     176  852   131   199 1574   109    63  198   116   115  144   136
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  176  852   131   199 1574   109    63  198   116   115  144   136
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   176  852   131   199 1574   109    63  198   116   115  144   136
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  176  852   131   199 1574   109    63  198   116   115  144   136
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  176  852   131   199 1574   109    63  198   116   115  144   136
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 2.60  0.40  2.00 2.81  0.19  1.00 0.63  0.37  1.00 0.51  0.49
Final Sat.:  1600 4360   640  3200 4689   311  1600 1009   591  1600  823   777
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.20  0.20  0.06 0.34  0.35  0.04 0.20  0.20  0.07 0.18  0.17
Crit Moves:  ****                      ****       ****        ****
*******************************************************************************
```

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  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:05                Page 95-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #93 Tustin Ave and 17th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.741
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        42               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  1  0    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     233 1000   514   377  404    40   457  898   122   211  693   385
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  233 1000   514   377  404    40   457  898   122   211  693   385
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   233 1000   514   377  404    40   457  898   122   211  693   385
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  233 1000   514   377  404    40   457  898   122   211  693   385
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  233 1000   514   377  404    40   457  898   122   211  693   385
OvlAdjVol:               409                                              197
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.00  1.00  2.00 2.73  0.27  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 3400  1600  3200 4568   432  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.29  0.32  0.12 0.09  0.09  0.14 0.18  0.08  0.07 0.14  0.24
OvlAdjV/S:               0.26                                             0.12
Crit Moves:       ****        ****             ****                 ****
*******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:05                Page 96-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #94 Tustin Ave and 4th St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.784
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  0  1    1  0  2  1  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       35  381   123   536  396   145   226  806    41   123  833   513
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    35  381   123   536  396   145   226  806    41   123  833   513
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     35  381   123   536  396   145   226  806    41   123  833   513
Reduct Vol:      0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    35  381   123   536  396   145   226  806    41   123  833   513
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    35  381   123   536  396   145   226  806    41   123  833   513
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 2.27  0.73  2.00 2.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00
Final Sat.:  1600 3829  1171  3200 3400  1600  1600 5100  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.10  0.11  0.17 0.12  0.09  0.14 0.16  0.03  0.08 0.25  0.32
Crit Moves:             ****  ****             ****                       ****
*******************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #95 SR-55 SB Ramps / Auto Mall Dr and Edinger Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.687
Loss Time (sec):       5               Average Delay (sec/veh):        25.4
Optimal Cycle:        37               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  1  0  0  2    1  0  1  0  1    1  0  3  0  1    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     401   32   423   110   50    37    46 1649   464   437 1139   136
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  401   32   423   110   50    37    46 1649   464   437 1139   136
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   401   32   423   110   50    37    46 1649     0   437 1139   136
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  401   32   423   110   50    37    46 1649     0   437 1139   136
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  401   32   423   110   50    37    46 1649     0   437 1139   136
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.96 0.96  0.75  0.95 1.00  0.85  0.95 0.91  1.00  0.92 0.90  0.90
Lanes:       1.85 0.15  2.00  1.00 1.00  1.00  1.00 3.00  1.00  2.00 2.68  0.32
Final Sat.:  3364  268  2842  1805 1900  1615  1805 5187  1900  3502 4560   544
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.12  0.15  0.06 0.03  0.02  0.03 0.32  0.00  0.12 0.25  0.25
Crit Moves:             ****  ****                 ****        ****
Green/Cycle: 0.22 0.22  0.22  0.09 0.09  0.09  0.06 0.46  0.00  0.18 0.58  0.58
Volume/Cap:  0.55 0.55  0.69  0.69 0.30  0.26  0.43 0.69  0.00  0.69 0.43  0.43
Delay/Veh:   35.7 35.7  39.3  56.0 43.6  43.5  48.1 22.0   0.0  41.4 11.6  11.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  35.7 35.7  39.3  56.0 43.6  43.5  48.1 22.0   0.0  41.4 11.6  11.6
LOS by Move:    D    D     D     E    D     D     D    C     A     D    B     B
HCM2k85thQ:    10   10    12     7    3     2     3   23     0    12   12    12
```

```
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #96 SR-55 NB Ramps / Del Amo Ave and Newport Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.951
Loss Time (sec):       5               Average Delay (sec/veh):        46.2
Optimal Cycle:       134               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  3  0  1    2  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     879  262    51    19  231   889   165   57    33    23  348    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  879  262    51    19  231   889   165   57    33    23  348    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   879  262    51    19  231   889   165   57    33    23  348    16
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  879  262    51    19  231   889   165   57    33    23  348    16
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  879  262    51    19  231   889   165   57    33    23  348    16
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.89  0.89  0.95 0.91  0.85  0.92 0.90  0.90  0.95 0.94  0.94
Lanes:       2.00 2.51  0.49  1.00 3.00  1.00  2.00 1.27  0.73  1.00 1.91  0.09
Final Sat.:  3502 4238   825  1805 5187  1615  3502 2161  1251  1805 3427   158
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.25 0.06  0.06  0.01 0.04  0.55  0.05 0.03  0.03  0.01 0.10  0.10
Crit Moves:  ****                         ****  ****                   ****
Green/Cycle: 0.26 0.68  0.68  0.12 0.53  0.58  0.05 0.11  0.11  0.05 0.11  0.11
Volume/Cap:  0.95 0.09  0.09  0.09 0.08  0.95  0.95 0.25  0.25  0.25 0.95  0.95
Delay/Veh:   54.9  5.5   5.5  39.7 11.6  38.3 101.1 41.5  41.5  47.0 77.7  77.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  54.9  5.5   5.5  39.7 11.6  38.3 101.1 41.5  41.5  47.0 77.7  77.7
LOS by Move:    D    A     A     D    B     D     F    D     D     D    E     E
HCM2k85thQ:    27    2     2     1    2    44     8    2     2     1   15    15
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:07                Page 99-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #97 Red Hill Ave and Edinger Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.865
Loss Time (sec):       5                Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        70                Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Ovl            Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  3  0  1    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     208 1501   238   108  214   173   410 1051   128    91 1176   574
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  208 1501   238   108  214   173   410 1051   128    91 1176   574
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   208 1501   238   108  214   173   410 1051   128    91 1176   574
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  208 1501   238   108  214   173   410 1051   128    91 1176   574
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  208 1501   238   108  214   173   410 1051   128    91 1176   574
OvlAdjVol:                                  0                24
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00  2.00 3.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 5100  1600  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.29  0.15  0.03 0.04  0.11  0.13 0.21  0.08  0.03 0.23  0.36
OvlAdjV/S:                                0.00             0.02
Crit Moves:       ****        ****              ****                        ****
******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:08                Page 100-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #98 Red Hill Ave and Warner Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.952
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:       132               Level Of Service:                    E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  1  0    2  0  2  1  0    1  0  2  1  0    2  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     343 1175   135    89  341   432   324  880   137    78 1643   216
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  343 1175   135    89  341   432   324  880   137    78 1643   216
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   343 1175   135    89  341   432   324  880   137    78 1643   216
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  343 1175   135    89  341   432   324  880   137    78 1643   216
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  343 1175   135    89  341   432   324  880   137    78 1643   216
OvlAdjVol:                                                                 172
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.59  0.41  2.00 2.00  1.00  1.00 2.60  0.40  2.00 3.00  1.00
Final Sat.:  3200 6040   660  3200 3400  1600  1600 4353   647  3200 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.19  0.20  0.03 0.10  0.27  0.20 0.20  0.21  0.02 0.32  0.14
OvlAdjV/S:                                                                 0.11
Crit Moves:  ****                      ****  ****                 ****
*******************************************************************************
```

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------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #99 Red Hill Ave and Dyer Rd / barranca Pkwy
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.591
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        28               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  4  0  1    2  0  4  0  1    2  0  3  1  0    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     344 1293   333   314  531   249   178  662    87   129  979   286
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  344 1293   333   314  531   249   178  662    87   129  979   286
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   344 1293   333   314  531   249   178  662    87   129  979   286
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  344 1293   333   314  531   249   178  662    87   129  979   286
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  344 1293   333   314  531   249   178  662    87   129  979   286
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 4.00  1.00  2.00 4.00  1.00  2.00 3.54  0.46  2.00 4.00  1.00
Final Sat.:  3200 6800  1600  3200 6800  1600  3200 5957   743  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.19  0.21  0.10 0.08  0.16  0.06 0.11  0.12  0.04 0.14  0.18
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:09              Page 102-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #100 Red Hill Ave and Alton Pkwy
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.494
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  1    1  0  3  0  1    1  0  2  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      27 1513   219   148  628     5   453 1111   569  2003  342  1235
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   27 1513   219   148  628     5   453 1111   569  2003  342  1235
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    27 1513   219   148  628     5   453 1111   569  2003  342  1235
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   27 1513   219   148  628     5   453 1111   569  2003  342  1235
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   27 1513   219   148  628     5   453 1111   569  2003  342  1235
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.00  1.00  1.00 3.00  1.00  1.00 2.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5100  1600  1600 5100  1600  1600 3400  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.30  0.14  0.09 0.12  0.00  0.28 0.33  0.36  0.63 0.20  0.77
Crit Moves:       ****        ****            ****                      ****
******************************************************************************
```

```
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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #101 Red Hill Ave and MacArthur Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.722
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        40               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ignore           Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  3  0  1    2  0  3  0  1    1  0  3  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     179 1160    14   340  707  1240   515  237    36    39  818   574
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  179 1160    14   340  707  1240   515  237    36    39  818   574
User Adj:    1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Volume:   179 1160    14   340  707     0   515  237    36    39  818     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  179 1160    14   340  707     0   515  237    36    39  818     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  179 1160    14   340  707     0   515  237    36    39  818     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.96  0.04  2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00
Final Sat.:  3200 4943    57  3200 5100  1600  3200 5100  1600  1600 5100  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.23  0.24  0.11 0.14  0.00  0.16 0.05  0.02  0.02 0.16  0.00
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

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--------------------------------------------------------------------------------
                          Santa Ana Circulation Element
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #102 Red Hill Ave and Main St
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.836
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        61               Level Of Service:                  D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  0  1    2  0  2  0  1    2  0  2  1  0    2  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     467 1006   272    88  640   348   212  757   205   284 1617    91
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  467 1006   272    88  640   348   212  757   205   284 1617    91
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   467 1006   272    88  640   348   212  757   205   284 1617    91
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  467 1006   272    88  640   348   212  757   205   284 1617    91
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  467 1006   272    88  640   348   212  757   205   284 1617    91
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00
Lanes:       2.00 2.00  1.00  2.00 2.00  1.00  2.00 2.36  0.64  2.00 2.84  0.16
Final Sat.:  3200 3400  1600  3200 3400  1600  3200 3977  1023  3200 4744   256
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.30  0.17  0.03 0.19  0.22  0.07 0.19  0.20  0.09 0.34  0.36
Crit Moves:  ****                     ****  ****                     ****
********************************************************************************
```

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-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #103 I-5 SB Ramps and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.444
Loss Time (sec):       5               Average Delay (sec/veh):        19.9
Optimal Cycle:        22               Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   357    0    78   595  672     0     0  590   162
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   357    0    78   595  672     0     0  590   162
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   357    0    78   595  672     0     0  590   162
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   357    0    78   595  672     0     0  590   162
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   357    0    78   595  672     0     0  590   162
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.92 1.00  0.85  0.92 0.91  1.00  1.00 0.88  0.88
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 2.35  0.65
Final Sat.:     0    0     0  3502    0  1615  3502 5187     0     0 3939  1082
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.10 0.00  0.05  0.17 0.13  0.00  0.00 0.15  0.15
Crit Moves:                   ****             ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.23 0.00  0.61  0.38 0.72  0.00  0.00 0.34  0.34
Volume/Cap:  0.00 0.00  0.00  0.44 0.00  0.08  0.44 0.18  0.00  0.00 0.44  0.44
Delay/Veh:    0.0  0.0   0.0  33.4  0.0   7.9  23.2  4.5   0.0   0.0 26.0  26.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

AdjDel/Veh:	0.0	0.0	0.0	33.4	0.0	7.9	23.2	4.5	0.0	0.0	26.0	26.0
LOS by Move:	A	A	A	C	A	A	C	A	A	A	C	C
HCM2k85thQ:	0	0	0	8	0	2	11	4	0	0	10	10

****

Note: Queue reported is the number of cars per lane.

****

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #104 Tustin Ranch Rd and Warner Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):          0.671
Loss Time (sec):       5                Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        34                Level Of Service:                    B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include          Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    2  0  0  0  1    2  0  3  0  0    0  0  3  0  1
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       0    0     0   653    0    45    64 2124     0     0  925   398
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   653    0    45    64 2124     0     0  925   398
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   653    0    45    64 2124     0     0  925   398
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   653    0    45    64 2124     0     0  925   398
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   653    0    45    64 2124     0     0  925   398
OvlAdjVol:                                                                  71
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 0.00  0.00  2.00 0.00  1.00  2.00 3.00  0.00  0.00 3.00  1.00
Final Sat.:     0    0     0  3200    0  1600  3200 5100     0     0 5100  1600
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.20 0.00  0.03  0.02 0.42  0.00  0.00 0.18  0.25
OvlAdjV/S:                                                                  0.04
Crit Moves:                    ****                 ****        ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #105 Von Karman Ave and Barranca Pkwy
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          1.284
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:       180               Level Of Service:                    F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  1  0    2  0  2  0  2    2  0  3  0  1    2  0  4  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     362 2082   454    80  407   280   785 1435   201   254  805   274
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  362 2082   454    80  407   280   785 1435   201   254  805   274
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   362 2082   454    80  407   280   785 1435   201   254  805   274
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  362 2082   454    80  407   280   785 1435   201   254  805   274
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  362 2082   454    80  407   280   785 1435   201   254  805   274
OvlAdjVol:                              0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 1.64  0.36  2.00 2.00  2.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 2727   573  3200 3400  3200  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.76  0.79  0.03 0.12  0.09  0.25 0.28  0.13  0.08 0.12  0.17
OvlAdjV/S:                              0.00
Crit Moves:             ****  ****            ****                         ****
*******************************************************************************
```

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-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #106 Red Hill Avenue and El Camino Real
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.696
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        37               Level Of Service:                  B
*******************************************************************************
Street Name:         Red Hill Avenue                   El Camino Real
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    1  0  2  1  0    1  0  1  0  1    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     433 1372   253    20  728    96    52  113   148   265  439    51
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  433 1372   253    20  728    96    52  113   148   265  439    51
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   433 1372   253    20  728    96    52  113   148   265  439    51
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  433 1372   253    20  728    96    52  113   148   265  439    51
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  433 1372   253    20  728    96    52  113   148   265  439    51
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.00  1.00
Lanes:       2.00 3.00  1.00  1.00 2.65  0.35  1.00 1.00  1.00  1.00 0.90  0.10
Final Sat.:  3200 5100  1600  1600 4441   559  1600 1700  1600  1600 1433   167
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.27  0.16  0.01 0.16  0.17  0.03 0.07  0.09  0.17 0.31  0.31
Crit Moves:  ****                 ****  ****                     ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:13              Page 109-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #107 Red Hill Avenue and I-5 NB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.623
Loss Time (sec):       5               Average Delay (sec/veh):        23.6
Optimal Cycle:        32               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 NB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  0  0    0  0  3  0  1    0  0  0  0  0    1  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     292 1670     0     0  865   175     0    0     0   256   96   415
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  292 1670     0     0  865   175     0    0     0   256   96   415
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   292 1670     0     0  865   175     0    0     0   256   96   415
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  292 1670     0     0  865   175     0    0     0   256   96   415
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  292 1670     0     0  865   175     0    0     0   256   96   415
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.91  1.00  1.00 0.91  0.85  1.00 1.00  1.00  0.83 0.83  0.83
Lanes:       1.00 3.00  0.00  0.00 3.00  1.00  0.00 0.00  0.00  1.45 0.55  1.00
Final Sat.:  1805 5187     0     0 5187  1615     0    0     0  2292  860  1576
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.32  0.00  0.00 0.17  0.11  0.00 0.00  0.00  0.11 0.11  0.26
Crit Moves:  ****                 ****                                     ****
Green/Cycle: 0.26 0.53  0.00  0.00 0.27  0.27  0.00 0.00  0.00  0.42 0.42  0.42
Volume/Cap:  0.62 0.61  0.00  0.00 0.62  0.40  0.00 0.00  0.00  0.26 0.26  0.62
Delay/Veh:   35.3 16.9   0.0   0.0 33.1  30.7   0.0  0.0   0.0  18.8 18.8  23.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
```

```
AdjDel/Veh:  35.3 16.9   0.0   0.0 33.1  30.7   0.0  0.0   0.0  18.8 18.8  23.6
LOS by Move:    D    B     A     A    C     C     A    A     A     B    B     C
HCM2k85thQ:    13   20     0     0   14     7     0    0     0     6    6    17
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:14              Page 110-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #108 Red Hill Avenue and I-5 SB Ramps
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.713
Loss Time (sec):       5               Average Delay (sec/veh):        21.8
Optimal Cycle:        40               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    I-5 SB Ramps
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  4  0  1    1  0  3  0  0    0  1  0  0  1    0  0  0  0  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:       0 1700   540   310  744     0   296    3   265     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1700   540   310  744     0   296    3   265     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1700   540   310  744     0   296    3   265     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1700   540   310  744     0   296    3   265     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1700   540   310  744     0   296    3   265     0    0     0
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 0.91  0.85  0.95 0.91  1.00  0.92 0.92  0.85  1.00 1.00  1.00
Lanes:       0.00 4.00  1.00  1.00 3.00  0.00  0.99 0.01  1.00  0.00 0.00  0.00
Final Sat.:     0 6916  1615  1805 5187     0  1732   18  1615     0    0     0
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.25  0.33  0.17 0.14  0.00  0.17 0.17  0.16  0.00 0.00  0.00
Crit Moves:             ****  ****                 ****
Green/Cycle: 0.00 0.47  0.47  0.24 0.71  0.00  0.24 0.24  0.24  0.00 0.00  0.00
Volume/Cap:  0.00 0.52  0.71  0.71 0.20  0.00  0.71 0.71  0.68  0.00 0.00  0.00
Delay/Veh:    0.0 18.8  24.4  40.3  4.9   0.0  40.5 40.5  39.6   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0 18.8  24.4  40.3  4.9   0.0  40.5 40.5  39.6   0.0  0.0   0.0
LOS by Move:    A    B     C     D    A     A     D    D     D     A    A     A
HCM2k85thQ:     0   15    21    15    4     0    15   15    13     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:15              Page 111-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #109 Red Hill Avenue and Nisson Road
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.715
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        39               Level Of Service:                  C
******************************************************************************
Street Name:         Red Hill Avenue                    Nisson Road
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  0  1  0    1  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      34 1769    36   142  730    73   247   90    40    48   83   141
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   34 1769    36   142  730    73   247   90    40    48   83   141
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    34 1769    36   142  730    73   247   90    40    48   83   141
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   34 1769    36   142  730    73   247   90    40    48   83   141
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   34 1769    36   142  730    73   247   90    40    48   83   141
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 3.92  0.08  1.00 2.73  0.27  1.00 0.69  0.31  1.00 0.37  0.63
Final Sat.:  1600 6572   128  1600 4564   436  1600 1108   492  1600  593  1007
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.27  0.28  0.09 0.16  0.17  0.15 0.08  0.08  0.03 0.14  0.14
Crit Moves:             ****  ****             ****                   ****
******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:16                Page 112-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #110 Red Hill Avenue and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):          0.749
Loss Time (sec):       5               Average Delay (sec/veh):       xxxxxx
Optimal Cycle:        43               Level Of Service:                    C
*******************************************************************************
Street Name:         Red Hill Avenue                   Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     283 1378    99   123  382   160    91  218    90   196  654   171
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  283 1378    99   123  382   160    91  218    90   196  654   171
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   283 1378    99   123  382   160    91  218    90   196  654   171
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  283 1378    99   123  382   160    91  218    90   196  654   171
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  283 1378    99   123  382   160    91  218    90   196  654   171
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.80  0.20  1.00 2.11  0.89  1.00 1.42  0.58  2.00 1.59  0.41
Final Sat.:  1600 4678   322  1600 3583  1417  1600 2365   935  3200 2637   663
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.29  0.31  0.08 0.11  0.11  0.06 0.09  0.10  0.06 0.25  0.26
Crit Moves:             ****  ****             ****                   ****
*******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:17                Page 113-1
-------------------------------------------------------------------------------
                          Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #111 Red Hill Avenue and Valencia Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.753
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        44               Level Of Service:                  C
*******************************************************************************
Street Name:         Red Hill Avenue                 Valencia Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  3  1  0    1  0  2  1  0    1  0  1  0  1    2  0  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     248 1849   305   116  467    52   110  297   130   284  412   272
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  248 1849   305   116  467    52   110  297   130   284  412   272
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   248 1849   305   116  467    52   110  297   130   284  412   272
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  248 1849   305   116  467    52   110  297   130   284  412   272
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  248 1849   305   116  467    52   110  297   130   284  412   272
OvlAdjVol:               225                                              156
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 3.43  0.57  1.00 2.70  0.30  1.00 1.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 5794   906  1600 4519   481  1600 1700  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.32  0.34  0.07 0.10  0.11  0.07 0.17  0.08  0.09 0.24  0.17
OvlAdjV/S:               0.25                                              0.10
Crit Moves:       ****         ****              ****                  ****
*******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:17              Page 114-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #112 Tustin Ranch Road and Warner Avenue North
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.924
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       103               Level Of Service:                  E
*******************************************************************************
Street Name:        Tustin Ranch Road               Warner Avenue North
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  1    2  0  3  0  0    0  0  0  0  0    3  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1995  1175   447  657     0     0    0     0   792    0   716
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1995  1175   447  657     0     0    0     0   792    0   716
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1995  1175   447  657     0     0    0     0   792    0   716
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1995  1175   447  657     0     0    0     0   792    0   716
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1995  1175   447  657     0     0    0     0   792    0   716
OvlAdjVol:               911                                              269
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 3.00  1.00  2.00 3.00  0.00  0.00 0.00  0.00  3.00 0.00  2.00
Final Sat.:     0 5100  1600  3200 5100     0     0    0     0  4800    0  3200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.39  0.73  0.14 0.13  0.00  0.00 0.00  0.00  0.17 0.00  0.22
OvlAdjV/S:               0.57                                              0.08
Crit Moves:              ****  ****                                ****
*******************************************************************************
```

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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:18              Page 115-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #113 Tustin Ranch Road and Walnut Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.772
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Street Name:        Tustin Ranch Road                 Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     876 3814   401   550 1460   947   329  402   230   307 1760  1394
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  876 3814   401   550 1460   947   329  402   230   307 1760  1394
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   876 3814   401   550 1460   947   329  402   230   307 1760  1394
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  876 3814   401   550 1460   947   329  402   230   307 1760  1394
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  876 3814   401   550 1460   947   329  402   230   307 1760  1394
OvlAdjVol:               247              783                              1119
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 1.27  0.73  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 2135  1165  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.75  0.25  0.17 0.29  0.59  0.10 0.19  0.20  0.10 0.52  0.87
OvlAdjV/S:               0.15             0.49                              0.70
Crit Moves:       ****        ****             ****                        ****
*******************************************************************************
```

```
  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to IBI GROUP, IRVINE, CA
2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:19              Page 116-1
-------------------------------------------------------------------------------
                         Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #114 SR-55 SB Ramps and Irvine Boulevard
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.929
Loss Time (sec):       5               Average Delay (sec/veh):        26.5
Optimal Cycle:       111               Level Of Service:                  C
*******************************************************************************
Street Name:          SR-55 SB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    1  0  1! 0  1    0  0  2  1  0    1  0  3  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0   484    0   289     0 1049   707   425 1222     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0   484    0   289     0 1049   707   425 1222     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0    0     0   484    0   289     0 1049   707   425 1222     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0   484    0   289     0 1049   707   425 1222     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0   484    0   289     0 1049   707   425 1222     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.74 1.00  0.73  1.00 0.86  0.86  0.95 0.91  1.00
Lanes:       0.00 0.00  0.00  1.62 0.00  1.38  0.00 2.00  1.00  1.00 3.00  0.00
Final Sat.:     0    0     0  2278    0  1915     0 3251  1625  1805 5187     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.21 0.00  0.15  0.00 0.32  0.44  0.24 0.24  0.00
Crit Moves:                   ****                          ****  ****
Green/Cycle: 0.00 0.00  0.00  0.23 0.00  0.46  0.00 0.47  0.47  0.25 0.72  0.00
Volume/Cap:  0.00 0.00  0.00  0.93 0.00  0.33  0.00 0.69  0.93  0.93 0.33  0.00
Delay/Veh:    0.0  0.0   0.0  54.5  0.0  17.5   0.0 21.7  33.7  61.9  5.1   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  54.5  0.0  17.5   0.0 21.7  33.7  61.9  5.1   0.0
LOS by Move:    A    A     A     D    A     B     A    C     C     E    A     A
```

```
HCM2k85thQ:     0    0     0    19    0     7     0   22    39    25    8     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
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2045 WP PM Peak Hour       Thu Oct 22, 2020 14:46:19              Page 117-1
------------------------------------------------------------------------------
                         Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #115 SR-55 NB Ramps and Irvine Boulevard
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.841
Loss Time (sec):       5               Average Delay (sec/veh):        22.3
Optimal Cycle:        65               Level Of Service:                  C
******************************************************************************
Street Name:          SR-55 NB Ramps                  Irvine Boulevard
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|--------------||--------------||--------------||--------------|
Control:         Permitted       Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1! 0  1    0  0  0  0  0    1  0  3  0  0    0  0  2  1  0
------------|--------------||--------------||--------------||--------------|
Volume Module:
Base Vol:     424   21   386     0    0     0   239 1094     0     0 1043   660
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  424   21   386     0    0     0   239 1094     0     0 1043   660
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   424   21   386     0    0     0   239 1094     0     0 1043   660
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  424   21   386     0    0     0   239 1094     0     0 1043   660
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  424   21   386     0    0     0   239 1094     0     0 1043   660
------------|--------------||--------------||--------------||--------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.86  0.86  1.00 1.00  1.00  0.95 0.91  1.00  1.00 0.86  0.86
Lanes:       1.50 0.05  1.45  0.00 0.00  0.00  1.00 3.00  0.00  0.00 2.00  1.00
Final Sat.:  2445   80  2372     0    0     0  1805 5187     0     0 3257  1629
------------|--------------||--------------||--------------||--------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.26  0.16  0.00 0.00  0.00  0.13 0.21  0.00  0.00 0.32  0.41
Crit Moves:       ****                          ****                     ****
Green/Cycle: 0.31 0.31  0.31  0.00 0.00  0.00  0.16 0.64  0.00  0.00 0.48  0.48
Volume/Cap:  0.56 0.84  0.52  0.00 0.00  0.00  0.84 0.33  0.00  0.00 0.66  0.84
Delay/Veh:   29.2 38.7  28.7   0.0  0.0   0.0  60.5  8.3   0.0   0.0 20.4  25.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  29.2 38.7  28.7   0.0  0.0   0.0  60.5  8.3   0.0   0.0 20.4  25.9
LOS by Move:    C    D     C     A    A     A     E    A     A     A    C     C
HCM2k85thQ:    12   22    11     0    0     0    15    9     0     0   21    31
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

APPENDIX E
MITIGATION WORKSHEETS

```
MITIG8 - 2045 WP AM Peak HoWed Aug 26, 2020 11:37:24                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #3 Euclid St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.995
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  2  0  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     127  801    68   180 2613   240   136  595   364   133  812   148
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  127  801    68   180 2613   240   136  595   364   133  812   148
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  127  801    68   180 2613   240   136  595   364   133  812   148
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   127  801    68   180 2613   240   136  595   364   133  812   148
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  127  801    68   180 2613   240   136  595   364   133  812   148
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  127  801    68   180 2613   240   136  595   364   133  812   148
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       2.00 2.77  0.23  2.00 2.75  0.25  1.00 2.00  1.00  1.00 2.54  0.46
Final Sat.:  3200 4624   376  3200 4596   404  1600 3400  1600  1600 4260   740
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.06 0.57  0.59  0.09 0.17  0.23  0.08 0.19  0.20
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoWed Aug 26, 2020 11:38:30                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #3 Euclid St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.803
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  2  0  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     551 1648   117   136  897   228   121  467   140   119 1103   179
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  551 1648   117   136  897   228   121  467   140   119 1103   179
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  551 1648   117   136  897   228   121  467   140   119 1103   179
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   551 1648   117   136  897   228   121  467   140   119 1103   179
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  551 1648   117   136  897   228   121  467   140   119 1103   179
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  551 1648   117   136  897   228   121  467   140   119 1103   179
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       2.00 2.80  0.20  2.00 2.39  0.61  1.00 2.00  1.00  1.00 2.58  0.42
Final Sat.:  3200 4682   318  3200 4027   973  1600 3400  1600  1600 4330   670
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.35  0.37  0.04 0.22  0.23  0.08 0.14  0.09  0.07 0.25  0.27
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoWed Aug 26, 2020 11:39:58                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #3 Euclid St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.995
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  0  1    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     127  801    68   180 2613   240   136  595   364   133  812   148
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  127  801    68   180 2613   240   136  595   364   133  812   148
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  127  801    68   180 2613   240   136  595   364   133  812   148
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   127  801    68   180 2613   240   136  595   364   133  812   148
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  127  801    68   180 2613   240   136  595   364   133  812   148
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  127  801    68   180 2613   240   136  595   364   133  812   148
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.77  0.23  2.00 2.75  0.25  2.00 2.00  1.00  1.00 2.00  1.00
Final Sat.:  3200 4624   376  3200 4596   404  3200 3400  1600  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.06 0.57  0.59  0.04 0.17  0.23  0.08 0.24  0.09
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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Attachment 8

MITIG8 - 2045 WP PM Peak HoWed Aug 26, 2020 11:40:46 Page 1-1

Santa Ana Circulation Element

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #3 Euclid St and Edinger Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.822
Loss Time (sec):	5	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	57	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	2	1 0	2 0	2	1 0	2 0	2	0 1	1 0	2	0 1
Volume Module:												
Base Vol:	551	1648	117	136	897	228	121	467	140	119	1103	179
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	551	1648	117	136	897	228	121	467	140	119	1103	179
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	551	1648	117	136	897	228	121	467	140	119	1103	179
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	551	1648	117	136	897	228	121	467	140	119	1103	179
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	551	1648	117	136	897	228	121	467	140	119	1103	179
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	551	1648	117	136	897	228	121	467	140	119	1103	179
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.04	1.00	1.00	1.05	1.00	1.00	1.06	1.00	1.00	1.06	1.00
Lanes:	2.00	2.80	0.20	2.00	2.39	0.61	2.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	3200	4682	318	3200	4027	973	3200	3400	1600	1600	3400	1600
Capacity Analysis Module:												
Vol/Sat:	0.17	0.35	0.37	0.04	0.22	0.23	0.04	0.14	0.09	0.07	0.32	0.11
Crit Moves:			****	****			****				****	

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoWed Aug 26, 2020 11:41:36                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #3 Euclid St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.965
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       154               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     127  801    68   180 2613   240   136  595   364   133  812   148
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  127  801    68   180 2613   240   136  595   364   133  812   148
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  127  801    68   180 2613   240   136  595   364   133  812   148
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   127  801    68   180 2613   240   136  595   364   133  812   148
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  127  801    68   180 2613   240   136  595   364   133  812   148
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  127  801    68   180 2613   240   136  595   364   133  812   148
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.77  0.23  2.00 2.75  0.25  2.00 2.00  1.00  2.00 2.00  1.00
Final Sat.:  3200 4624   376  3200 4596   404  3200 3400  1600  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.06 0.57  0.59  0.04 0.17  0.23  0.04 0.24  0.09
Crit Moves:  ****                     ****  ****                     ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoWed Aug 26, 2020 11:41:57                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #3 Euclid St and Edinger Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.822
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        57               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    2  0  2  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     551 1648   117   136  897   228   121  467   140   119 1103   179
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  551 1648   117   136  897   228   121  467   140   119 1103   179
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  551 1648   117   136  897   228   121  467   140   119 1103   179
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   551 1648   117   136  897   228   121  467   140   119 1103   179
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  551 1648   117   136  897   228   121  467   140   119 1103   179
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  551 1648   117   136  897   228   121  467   140   119 1103   179
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.80  0.20  2.00 2.39  0.61  2.00 2.00  1.00  2.00 2.00  1.00
Final Sat.:  3200 4682   318  3200 4027   973  3200 3400  1600  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.35  0.37  0.04 0.22  0.23  0.04 0.14  0.09  0.04 0.32  0.11
Crit Moves:             ****  ****             ****                   ****
******************************************************************************
```

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Attachment 8

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MITIG8 - 2045 WP AM Peak HoMon Jun 8, 2020 16:46:00                  Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #13 Harbor Blvd and Segerstrom Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.961
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       147               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  2  1  0    1  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     107  759    48   173 2324    87    90  753   303   146  453   103
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  107  759    48   173 2324    87    90  753   303   146  453   103
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   107  759    48   173 2324    87    90  753   303   146  453   103
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  107  759    48   173 2324    87    90  753   303   146  453   103
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  107  759    48   173 2324    87    90  753   303   146  453   103
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 2.82  0.18  1.00 2.89  0.11  1.00 1.43  0.57  2.00 2.00  1.00
Final Sat.:  3200 4714   286  1600 4827   173  1600 2382   918  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.16  0.17  0.11 0.48  0.50  0.06 0.32  0.33  0.05 0.13  0.06
Crit Moves:  ****                 ****              ****  ****
******************************************************************************
```

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Attachment 8

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MITIG8 - 2045 WP PM Peak HoMon Jun 8, 2020 16:45:14                  Page 1-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #13 Harbor Blvd and Segerstrom Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.934
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       113               Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  2  1  0    1  0  1  1  0    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     275 1732    55    86  973    86   118  585   192   121 1308   475
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  275 1732    55    86  973    86   118  585   192   121 1308   475
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   275 1732    55    86  973    86   118  585   192   121 1308   475
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  275 1732    55    86  973    86   118  585   192   121 1308   475
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  275 1732    55    86  973    86   118  585   192   121 1308   475
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00
Lanes:       2.00 2.91  0.09  1.00 2.76  0.24  1.00 1.51  0.49  2.00 2.00  1.00
Final Sat.:  3200 4852   148  1600 4610   390  1600 2509   791  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.36  0.37  0.05 0.21  0.22  0.07 0.23  0.24  0.04 0.38  0.30
Crit Moves:             ****  ****            ****                   ****
*******************************************************************************
```

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Attachment 8

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MITIG8 - 2045 WP AM Peak HoTue Jun 9, 2020 10:55:11                  Page 1-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #34 Bristol St and 1st St
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.788
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        50               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  2  1  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     208 1451   184   315 1298   183   206 1268   128   126  949   139
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  208 1451   184   315 1298   183   206 1268   128   126  949   139
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   208 1451   184   315 1298   183   206 1268   128   126  949   139
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  208 1451   184   315 1298   183   206 1268   128   126  949   139
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  208 1451   184   315 1298   183   206 1268   128   126  949   139
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00  1.00 2.62  0.38
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 5100  1600  1600 4387   613
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.28  0.12  0.10 0.25  0.11  0.13 0.25  0.08  0.08 0.22  0.23
Crit Moves:       ****        ****             ****                       ****
*******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoTue Jun 9, 2020 10:53:45                  Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #34 Bristol St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.867
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        71               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    1  0  2  1  1    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     434 1872   276   216 1169   264   259 1454   186   155  953    90
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  434 1872   276   216 1169   264   259 1454   186   155  953    90
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   434 1872   276   216 1169   264   259 1454   186   155  953    90
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  434 1872   276   216 1169   264   259 1454   186   155  953    90
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  434 1872   276   216 1169   264   259 1454   186   155  953    90
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  1.00 3.00  1.00  1.00 2.74  0.26
Final Sat.:  3200 5100  1600  3200 5100  1600  1600 5100  1600  1600 4586   414
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.14 0.37  0.17  0.07 0.23  0.17  0.16 0.29  0.12  0.10 0.21  0.22
Crit Moves:       ****        ****                   ****        ****
******************************************************************************
```

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Attachment 8

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MITIG8 - 2045 WP AM Peak HoTue Jun 9, 2020 11:13:41                  Page 1-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #37 Bristol St and Segerstrom Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.814
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        55               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  1    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70  778   146   283 1011   119   306 1480   136   157  712    91
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   70  778   146   283 1011   119   306 1480   136   157  712    91
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    70  778   146   283 1011   119   306 1480   136   157  712    91
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   70  778   146   283 1011   119   306 1480   136   157  712    91
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   70  778   146   283 1011   119   306 1480   136   157  712    91
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 3.00  1.00  1.00 2.68  0.32  1.00 2.75  0.25  1.00 2.66  0.34
Final Sat.:  1600 5100  1600  1600 4495   505  1600 4596   404  1600 4456   544
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.15  0.09  0.18 0.22  0.24  0.19 0.32  0.34  0.10 0.16  0.17
Crit Moves:       ****        ****                     ****  ****
*******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoTue Jun 9, 2020 11:12:49                  Page 1-1
--------------------------------------------------------------------------------
                          Santa Ana Circulation Element
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
           ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
********************************************************************************
Intersection #37 Bristol St and Segerstrom Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.868
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        72               Level Of Service:                   D
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:         WideBypass         Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  1    1  0  2  1  0    1  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     177 1309   231    98  894   187   279  998    79   156 1408    71
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  177 1309   231    98  894   187   279  998    79   156 1408    71
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   177 1309   231    98  894   187   279  998    79   156 1408    71
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  177 1309   231    98  894   187   279  998    79   156 1408    71
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  177 1309   231    98  894   187   279  998    79   156 1408    71
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 3.00  1.00  1.00 2.48  0.52  1.00 2.78  0.22  1.00 2.86  0.14
Final Sat.:  1600 5100  1600  1600 4170   830  1600 4648   352  1600 4770   230
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.26  0.14  0.06 0.21  0.23  0.17 0.21  0.22  0.10 0.30  0.31
Crit Moves:  ****                     ****  ****                     ****
********************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoTue Jul 14, 2020 10:11:45                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #44 Flower St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.925
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       104               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      89  387   102   366 1158   121   107  983    39   161  664    95
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   89  387   102   366 1158   121   107  983    39   161  664    95
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   89  387   102   366 1158   121   107  983    39   161  664    95
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:    89  387   102   366 1158   121   107  983    39   161  664    95
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   89  387   102   366 1158   121   107  983    39   161  664    95
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   89  387   102   366 1158   121   107  983    39   161  664    95
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.03  1.00  1.00 1.03  1.00  1.00 1.04  1.00
Lanes:       1.00 2.00  1.00  1.00 1.81  0.19  1.00 1.92  0.08  1.00 1.75  0.25
Final Sat.:  1600 3400  1600  1600 2997   303  1600 3178   122  1600 2899   401
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.11  0.06  0.23 0.39  0.40  0.07 0.31  0.32  0.10 0.23  0.24
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoTue Jul 14, 2020 10:09:24                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #44 Flower St and 1st St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.921
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       101               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     211 1000   238   140  383   111   135 1181    98   144  969   101
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  211 1000   238   140  383   111   135 1181    98   144  969   101
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  211 1000   238   140  383   111   135 1181    98   144  969   101
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   211 1000   238   140  383   111   135 1181    98   144  969   101
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  211 1000   238   140  383   111   135 1181    98   144  969   101
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  211 1000   238   140  383   111   135 1181    98   144  969   101
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.03  1.00  1.00 1.03  1.00
Lanes:       1.00 2.00  1.00  1.00 1.55  0.45  1.00 1.85  0.15  1.00 1.81  0.19
Final Sat.:  1600 3400  1600  1600 2581   719  1600 3055   245  1600 2998   302
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.29  0.15  0.09 0.15  0.15  0.08 0.39  0.40  0.09 0.32  0.33
Crit Moves:       ****        ****                          ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoThu Jun 11, 2020 14:58:30                 Page 1-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #62 Santiago St and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.241
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  1  0  1    0  1  0  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     188  611   303   409  972   253   118  732    99   297  699   258
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  188  611   303   409  972   253   118  732    99   297  699   258
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   188  611   303   409  972   253   118  732    99   297  699   258
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  188  611   303   409  972   253   118  732    99   297  699   258
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  188  611   303   409  972   253   118  732    99   297  699   258
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 1.00  1.00  1.00 1.00  1.00  0.25 1.54  0.21  1.00 2.00  1.00
Final Sat.:  1600 1700  1600  1600 1700  1600   398 2468   334  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.36  0.19  0.26 0.57  0.16  0.30 0.30  0.30  0.19 0.21  0.16
Crit Moves:  ****               ****            ****             ****
*******************************************************************************
```

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Attachment 8

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MITIG8 - 2045 WP PM Peak HoThu Jun 11, 2020 15:18:08                 Page 1-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #62 Santiago St and Santa Ana Blvd
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.282
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  1  0  1    0  1  0  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     135  833   236   378  639   103   164  673    87   255  546   347
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  135  833   236   378  639   103   164  673    87   255  546   347
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   135  833   236   378  639   103   164  673    87   255  546   347
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  135  833   236   378  639   103   164  673    87   255  546   347
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  135  833   236   378  639   103   164  673    87   255  546   347
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.00  1.00  1.00 1.06  1.00
Lanes:       1.00 1.00  1.00  1.00 1.00  1.00  0.35 1.46  0.19  1.00 2.00  1.00
Final Sat.:  1600 1700  1600  1600 1700  1600   568 2331   301  1600 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.49  0.15  0.24 0.38  0.06  0.29 0.29  0.29  0.16 0.16  0.22
Crit Moves:       ****        ****                    ****              ****
*******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoTue Jul 14, 2020 09:53:26                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #63 Standard Ave and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.062
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  1  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     191  473   248   431  604   332   298  624   219   250  550   340
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  191  473   248   431  604   332   298  624   219   250  550   340
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  191  473   248   431  604   332   298  624   219   250  550   340
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   191  473   248   431  604   332   298  624   219   250  550   340
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  191  473   248   431  604   332   298  624   219   250  550   340
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  191  473   248   431  604   332   298  624   219   250  550   340
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.48  0.52  1.00 1.24  0.76
Final Sat.:  1600 1700  1600  1600 1700  1600  1600 2469   831  1600 2078  1222
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.28  0.16  0.27 0.36  0.21  0.19 0.25  0.26  0.16 0.26  0.28
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoTue Jul 14, 2020 09:55:45                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #63 Standard Ave and 4th St
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.029
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  1  0  1    1  0  1  0  1    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     251  543   214   254  428   297   302  477   201   233  648   351
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  251  543   214   254  428   297   302  477   201   233  648   351
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  251  543   214   254  428   297   302  477   201   233  648   351
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   251  543   214   254  428   297   302  477   201   233  648   351
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  251  543   214   254  428   297   302  477   201   233  648   351
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  251  543   214   254  428   297   302  477   201   233  648   351
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.04  1.00  1.00 1.05  1.00
Lanes:       1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.41  0.59  1.00 1.30  0.70
Final Sat.:  1600 1700  1600  1600 1700  1600  1600 2351   949  1600 2176  1124
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.32  0.13  0.16 0.25  0.19  0.19 0.20  0.21  0.15 0.30  0.31
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoTue Jun 9, 2020 15:58:28                  Page 1-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #81 Grand Ave and McFadden Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.861
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        69               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     262 1104   165   294 1974   192   109  352   107    95  340    86
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  262 1104   165   294 1974   192   109  352   107    95  340    86
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   262 1104   165   294 1974   192   109  352   107    95  340    86
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  262 1104   165   294 1974   192   109  352   107    95  340    86
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  262 1104   165   294 1974   192   109  352   107    95  340    86
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.61  0.39  1.00 2.73  0.27  1.00 1.53  0.47  1.00 1.60  0.40
Final Sat.:  1600 4376   624  1600 4575   425  1600 2554   746  1600 2654   646
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.25  0.26  0.18 0.43  0.45  0.07 0.14  0.14  0.06 0.13  0.13
Crit Moves:  ****                ****  ****                     ****
*******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoTue Jun 9, 2020 15:59:40                  Page 1-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
*******************************************************************************
Intersection #81 Grand Ave and McFadden Ave
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.813
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        55               Level Of Service:                  D
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    1  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     232 1320   227   176  800   215    64  238    42    96  762   168
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  232 1320   227   176  800   215    64  238    42    96  762   168
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   232 1320   227   176  800   215    64  238    42    96  762   168
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  232 1320   227   176  800   215    64  238    42    96  762   168
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  232 1320   227   176  800   215    64  238    42    96  762   168
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.04  1.00
Lanes:       1.00 2.56  0.44  1.00 2.36  0.64  1.00 1.70  0.30  1.00 1.64  0.36
Final Sat.:  1600 4296   704  1600 3983  1017  1600 2820   480  1600 2722   578
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.31  0.32  0.11 0.20  0.21  0.04 0.08  0.09  0.06 0.28  0.29
Crit Moves:           ****  ****            ****                     ****
*******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoFri Aug 21, 2020 18:32:50                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #91 Tustin Ave and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.056
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     125  720   126   249 2148    42    78  297   511   306  338   442
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  125  720   126   249 2148    42    78  297   511   306  338   442
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  125  720   126   249 2148    42    78  297   511   306  338   442
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   125  720   126   249 2148    42    78  297   511   306  338   442
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  125  720   126   249 2148    42    78  297   511   306  338   442
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  125  720   126   249 2148    42    78  297   511   306  338   442
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.55  0.45  2.00 2.94  0.06  1.00 1.00  1.00  1.00 1.00  1.00
Final Sat.:  3200 4285   715  3200 4908    92  1600 1700  1600  1600 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.17  0.18  0.08 0.44  0.46  0.05 0.17  0.32  0.19 0.20  0.28
Crit Moves:  ****                     ****              ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoFri Aug 21, 2020 18:34:16                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #91 Tustin Ave and Fairhaven Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.641
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        32               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     258 1377   122   356  940   108    82  185   151    86  191   180
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  258 1377   122   356  940   108    82  185   151    86  191   180
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  258 1377   122   356  940   108    82  185   151    86  191   180
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   258 1377   122   356  940   108    82  185   151    86  191   180
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  258 1377   122   356  940   108    82  185   151    86  191   180
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  258 1377   122   356  940   108    82  185   151    86  191   180
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 2.76  0.24  2.00 2.69  0.31  1.00 1.10  0.90  1.00 1.03  0.97
Final Sat.:  3200 4609   391  3200 4505   495  1600 1862  1438  1600 1747  1553
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 0.30  0.31  0.11 0.21  0.22  0.05 0.10  0.10  0.05 0.11  0.12
Crit Moves:             ****  ****             ****                     ****
******************************************************************************
```

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Attachment 8

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MITIG8 - 2045 WP AM Peak HoFri Aug 21, 2020 18:34:59                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #92 Tustin Ave and Santa Clara Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.938
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       116               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     102  556   104   135 2756    87   116  293   214   118  244   122
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  102  556   104   135 2756    87   116  293   214   118  244   122
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  102  556   104   135 2756    87   116  293   214   118  244   122
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   102  556   104   135 2756    87   116  293   214   118  244   122
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  102  556   104   135 2756    87   116  293   214   118  244   122
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  102  556   104   135 2756    87   116  293   214   118  244   122
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       1.00 2.53  0.47  2.00 2.91  0.09  1.00 1.16  0.84  1.00 1.33  0.67
Final Sat.:  1600 4244   756  3200 4853   147  1600 1949  1351  1600 2233  1067
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.13  0.14  0.04 0.57  0.59  0.07 0.15  0.16  0.07 0.11  0.11
Crit Moves:  ****                      ****              ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoFri Aug 21, 2020 18:35:50                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #92 Tustin Ave and Santa Clara Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.681
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        35               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  1  0    2  0  2  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     176  852   131   199 1574   109    63  198   116   115  144   136
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  176  852   131   199 1574   109    63  198   116   115  144   136
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  176  852   131   199 1574   109    63  198   116   115  144   136
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   176  852   131   199 1574   109    63  198   116   115  144   136
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  176  852   131   199 1574   109    63  198   116   115  144   136
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  176  852   131   199 1574   109    63  198   116   115  144   136
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.04  1.00  1.00 1.05  1.00  1.00 1.06  1.00
Lanes:       1.00 2.60  0.40  2.00 2.81  0.19  1.00 1.26  0.74  1.00 1.03  0.97
Final Sat.:  1600 4360   640  3200 4689   311  1600 2118  1182  1600 1746  1554
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.20  0.20  0.06 0.34  0.35  0.04 0.09  0.10  0.07 0.08  0.09
Crit Moves:  ****                      ****              ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoTue Jun 9, 2020 16:22:34                  Page 1-1
-------------------------------------------------------------------------------
                        Santa Ana Circulation Element
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #96 SR-55 NB Ramps / Del Amo Ave and Newport Avenue
*******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.460
Loss Time (sec):       5               Average Delay (sec/veh):        24.4
Optimal Cycle:        23               Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  3  0  2    2  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     413  109    69    20  497   728   269  163   155     8  223     4
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  413  109    69    20  497   728   269  163   155     8  223     4
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   413  109    69    20  497   728   269  163   155     8  223     4
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  413  109    69    20  497   728   269  163   155     8  223     4
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  413  109    69    20  497   728   269  163   155     8  223     4
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.86  0.86  0.95 0.91  0.75  0.92 0.88  0.88  0.95 0.95  0.95
Lanes:       2.00 2.00  1.00  1.00 3.00  2.00  2.00 1.03  0.97  1.00 1.96  0.04
Final Sat.:  3502 3257  1629  1805 5187  2842  3502 1715  1631  1805 3536    63
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.03  0.04  0.01 0.10  0.26  0.08 0.10  0.10  0.00 0.06  0.06
Crit Moves:  ****                     ****  ****                   ****
Green/Cycle: 0.26 0.51  0.51  0.13 0.39  0.56  0.17 0.29  0.29  0.01 0.14  0.14
Volume/Cap:  0.46 0.07  0.08  0.08 0.25  0.46  0.46 0.33  0.33  0.33 0.46  0.46
Delay/Veh:   31.7 12.3  12.4  38.1 20.7  13.4  38.2 28.0  28.0  56.5 40.4  40.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.7 12.3  12.4  38.1 20.7  13.4  38.2 28.0  28.0  56.5 40.4  40.4
LOS by Move:    C    B     B     D    C     B     D    C     C     E    D     D
HCM2k85thQ:     9    1     2     1    6    12     7    6     6     1    6     6
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoTue Jun 9, 2020 16:21:12                  Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #96 SR-55 NB Ramps / Del Amo Ave and Newport Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.700
Loss Time (sec):       5               Average Delay (sec/veh):        28.5
Optimal Cycle:        39               Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  2  1  0    1  0  3  0  2    2  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     879  262    51    19  231   889   165   57    33    23  348    16
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  879  262    51    19  231   889   165   57    33    23  348    16
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   879  262    51    19  231   889   165   57    33    23  348    16
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  879  262    51    19  231   889   165   57    33    23  348    16
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  879  262    51    19  231   889   165   57    33    23  348    16
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 0.89  0.89  0.95 0.91  0.75  0.92 0.90  0.90  0.95 0.94  0.94
Lanes:       2.00 2.51  0.49  1.00 3.00  2.00  2.00 1.27  0.73  1.00 1.91  0.09
Final Sat.:  3502 4238   825  1805 5187  2842  3502 2161  1251  1805 3427   158
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.25 0.06  0.06  0.01 0.04  0.31  0.05 0.03  0.03  0.01 0.10  0.10
Crit Moves:  ****                     ****  ****                     ****
Green/Cycle: 0.36 0.63  0.63  0.11 0.38  0.45  0.07 0.14  0.14  0.07 0.14  0.14
Volume/Cap:  0.70 0.10  0.10  0.10 0.12  0.70  0.70 0.18  0.18  0.18 0.70  0.70
Delay/Veh:   29.3  7.3   7.3  40.5 20.2  24.1  54.7 37.9  37.9  44.6 44.9  44.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  29.3  7.3   7.3  40.5 20.2  24.1  54.7 37.9  37.9  44.6 44.9  44.9
LOS by Move:    C    A     A     D    C     C     D    D     D     D    D     D
HCM2k85thQ:    19    2     2     1    3    20     6    2     2     1   11    11
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoFri Aug 21, 2020 18:36:38                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #98 Red Hill Ave and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.559
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        26               Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  1  0    2  0  2  1  0    2  0  2  1  0    2  0  3  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     118  716    97    20  949   191   239  407   300   152  543    96
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  118  716    97    20  949   191   239  407   300   152  543    96
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  118  716    97    20  949   191   239  407   300   152  543    96
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   118  716    97    20  949   191   239  407   300   152  543    96
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  118  716    97    20  949   191   239  407   300   152  543    96
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  118  716    97    20  949   191   239  407   300   152  543    96
OvlAdjVol:                                                                  90
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.52  0.48  2.00 2.50  0.50  2.00 2.00  1.00  2.00 3.40  0.60
Final Sat.:  3200 5936   764  3200 4196   804  3200 3400  1600  3200 5738   962
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.04 0.12  0.13  0.01 0.23  0.24  0.07 0.12  0.19  0.05 0.09  0.10
OvlAdjV/S:                                                                  0.09
Crit Moves:  ****                      ****             ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoFri Aug 21, 2020 18:37:15                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #98 Red Hill Ave and Warner Ave
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.804
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        53               Level Of Service:                  D
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  1  0    2  0  2  1  0    2  0  2  1  0    2  0  3  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     343 1175   135    89  341   432   324  880   137    78 1643   216
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  343 1175   135    89  341   432   324  880   137    78 1643   216
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  343 1175   135    89  341   432   324  880   137    78 1643   216
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   343 1175   135    89  341   432   324  880   137    78 1643   216
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  343 1175   135    89  341   432   324  880   137    78 1643   216
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  343 1175   135    89  341   432   324  880   137    78 1643   216
OvlAdjVol:                                                                 195
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.05  1.00  1.00 1.05  1.00
Lanes:       2.00 3.59  0.41  2.00 2.00  1.00  2.00 2.60  0.40  2.00 3.54  0.46
Final Sat.:  3200 6040   660  3200 3400  1600  3200 4353   647  3200 5956   744
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.19  0.20  0.03 0.10  0.27  0.10 0.20  0.21  0.02 0.28  0.29
OvlAdjV/S:                                                                 0.26
Crit Moves:  ****                      ****  ****                 ****
******************************************************************************
```

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Attachment 8

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MITIG8 - 2045 WP AM Peak HoTue Aug 4, 2020 12:08:30                  Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #100 Red Hill Ave and Alton Pkwy
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.684
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        36               Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  4  0  1    1  0  3  0  1    2  0  2  1  1    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     235  693   434   233 1059   170   185  574   574   335  284   159
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  235  693   434   233 1059   170   185  574   574   335  284   159
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  235  693   434   233 1059   170   185  574   574   335  284   159
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:   235  693   434   233 1059   170   185  574     0   335  284   159
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  235  693   434   233 1059   170   185  574     0   335  284   159
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:  235  693   434   233 1059   170   185  574     0   335  284   159
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       1.00 4.00  1.00  1.00 3.00  1.00  2.00 3.00  1.00  2.00 1.28  0.72
Final Sat.:  1600 6800  1600  1600 5100  1600  3200 5100  1600  3200 2151  1149
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.10  0.27  0.15 0.21  0.11  0.06 0.11  0.00  0.10 0.13  0.14
Crit Moves:             ****  ****                   ****        ****
******************************************************************************
```

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Attachment 8

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MITIG8 - 2045 WP PM Peak HoTue Aug 4, 2020 12:10:27                  Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #100 Red Hill Ave and Alton Pkwy
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.278
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Ignore           Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  4  0  1    1  0  3  0  1    2  0  2  1  1    2  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      27 1513   219   148  628     5   453 1111   569  2003  342  1235
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   27 1513   219   148  628     5   453 1111   569  2003  342  1235
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   27 1513   219   148  628     5   453 1111   569  2003  342  1235
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
PHF Volume:    27 1513   219   148  628     5   453 1111     0  2003  342  1235
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   27 1513   219   148  628     5   453 1111     0  2003  342  1235
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00  1.00 1.00  1.00
FinalVolume:   27 1513   219   148  628     5   453 1111     0  2003  342  1235
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       1.00 4.00  1.00  1.00 3.00  1.00  2.00 3.00  1.00  2.00 1.00  1.00
Final Sat.:  1600 6800  1600  1600 5100  1600  3200 5100  1600  3200 1700  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.22  0.14  0.09 0.12  0.00  0.14 0.22  0.00  0.63 0.20  0.77
Crit Moves:       ****        ****             ****                       ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoTue Jun 9, 2020 18:03:28                  Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #105 Von Karman Ave and Barranca Pkwy
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.930
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       108               Level Of Service:                  E
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  1  0    2  0  2  0  2    2  0  3  0  1    2  0  3  1  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     375  497   298    98  960   420   247  928   310   917 1506    47
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  375  497   298    98  960   420   247  928   310   917 1506    47
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   375  497   298    98  960   420   247  928   310   917 1506    47
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  375  497   298    98  960   420   247  928   310   917 1506    47
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  375  497   298    98  960   420   247  928   310   917 1506    47
OvlAdjVol:                            173
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.05  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 1.25  0.75  2.00 2.00  2.00  2.00 3.00  1.00  2.00 4.00  1.00
Final Sat.:  3200 2101  1199  3200 3400  3200  3200 5100  1600  3200 6800  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.24  0.25  0.03 0.28  0.13  0.08 0.18  0.19  0.29 0.22  0.03
OvlAdjV/S:                            0.05
Crit Moves:  ****                  ****                  ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoTue Jun 9, 2020 18:02:58                  Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                      Level Of Service Computation Report
        ICU 1(Loss as Cycle Length %) Method (Base Volume Alternative)
******************************************************************************
Intersection #105 Von Karman Ave and Barranca Pkwy
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.241
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Ovl              Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  1  0    2  0  2  0  2    2  0  3  0  1    2  0  3  1  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     362 2082   454    80  407   280   785 1435   201   254  805   274
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  362 2082   454    80  407   280   785 1435   201   254  805   274
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   362 2082   454    80  407   280   785 1435   201   254  805   274
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  362 2082   454    80  407   280   785 1435   201   254  805   274
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  362 2082   454    80  407   280   785 1435   201   254  805   274
OvlAdjVol:                              0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.04  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.05  1.00
Lanes:       2.00 1.64  0.36  2.00 2.00  2.00  2.00 3.00  1.00  2.00 3.73  1.27
Final Sat.:  3200 2727   573  3200 3400  3200  3200 5100  1600  3200 6268  2032
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.76  0.79  0.03 0.12  0.09  0.25 0.28  0.13  0.08 0.13  0.13
OvlAdjV/S:                              0.00
Crit Moves:             ****  ****            ****                   ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoWed Oct 21, 2020 17:59:31                Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #112 Tustin Ranch Road and Warner Avenue North
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.459
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        22               Level Of Service:                  A
******************************************************************************
Street Name:        Tustin Ranch Road               Warner Avenue North
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  2    2  0  3  0  0    0  0  0  0  0    3  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0  396   383   412 1165     0     0    0     0   865    0   255
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0  396   383   412 1165     0     0    0     0   865    0   255
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0  396   383   412 1165     0     0    0     0   865    0   255
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0  396   383   412 1165     0     0    0     0   865    0   255
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0  396   383   412 1165     0     0    0     0   865    0   255
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0  396   383   412 1165     0     0    0     0   865    0   255
OvlAdjVol:                0                                                  0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 3.00  2.00  2.00 3.00  0.00  0.00 0.00  0.00  3.00 0.00  2.00
Final Sat.:     0 5100  3200  3200 5100     0     0    0     0  4800    0  3200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.08  0.12  0.13 0.23  0.00  0.00 0.00  0.00  0.18 0.00  0.08
OvlAdjV/S:              0.00                                                0.00
Crit Moves:  ****                 ****                          ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoWed Oct 21, 2020 17:59:09                Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #112 Tustin Ranch Road and Warner Avenue North
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.746
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        43               Level Of Service:                  C
******************************************************************************
Street Name:        Tustin Ranch Road               Warner Avenue North
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:            Ovl              Include          Include           Ovl
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  3  0  2    2  0  3  0  0    0  0  0  0  0    3  0  0  0  2
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0 1995  1175   447  657     0     0    0     0   792    0   716
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0 1995  1175   447  657     0     0    0     0   792    0   716
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:    0 1995  1175   447  657     0     0    0     0   792    0   716
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:     0 1995  1175   447  657     0     0    0     0   792    0   716
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0 1995  1175   447  657     0     0    0     0   792    0   716
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0 1995  1175   447  657     0     0    0     0   792    0   716
OvlAdjVol:               647                                              269
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       0.00 3.00  2.00  2.00 3.00  0.00  0.00 0.00  0.00  3.00 0.00  2.00
Final Sat.:     0 5100  3200  3200 5100     0     0    0     0  4800    0  3200
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.39  0.37  0.14 0.13  0.00  0.00 0.00  0.00  0.17 0.00  0.22
OvlAdjV/S:               0.20                                              0.08
Crit Moves:       ****        ****                                ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP AM Peak HoThu Oct 22, 2020 12:50:42                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #113 Tustin Ranch Road and Walnut Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.175
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Street Name:        Tustin Ranch Road                  Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl            Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     103  630   314  1123 3139   418   856 1118   675   176  260   219
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  103  630   314  1123 3139   418   856 1118   675   176  260   219
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  103  630   314  1123 3139   418   856 1118   675   176  260   219
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Volume:   103  630   314  1123 3139   418   856 1118   675   176  260     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  103  630   314  1123 3139   418   856 1118   675   176  260     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  103  630   314  1123 3139   418   856 1118   675   176  260     0
OvlAdjVol:               226               0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.00  1.00  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 3400  1600  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.03 0.12  0.20  0.35 0.62  0.26  0.27 0.33  0.42  0.06 0.08  0.00
OvlAdjV/S:               0.14               0.00
Crit Moves:  ****                 ****                    ****  ****
******************************************************************************
```

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Attachment 8

```
MITIG8 - 2045 WP PM Peak HoThu Oct 22, 2020 12:54:00                 Page 1-1
------------------------------------------------------------------------------
                        Santa Ana Circulation Element
------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
******************************************************************************
Intersection #113 Tustin Ranch Road and Walnut Avenue
******************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.590
Loss Time (sec):       5               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180               Level Of Service:                  F
******************************************************************************
Street Name:        Tustin Ranch Road                  Walnut Avenue
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Include          Ignore
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  3  0  1    2  0  3  0  1    2  0  2  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     876 3814   401   550 1460   947   329  402   230   307 1760  1394
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  876 3814   401   550 1460   947   329  402   230   307 1760  1394
Added Vol:      0    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  876 3814   401   550 1460   947   329  402   230   307 1760  1394
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
PHF Volume:   876 3814   401   550 1460   947   329  402   230   307 1760     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  876 3814   401   550 1460   947   329  402   230   307 1760     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  0.00
FinalVolume:  876 3814   401   550 1460   947   329  402   230   307 1760     0
OvlAdjVol:               247             783
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00  1.00 1.06  1.00
Lanes:       2.00 3.00  1.00  2.00 3.00  1.00  2.00 2.00  1.00  2.00 2.00  1.00
Final Sat.:  3200 5100  1600  3200 5100  1600  3200 3400  1600  3200 3400  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.27 0.75  0.25  0.17 0.29  0.59  0.10 0.12  0.14  0.10 0.52  0.00
OvlAdjV/S:               0.15             0.49
Crit Moves:       ****        ****             ****                   ****
******************************************************************************
```

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Attachment 8

APPENDIX F
VMT CALCULATIONS

Base Year 2016										
SCENARIO	I-I	I-X	X-I	Total VMT	TOT_POP	Total Employees	VMT/Capita	TOT_POP	Total Employees - Reduced	VMT / Capita
Citywide	698,590	5,295,496	5,291,968	11,286,054	364,042	176,354	20.9	364,042	139,672	22.4
Countywide	47,482,030	24,809,328	24,994,227	97,285,585	3,179,626	1,710,147	19.9	3,179,626	593,421	25.8

Existing Year 2020										
SCENARIO	I-I	I-X	X-I	Total VMT	TOT_POP	Total Employees	VMT/Capita	TOT_POP	Total Employees - Reduced	VMT / Capita
Citywide	697,779	5,356,504	5,352,841	11,407,124	367,064	177,854	20.9	367,064	140,860	22.5
Countywide	48,242,429	25,463,887	25,637,825	99,344,141	3,228,591	1,747,428	20.0	3,228,591	606,358	25.9

Future Year 2045 Baseline										
SCENARIO	I-I	I-X	X-I	Total VMT	TOT_POP	Total Employees	VMT/Capita	TOT_POP	Total Employees - Reduced	VMT / Capita
Citywide	692,704	5,737,798	5,733,292	12,163,794	385,955	187,226	21.2	385,955	148,283	22.8
Countywide	52,994,916	29,554,879	29,660,308	112,210,103	3,534,620	1,980,433	20.3	3,534,620	687,210	26.6

Future Year 2045 WP - 80% Buildout										
SCENARIO	I-I	I-X	X-I	Total VMT	TOT_POP	Total Employees	VMT/Capita	TOT_POP	Total Employees - Reduced	VMT / Capita
Citywide	637,655	5,432,337	5,448,967	11,518,959	432,421	169,438	19.1	432,421	134,195	20.3
Countywide	52,931,787	29,642,498	29,748,229	112,322,514	3,581,086	1,962,645	20.3	3,581,086	681,038	26.4

*In order to mitigate double-counting, a reduction factor was applied to the employee population to account for the amount of employees who are also residents of the City. Per SCAG Local Profile Report (2019), 20.8% of commuters live in the City. Thus, a reduction of 20.8% was applied to the employee population. (https://www.scag.ca.gov/Documents/SantaAna.pdf)

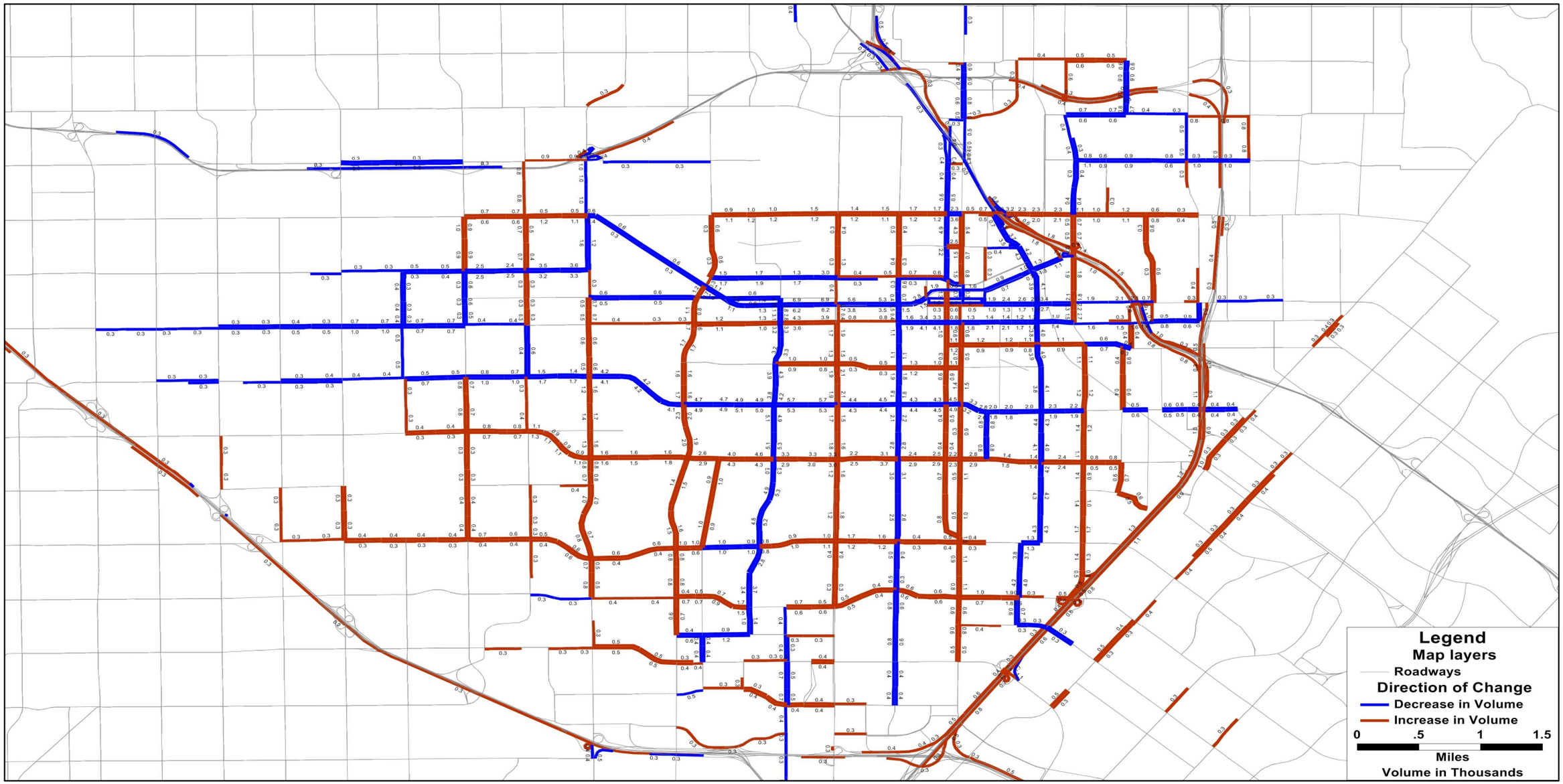
*In order to mitigate double-counting, a reduction factor was applied to the employee population to account for the amount of employees who are also residents of the County. Per SCAG Local Profile Report (2019), 65.3% of commuters live in the County. Thus, a reduction of 65.3% was applied to the employee population. (https://www.scag.ca.gov/Documents/OrangeCountyLP.pdf)

APPENDIX G

OCTAM VOLUME COMPARISON PLOTS

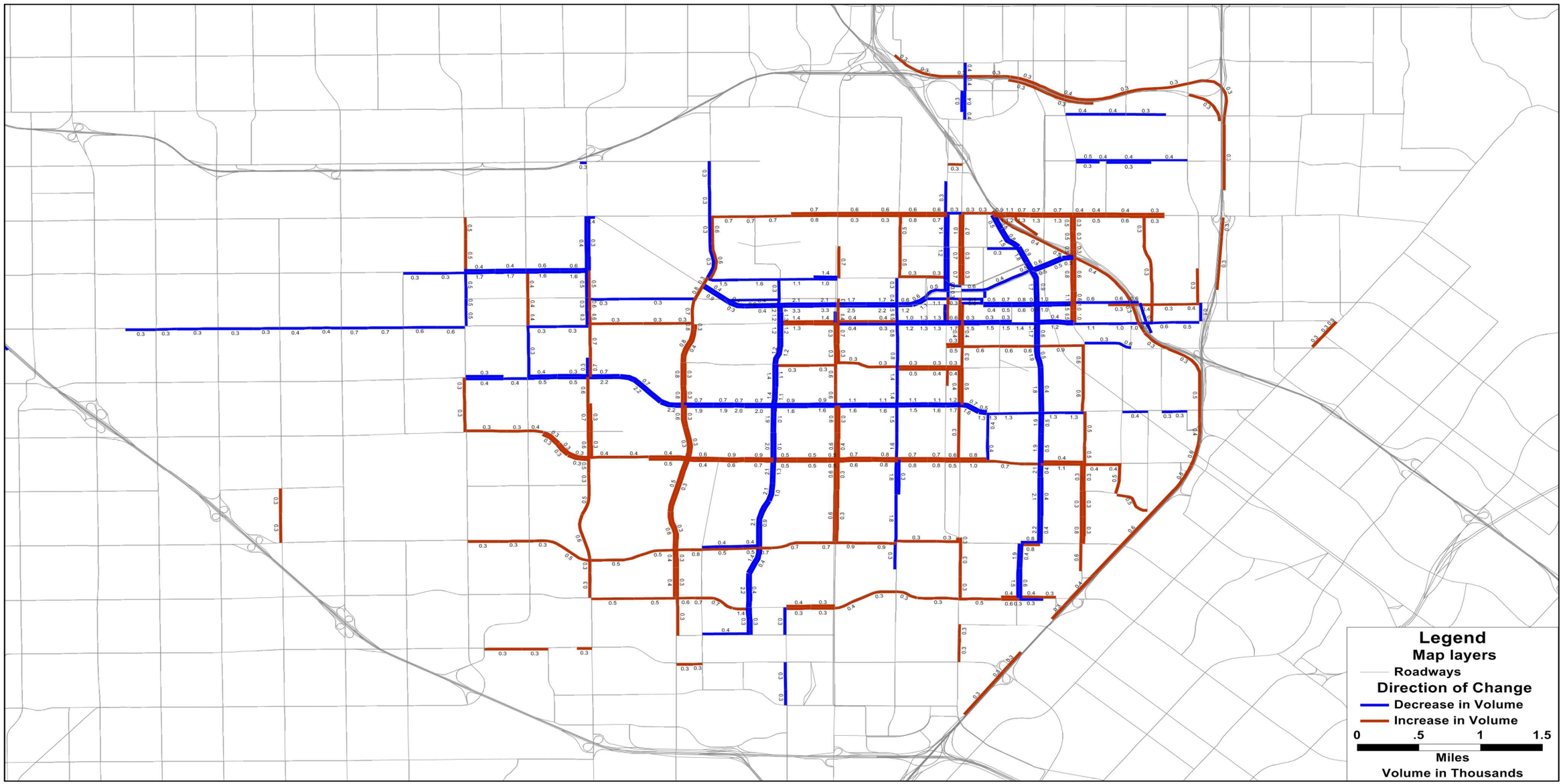
OCTAM 5.0 – Daily Traffic Volume Comparison Between 2045 80% Buildout and 2045 80% Buildout with Baseline Network

Volume in Thousands



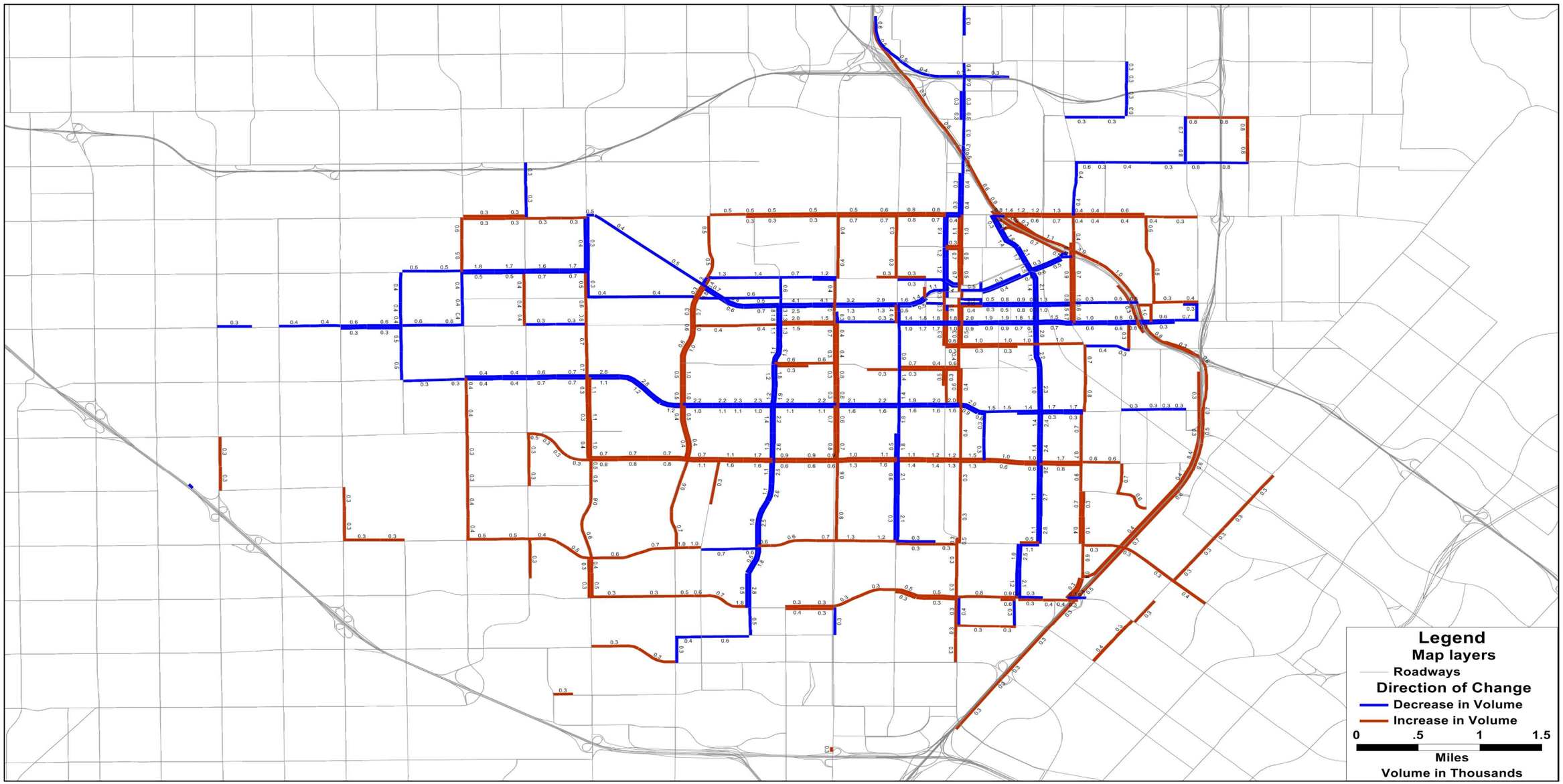
OCTAM 5.0 – AM Peak Traffic Volume Comparison Between 2045 80% Buildout and 2045 80% Buildout with Baseline Network

Volume in Thousands



OCTAM 5.0 – PM Peak Traffic Volume Comparison Between 2045 80% Buildout and 2045 80% Buildout with Baseline Network

Volume in Thousands



APPENDIX H
COUNTS

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Euclid
EAST & WEST: 1st

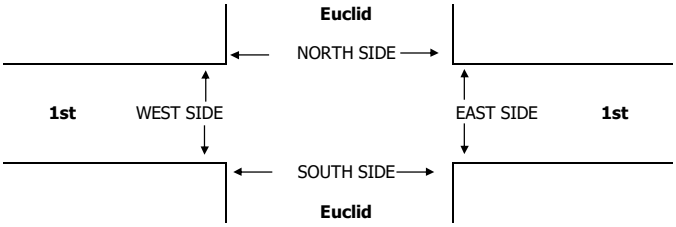
PROJECT #: SC2183
LOCATION #: 1
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Euclid			SOUTHBOUND Euclid			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	7	180	40	42	475	14	33	136	22	23	71	18	1,061	1	0	0	2	3
	7:15 AM	10	203	43	53	504	12	36	138	32	37	109	29	1,206	0	0	0	2	2
	7:30 AM	28	245	48	48	503	19	44	147	38	60	125	42	1,347	0	0	0	1	1
	7:45 AM	34	271	44	47	473	15	62	205	41	47	173	49	1,461	0	0	1	0	1
	8:00 AM	33	264	41	60	432	23	52	210	43	44	168	49	1,419	1	0	0	0	1
	8:15 AM	27	253	44	49	417	45	57	240	29	31	114	46	1,352	1	0	0	2	3
	8:30 AM	21	235	43	58	400	35	41	168	22	37	123	32	1,215	0	0	1	3	4
	8:45 AM	35	179	31	48	377	39	56	117	23	35	141	34	1,115	1	0	0	0	1
	VOLUMES	195	1,830	334	405	3,581	202	381	1,361	250	314	1,024	299	10,176	4	0	2	10	16
	APPROACH %	8%	78%	14%	10%	86%	5%	19%	68%	13%	19%	63%	18%						
	APP/DEPART	2,359	/	2,508	4,188	/	4,139	1,992	/	2,110	1,637	/	1,419	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	122	1,033	177	204	1,825	102	215	802	151	182	580	186	5,579					
	APPROACH %	9%	78%	13%	10%	86%	5%	18%	69%	13%	19%	61%	20%						
	PEAK HR FACTOR		0.954			0.935			0.896			0.881		0.955					
	APP/DEPART	1,332	/	1,433	2,131	/	2,157	1,168	/	1,186	948	/	803	0					
PM	4:00 PM	46	364	41	36	244	43	55	161	20	44	162	58	1,274	0	1	1	1	3
	4:15 PM	45	404	28	44	213	42	44	121	19	39	174	52	1,225	0	0	0	1	1
	4:30 PM	23	318	73	50	283	48	57	161	20	46	170	43	1,292	0	0	1	1	2
	4:45 PM	36	367	29	39	258	47	53	154	20	48	196	61	1,308	0	0	2	2	4
	5:00 PM	34	363	33	43	289	47	46	162	28	59	225	55	1,384	0	0	3	0	3
	5:15 PM	43	371	28	49	261	46	58	169	28	56	226	55	1,390	0	0	2	0	2
	5:30 PM	41	370	23	38	245	56	53	162	25	45	223	58	1,339	1	0	0	0	1
	5:45 PM	39	358	33	53	247	48	52	178	23	54	226	46	1,357	0	0	0	0	0
	VOLUMES	307	2,915	288	352	2,040	377	418	1,268	183	391	1,602	428	10,569	1	1	9	5	16
	APPROACH %	9%	83%	8%	13%	74%	14%	22%	68%	10%	16%	66%	18%						
	APP/DEPART	3,510	/	3,753	2,769	/	2,610	1,869	/	1,912	2,421	/	2,294	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	157	1,462	117	183	1,042	197	209	671	104	214	900	214	5,470					
	APPROACH %	9%	84%	7%	13%	73%	14%	21%	68%	11%	16%	68%	16%						
	PEAK HR FACTOR		0.982			0.938			0.965			0.979		0.984					
	APP/DEPART	1,736	/	1,880	1,422	/	1,361	984	/	971	1,328	/	1,258	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	5:00 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Wed, Feb 10, 16

LOCATION: Santa Ana
NORTH & SOUTH: Euclid
EAST & WEST: McFadden

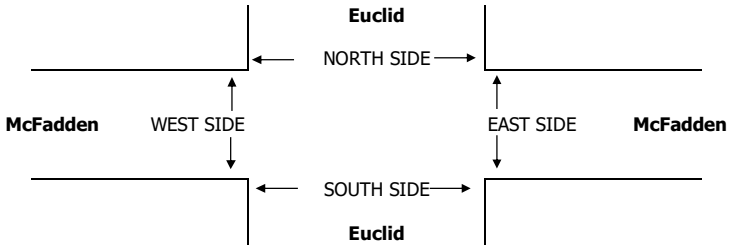
PROJECT #: SC0846
LOCATION #: 30
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Euclid			SOUTHBOUND Euclid			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	15	164	8	14	479	23	19	68	16	23	52	12	893	0	0	0	0	0
	7:15 AM	16	272	20	26	548	20	27	78	41	17	64	25	1,154	0	0	0	0	0
	7:30 AM	29	263	38	32	395	18	51	118	71	45	65	39	1,164	0	0	0	0	0
	7:45 AM	34	265	27	38	470	34	58	101	81	49	75	38	1,270	0	0	0	0	0
	8:00 AM	43	258	30	26	431	58	55	111	62	41	133	35	1,283	0	0	0	0	0
	8:15 AM	33	271	30	35	535	41	54	114	61	24	80	22	1,300	0	0	0	0	0
	8:30 AM	22	263	15	22	469	31	39	118	48	17	73	34	1,151	0	0	0	0	0
	8:45 AM	20	229	17	20	432	18	34	90	28	20	56	25	989	0	0	0	0	0
	VOLUMES	212	1,985	185	213	3,759	243	337	798	408	236	598	230	9,204	0	0	0	0	0
	APPROACH %	9%	83%	8%	5%	89%	6%	22%	52%	26%	22%	56%	22%						
	APP/DEPART	2,382	/	2,552	4,215	/	4,403	1,543	/	1,196	1,064	/	1,053	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	139	1,057	125	131	1,831	151	218	444	275	159	353	134	5,017					
	APPROACH %	11%	80%	9%	6%	87%	7%	23%	47%	29%	25%	55%	21%						
	PEAK HR FACTOR		0.989			0.865			0.976			0.773		0.965					
	APP/DEPART	1,321	/	1,409	2,113	/	2,265	937	/	700	646	/	643	0					
PM	4:00 PM	29	286	20	25	278	27	45	83	35	14	96	25	963	0	0	0	0	0
	4:15 PM	30	297	15	27	284	35	53	96	47	17	109	30	1,040	0	0	0	0	0
	4:30 PM	34	315	21	22	287	40	55	101	43	21	123	35	1,097	0	0	0	0	0
	4:45 PM	36	327	20	26	300	39	49	98	52	27	130	47	1,151	0	0	0	0	0
	5:00 PM	44	335	23	24	285	35	51	104	40	30	134	53	1,158	0	0	0	0	0
	5:15 PM	34	374	19	22	365	40	40	100	41	34	130	63	1,262	0	0	0	0	0
	5:30 PM	54	334	26	33	351	43	35	100	44	31	117	73	1,241	0	0	0	0	0
	5:45 PM	51	352	17	28	267	36	36	115	29	21	121	64	1,137	0	0	0	0	0
	VOLUMES	312	2,620	161	207	2,417	295	364	797	331	195	960	390	9,049	0	0	0	0	0
	APPROACH %	10%	85%	5%	7%	83%	10%	24%	53%	22%	13%	62%	25%						
	APP/DEPART	3,093	/	3,374	2,919	/	2,943	1,492	/	1,165	1,545	/	1,567	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	168	1,370	88	105	1,301	157	175	402	177	122	511	236	4,812					
	APPROACH %	10%	84%	5%	7%	83%	10%	23%	53%	23%	14%	59%	27%						
	PEAK HR FACTOR		0.952			0.915			0.947			0.957		0.953					
	APP/DEPART	1,626	/	1,781	1,563	/	1,600	754	/	595	869	/	836	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	8	4	2	8	22	7	1	2	5	15	1	3	0	3	7
	7:15 AM	8	13	6	27	54	6	12	5	27	50	2	1	1	0	4
	7:30 AM	21	52	21	55	149	20	50	19	52	141	1	2	2	3	8
	7:45 AM	7	12	11	4	34	6	8	8	3	25	1	4	3	1	9
	8:00 AM	9	20	4	11	44	3	15	4	7	29	6	5	0	4	15
	8:15 AM	6	4	5	9	24	6	3	4	9	22	0	1	1	0	2
	8:30 AM	4	6	4	2	16	3	5	4	2	14	1	1	0	0	2
	8:45 AM	1	2	2	0	5	1	1	2	0	4	0	1	0	0	1
	TOTAL	64	113	55	116	348	52	95	48	105	300	12	18	7	11	48
PM	4:00 PM	8	14	9	7	38	5	12	7	5	29	3	2	2	2	9
	4:15 PM	8	12	13	4	37	7	8	8	3	26	1	4	5	1	11
	4:30 PM	10	15	8	10	43	4	10	6	6	26	6	5	2	4	17
	4:45 PM	8	4	5	9	26	6	3	4	9	22	2	1	1	0	4
	5:00 PM	35	14	11	51	111	31	12	10	47	100	4	2	1	4	11
	5:15 PM	19	46	15	34	114	16	44	11	33	104	3	2	4	1	10
	5:30 PM	15	24	6	42	87	14	22	6	41	83	1	2	0	1	4
	5:45 PM	6	7	4	11	28	5	7	2	10	24	1	0	2	1	4
	TOTAL	109	136	71	168	484	88	118	54	154	414	21	18	17	14	70

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Euclid
EAST & WEST: Edinger

PROJECT #: SC2183
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

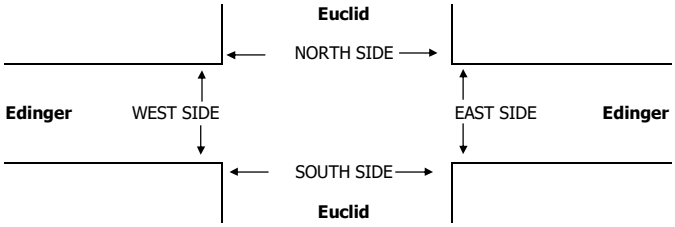
AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND (Euclid)			SOUTHBOUND (Euclid)			EASTBOUND (Edinger)			WESTBOUND (Edinger)			
	LANES:	NL 2	NT 2.5	NR 0.5	SL 2	ST 2.5	SR 0.5	EL 1	ET 2	ER 1	WL 1	WT 2	WR 1	TOTAL
AM	7:00 AM	15	137	5	17	426	24	33	131	88	25	101	18	1,020
	7:15 AM	23	134	8	27	485	31	50	141	86	18	119	24	1,146
	7:30 AM	30	214	8	35	494	39	42	152	124	27	165	32	1,362
	7:45 AM	47	199	18	27	478	57	50	188	138	29	155	29	1,415
	8:00 AM	30	221	16	34	424	30	37	204	109	27	149	30	1,311
	8:15 AM	25	202	29	29	427	41	41	201	84	16	133	18	1,246
	8:30 AM	27	161	13	26	456	45	50	144	87	27	117	21	1,174
	8:45 AM	33	152	19	26	397	33	31	140	86	20	125	26	1,088
	VOLUMES	230	1,420	116	221	3,587	300	334	1,301	802	189	1,064	198	9,762
	APPROACH %	13%	80%	7%	5%	87%	7%	14%	53%	33%	13%	73%	14%	
	APP/DEPART	1,766	/	1,935	4,108	/	4,586	2,437	/	1,640	1,451	/	1,601	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	132	836	71	125	1,823	167	170	745	455	99	602	109	5,334
	APPROACH %	13%	80%	7%	6%	86%	8%	12%	54%	33%	12%	74%	13%	
	PEAK HR FACTOR		0.973			0.931			0.911			0.904		0.942
	APP/DEPART	1,039	/	1,107	2,115	/	2,384	1,370	/	942	810	/	901	0
PM	4:00 PM	86	347	11	24	179	36	39	162	39	23	186	22	1,154
	4:15 PM	104	390	27	25	179	41	37	150	36	18	214	21	1,242
	4:30 PM	107	350	19	28	178	47	40	150	46	17	208	32	1,222
	4:45 PM	102	415	34	32	191	46	46	139	41	20	203	35	1,304
	5:00 PM	140	374	27	36	195	48	37	130	55	21	217	36	1,316
	5:15 PM	136	401	29	27	216	63	43	172	45	19	191	29	1,371
	5:30 PM	142	366	20	25	193	44	33	174	43	30	220	34	1,324
	5:45 PM	112	313	25	32	191	43	40	171	38	17	207	32	1,221
	VOLUMES	929	2,956	192	229	1,522	368	315	1,248	343	165	1,646	241	10,154
	APPROACH %	23%	73%	5%	11%	72%	17%	17%	65%	18%	8%	80%	12%	
	APP/DEPART	4,077	/	3,489	2,119	/	2,043	1,906	/	1,664	2,052	/	2,958	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	520	1,556	110	120	795	201	159	615	184	90	831	134	5,315
	APPROACH %	24%	71%	5%	11%	71%	18%	17%	64%	19%	9%	79%	13%	
	PEAK HR FACTOR		0.966			0.912			0.921			0.929		0.969
	APP/DEPART	2,186	/	1,836	1,116	/	1,081	958	/	844	1,055	/	1,554	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	
0	0	0	1	1
0	0	3	1	4
3	0	2	0	5
3	0	2	1	6
3	1	4	0	8
0	0	1	1	2
1	1	2	0	4
2	0	5	0	7
12	2	19	4	37
2	3	1	1	7
1	0	2	0	3
0	1	5	1	7
1	1	2	0	4
3	0	8	0	11
6	1	4	1	12
3	0	1	0	4
0	2	8	0	10
16	8	31	3	58



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR			7:30 AM			0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR			4:45 PM			0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Wed, Feb 10, 16

LOCATION: Santa Ana
NORTH & SOUTH: Newhope
EAST & WEST: Hazard

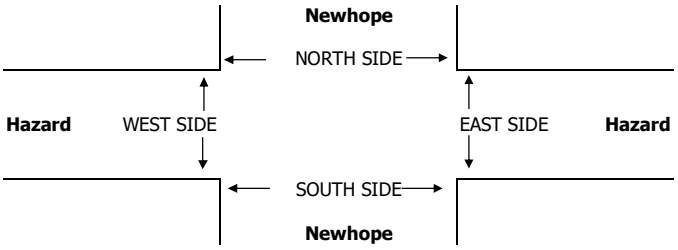
PROJECT #: SC0846
LOCATION #: 11
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND (Newhope)			SOUTHBOUND (Newhope)			EASTBOUND (Hazard)			WESTBOUND (Hazard)				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	10	146	6	7	257	4	13	28	16	4	15	9	515	0	0	0	0	0
	7:15 AM	15	178	15	15	352	21	10	36	28	8	39	9	726	0	0	0	0	0
	7:30 AM	24	190	22	21	308	31	19	50	25	17	39	13	759	0	0	0	0	0
	7:45 AM	40	165	48	37	281	41	26	57	59	10	45	19	828	0	0	0	0	0
	8:00 AM	15	176	15	14	347	25	19	48	29	14	40	24	766	0	0	0	0	0
	8:15 AM	20	174	4	17	316	16	30	59	22	1	23	11	693	0	0	0	0	0
	8:30 AM	13	163	3	17	322	23	22	48	24	9	32	10	686	0	0	0	0	0
	8:45 AM	29	161	11	9	282	13	24	32	26	4	29	12	632	0	0	0	0	0
	VOLUMES	166	1,353	124	137	2,465	174	163	358	229	67	262	107	5,605	0	0	0	0	0
	APPROACH %	10%	82%	8%	5%	89%	6%	22%	48%	31%	15%	60%	25%						
	APP/DEPART	1,643	/	1,623	2,776	/	2,761	750	/	619	436	/	602	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	94	709	100	87	1,288	118	74	191	141	49	163	65	3,079					
	APPROACH %	10%	79%	11%	6%	86%	8%	18%	47%	35%	18%	59%	23%						
	PEAK HR FACTOR		0.892			0.962			0.715			0.888		0.930					
	APP/DEPART	903	/	848	1,493	/	1,478	406	/	378	277	/	375	0					
PM	4:00 PM	20	292	8	11	223	24	24	30	18	3	42	38	733	0	0	0	0	0
	4:15 PM	18	304	12	16	194	17	27	35	17	10	30	37	717	0	0	0	0	0
	4:30 PM	21	340	12	10	199	27	29	49	14	6	41	13	761	0	0	0	0	0
	4:45 PM	27	299	18	13	193	19	24	51	23	8	59	12	746	0	0	0	0	0
	5:00 PM	22	315	9	15	267	35	19	48	29	10	52	7	828	0	0	0	0	0
	5:15 PM	31	298	7	9	252	31	29	49	29	5	54	19	813	0	0	0	0	0
	5:30 PM	28	294	15	14	251	26	29	56	37	12	37	13	812	0	0	0	0	0
	5:45 PM	30	324	17	9	227	27	26	52	30	3	51	16	812	0	0	0	0	0
	VOLUMES	197	2,466	98	97	1,806	206	207	370	197	57	366	155	6,222	0	0	0	0	0
	APPROACH %	7%	89%	4%	5%	86%	10%	27%	48%	25%	10%	63%	27%						
	APP/DEPART	2,761	/	2,828	2,109	/	2,060	774	/	565	578	/	769	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	111	1,231	48	47	997	119	103	205	125	30	194	55	3,265					
	APPROACH %	8%	89%	3%	4%	86%	10%	24%	47%	29%	11%	70%	20%						
	PEAK HR FACTOR		0.937			0.917			0.887			0.894		0.986					
	APP/DEPART	1,390	/	1,389	1,163	/	1,152	433	/	300	279	/	424	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	1	1	0	3	0	0	0	0	0	1	1	1	0	3
	7:15 AM	2	3	1	0	6	1	2	1	0	4	1	1	0	0	2
	7:30 AM	4	3	5	0	12	4	3	4	0	11	0	0	1	0	1
	7:45 AM	1	3	8	2	14	1	3	6	1	11	0	0	2	1	3
	8:00 AM	1	12	8	0	21	1	11	5	0	17	0	1	3	0	4
	8:15 AM	1	6	7	4	18	0	6	5	2	13	1	0	2	2	5
	8:30 AM	14	6	5	0	25	14	6	4	0	24	0	0	1	0	1
	8:45 AM	1	12	2	0	15	1	12	1	0	14	0	0	1	0	1
	TOTAL	25	46	37	6	114	22	43	26	3	94	3	3	11	3	20
PM	4:00 PM	1	0	3	2	6	0	0	3	2	5	1	0	0	0	1
	4:15 PM	1	2	1	3	7	0	0	0	0	0	1	2	1	3	7
	4:30 PM	4	0	2	4	10	4	0	1	3	8	0	0	1	1	2
	4:45 PM	3	0	0	5	8	3	0	0	3	6	0	0	0	2	2
	5:00 PM	0	2	4	1	7	0	1	4	0	5	0	1	0	1	2
	5:15 PM	2	3	5	2	12	1	2	2	0	5	1	1	3	2	7
	5:30 PM	1	4	2	1	8	0	2	1	0	3	1	2	1	1	5
	5:45 PM	2	2	2	2	8	2	1	1	0	4	0	1	1	2	4
	TOTAL	14	13	19	20	66	10	6	12	8	36	4	7	7	12	30

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Wed, Feb 10, 16

LOCATION: Santa Ana
NORTH & SOUTH: Newhope
EAST & WEST: McFadden

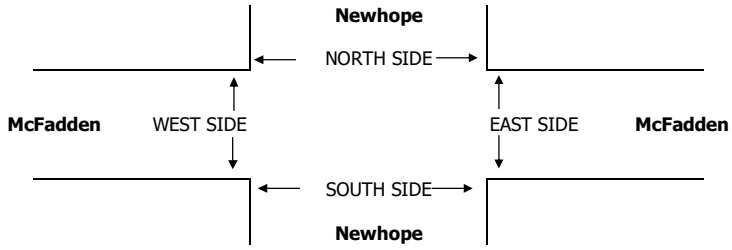
PROJECT #: SC0846
LOCATION #: 31
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND (Newhope)			SOUTHBOUND (Newhope)			EASTBOUND (McFadden)			WESTBOUND (McFadden)				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	5	97	11	18	281	11	10	54	17	11	67	21	603	0	0	0	0	0
	7:15 AM	14	91	15	22	301	19	8	73	38	17	72	17	687	0	0	0	0	0
	7:30 AM	17	94	28	18	318	17	33	113	37	37	112	22	846	0	0	0	0	0
	7:45 AM	38	110	45	29	247	20	24	102	43	49	110	34	851	0	0	0	0	0
	8:00 AM	31	144	60	31	249	37	52	129	38	53	133	22	979	0	0	0	0	0
	8:15 AM	19	123	33	36	322	31	20	128	35	30	76	18	871	0	0	0	0	0
	8:30 AM	9	127	28	22	291	17	25	108	30	35	88	25	805	0	0	0	0	0
	8:45 AM	23	162	38	26	355	23	10	83	21	40	61	31	873	0	0	0	0	0
	VOLUMES	156	948	258	202	2,364	175	182	790	259	272	719	190	6,515	0	0	0	0	0
	APPROACH %	11%	70%	19%	7%	86%	6%	15%	64%	21%	23%	61%	16%						
	APP/DEPART	1,362	/	1,320	2,741	/	2,895	1,231	/	1,250	1,181	/	1,050	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	105	471	166	114	1,136	105	129	472	153	169	431	96	3,547					
	APPROACH %	14%	63%	22%	8%	84%	8%	17%	63%	20%	24%	62%	14%						
	PEAK HR FACTOR		0.789			0.871			0.861			0.837		0.906					
	APP/DEPART	742	/	696	1,355	/	1,458	754	/	752	696	/	641	0					
PM	4:00 PM	37	275	38	37	140	30	15	103	11	35	104	51	876	0	0	0	0	0
	4:15 PM	26	283	41	37	158	26	22	118	17	27	99	40	894	0	0	0	0	0
	4:30 PM	35	278	42	30	134	31	11	104	13	31	103	38	850	0	0	0	0	0
	4:45 PM	42	274	39	22	146	18	11	106	16	26	130	46	876	0	0	0	0	0
	5:00 PM	43	262	42	26	158	32	26	110	18	25	138	39	919	0	0	0	0	0
	5:15 PM	52	260	53	37	169	40	19	108	11	24	135	39	947	0	0	0	0	0
	5:30 PM	50	245	42	48	191	36	20	122	23	32	138	39	986	0	0	0	0	0
	5:45 PM	49	274	45	46	186	28	12	136	17	21	155	44	1,013	0	0	0	0	0
	VOLUMES	334	2,151	342	283	1,282	241	136	907	126	221	1,002	336	7,361	0	0	0	0	0
	APPROACH %	12%	76%	12%	16%	71%	13%	12%	78%	11%	14%	64%	22%						
	APP/DEPART	2,827	/	2,623	1,806	/	1,629	1,169	/	1,532	1,559	/	1,577	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	194	1,041	182	157	704	136	77	476	69	102	566	161	3,865					
	APPROACH %	14%	73%	13%	16%	71%	14%	12%	77%	11%	12%	68%	19%						
	PEAK HR FACTOR		0.963			0.906			0.942			0.942		0.954					
	APP/DEPART	1,417	/	1,279	997	/	875	622	/	815	829	/	896	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	5	4	0	10	1	4	3	0	8	0	1	1	0	2
	7:15 AM	4	4	7	0	15	1	2	6	0	9	3	2	1	0	6
	7:30 AM	4	24	19	1	48	3	21	18	0	42	1	3	1	1	6
	7:45 AM	13	17	20	32	82	13	16	19	31	79	0	1	1	1	3
	8:00 AM	36	57	47	40	180	35	55	43	38	171	1	2	4	2	9
	8:15 AM	11	30	34	17	92	9	30	32	15	86	2	0	2	2	6
	8:30 AM	5	7	19	4	35	5	6	17	3	31	0	1	2	1	4
	8:45 AM	3	3	14	0	20	3	2	13	0	18	0	1	1	0	2
	TOTAL	77	147	164	94	482	70	136	151	87	444	7	11	13	7	38
PM	4:00 PM	2	2	5	4	13	2	1	5	4	12	0	1	0	0	1
	4:15 PM	4	6	10	6	26	3	2	5	4	14	1	4	5	2	12
	4:30 PM	2	6	1	2	11	2	3	0	2	7	0	3	1	0	4
	4:45 PM	10	17	4	8	39	10	15	4	8	37	0	2	0	0	2
	5:00 PM	15	9	4	4	32	9	6	3	3	21	6	3	1	1	11
	5:15 PM	4	7	8	4	23	4	3	7	4	18	0	4	1	0	5
	5:30 PM	7	4	5	5	21	6	2	3	5	16	1	2	2	0	5
	5:45 PM	5	5	6	1	17	3	3	3	0	9	2	2	3	1	8
	TOTAL	49	56	43	34	182	39	35	30	30	134	10	21	13	4	48

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Harbor Blvd and Banner Dr , Garden Grove

Date: 2014-10-16
Day: Thursday
Project #: Historical
City: Garden Grove

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	500 PM

Peak Hour Summary

Southbound Approach (Harbor Blvd)

Lanes		0	3	0		
	AM	17	1301	0	1407	AM
	NOON	0	0	0	0	NOON
	PM	47	1459	0	2166	PM

Eastbound Approach (Banner Dr)

Lanes		AM	NOON	PM
		126	0	207
0		71	0	89
1		0	0	0
0		116	0	74
Lanes		AM	NOON	PM

Westbound Approach

	AM	NOON	PM	Lanes
	112	0	163	1
	42	0	76	.5
	803	0	569	1.5
	0	0	0	
	AM	NOON	PM	

CONTROL: Signalized

Northbound Approach

AM	2220	67	1224	0	AM
NOON	0	0	0	0	NOON
PM	2102	84	1914	0	PM
		1	3	1	Lanes

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		
AM	1318	1407	AM
NOON	0	0	NOON
PM	1506	2166	PM

West Leg				East Leg		
AM	NOON	PM		AM	NOON	PM
126	0	207		957	0	808
187	0	163		0	0	0

	South Leg	
AM	2220	1291
NOON	0	0
PM	2102	1998

Total Volume Per Leg

	North Leg	
AM	2725	AM
NOON	0	NOON
PM	3672	PM

West Leg			East Leg		
AM	NOON	PM			
313	0	370	957	0	808
			AM	NOON	PM

	South Leg
AM	3511
NOON	0
PM	4100

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

SR-22 EB On-Ramp and Trask Ave , City of Santa Ana

Date: 2013-02-05

Day: Tuesday

Project #: Historical

AM Peak Hour	715 AM
NOON Peak Hour	
PM Peak Hour	400 PM

Peak Hour Summary

Southbound Approach (SR-22 EB On-Ramp)

Lanes	0	0	0		
AM	0	0	0	735	AM
NOON	0	0	0	0	NOON
PM	0	0	0	834	PM

Eastbound Approach (Trask Ave)

Lanes	AM	NOON	PM
	688	0	565
2	607	0	781
1	760	0	585
0	0	0	0
Lanes	AM	NOON	PM

Westbound Approach

AM	NOON	PM	Lanes
128	0	53	0
688	0	565	2
0	0	0	0
760	0	585	
AM	NOON	PM	

CONTROL: Signalized

Count Periods	Start	End
AM	6:00 AM	9:00 AM
NOON		
PM	4:00 PM	7:00 PM

Northbound Approach

AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM
		0	0	0	Lanes

Total Ins & Outs

North Leg		
0	735	AM
0	0	NOON
0	834	PM

West Leg			East Leg		
AM	NOON	PM			
688	0	565	816	0	618
1367	0	1366	760	0	585
			AM	NOON	PM

South Leg	
0	0
0	0
0	0

AM / NOON / PM

Total Volume Per Leg

North Leg
735 AM
0 NOON
834 PM

West Leg			East Leg		
AM	NOON	PM			
2055	0	1931	1576	0	1203
			AM	NOON	PM

South Leg
0 AM
0 NOON
0 PM

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: Harbor
EAST & WEST: Westminster

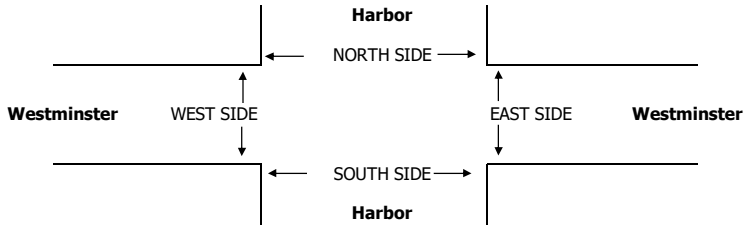
PROJECT #: SC2183
LOCATION #: 3
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Harbor			SOUTHBOUND Harbor			EASTBOUND Westminster			WESTBOUND Westminster				U-TURNS				
	LANES:	NL 1	NT 3	NR 1	SL 1	ST 3	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	40	258	41	40	419	20	24	160	3	51	91	25	1,172	7	3	3	4	17
	7:15 AM	28	298	43	43	428	13	23	214	6	50	115	32	1,293	5	3	4	6	18
	7:30 AM	41	336	67	56	439	24	36	237	10	61	156	33	1,496	6	4	8	7	25
	7:45 AM	49	299	74	56	391	22	43	236	2	52	156	38	1,418	9	8	10	5	32
	8:00 AM	48	288	55	55	390	28	43	234	9	48	138	45	1,381	9	4	9	5	27
	8:15 AM	38	238	52	42	426	20	52	210	11	48	118	38	1,293	10	6	13	6	35
	8:30 AM	52	282	41	56	383	36	55	182	8	40	113	35	1,283	13	8	14	5	40
	8:45 AM	44	234	24	35	340	34	37	145	8	48	103	48	1,100	9	2	6	4	21
	VOLUMES	340	2,233	397	383	3,216	197	313	1,618	57	398	990	294	10,436	68	38	67	42	215
	APPROACH %	11%	75%	13%	10%	85%	5%	16%	81%	3%	24%	59%	17%						
	APP/DEPART	2,970	/	2,811	3,796	/	3,697	1,988	/	2,402	1,682	/	1,526	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	176	1,161	248	209	1,646	94	174	917	32	209	568	154	5,588					
	APPROACH %	11%	73%	16%	11%	84%	5%	15%	82%	3%	22%	61%	17%						
	PEAK HR FACTOR		0.892			0.939			0.982			0.931		0.934					
	APP/DEPART	1,585	/	1,471	1,949	/	1,898	1,123	/	1,375	931	/	844	0					
PM	4:00 PM	59	331	66	47	345	48	60	170	4	63	171	50	1,414	9	3	13	8	33
	4:15 PM	60	331	46	44	321	37	45	136	8	54	180	48	1,310	6	2	9	6	23
	4:30 PM	63	336	70	58	299	46	45	127	11	62	181	46	1,344	6	2	7	12	27
	4:45 PM	50	363	72	48	320	41	47	153	14	59	204	49	1,420	8	7	9	5	29
	5:00 PM	69	341	65	48	370	40	49	142	3	57	194	52	1,430	10	4	10	4	28
	5:15 PM	69	320	84	55	369	39	49	177	10	59	216	42	1,489	9	7	13	7	36
	5:30 PM	85	336	100	53	356	43	40	188	4	52	175	36	1,468	12	6	12	3	33
	5:45 PM	70	337	77	57	340	31	39	170	7	50	173	38	1,389	10	1	11	4	26
	VOLUMES	525	2,695	580	410	2,720	325	374	1,263	61	456	1,494	361	11,264	70	32	84	49	235
	APPROACH %	14%	71%	15%	12%	79%	9%	22%	74%	4%	20%	65%	16%						
	APP/DEPART	3,800	/	3,378	3,455	/	3,258	1,698	/	2,270	2,311	/	2,358	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	273	1,360	321	204	1,415	163	185	660	31	227	789	179	5,807					
	APPROACH %	14%	70%	16%	11%	79%	9%	21%	75%	4%	19%	66%	15%						
	PEAK HR FACTOR		0.938			0.962			0.928			0.942		0.975					
	APP/DEPART	1,954	/	1,704	1,782	/	1,693	876	/	1,180	1,195	/	1,230	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS AVERAGE SHEET

T319

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: AVERAGE FOR THREE DAYS

LOCATION: Santa Ana
NORTH & SOUTH: Harbor
EAST & WEST: 1st

PROJECT #: CMP2019
LOCATION #: 190
CONTROL: SIGNAL

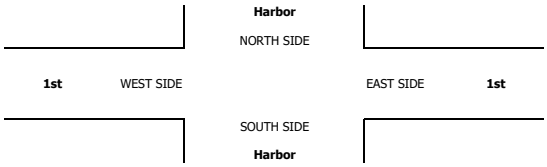
NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ / ◄ W / E ► / S ▼

Add U-Turns to Left Turns

		NORTHBOUND (Harbor)			SOUTHBOUND (Harbor)			EASTBOUND (1st)			WESTBOUND (1st)				U-TURNS					Right-turn Overlap			
	LANES:	NL 1	NT 3	NR 1	SL 1	ST 3	SR 1	EL 2	ET 3	ER 0	WL 2	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL	NRR X	SRR X	ERR X	WRR X
AM	6:00 AM	11	108	14	18	225	11	21	67	22	11	54	21	583	2	2	0	0	4	0	0	0	0
	6:15 AM	10	125	22	25	289	11	19	108	34	23	78	30	775	2	1	0	0	3	0	0	0	0
	6:30 AM	13	143	22	37	451	15	20	137	33	22	93	30	1,015	3	2	1	0	6	0	0	0	0
	6:45 AM	23	148	20	53	452	15	23	186	36	33	92	30	1,109	4	2	3	0	8	0	0	0	0
	7:00 AM	19	156	32	53	487	20	23	207	42	36	93	35	1,203	4	0	3	0	7	0	0	0	0
	7:15 AM	22	227	45	53	493	25	26	230	40	56	115	38	1,371	5	1	2	0	8	0	0	0	0
	7:30 AM	19	237	61	53	510	26	30	229	47	78	149	36	1,478	6	1	4	0	10	0	0	0	0
	7:45 AM	27	228	52	51	445	38	32	224	44	60	188	37	1,428	5	1	4	0	10	0	0	0	0
	8:00 AM	24	232	42	60	446	32	37	239	47	47	162	31	1,400	6	3	2	0	12	0	0	0	0
	8:15 AM	28	200	38	58	428	20	37	264	56	48	118	32	1,327	8	3	2	0	14	0	0	0	0
	8:30 AM	24	184	35	53	439	24	33	253	38	37	115	36	1,270	9	3	7	0	19	0	0	0	0
	8:45 AM	32	177	34	41	408	22	35	213	40	36	128	32	1,197	8	4	3	0	16	0	0	0	0
	VOLUMES	254	2,165	416	554	5,073	259	338	2,355	480	486	1,385	388	14,272	62	23	32	0	117	0	0	0	0
	APPROACH %	9%	75%	14%	9%	86%	4%	11%	73%	15%	22%	61%	17%										
	APP/DEPART	2,898	/	2,914	5,910	/	6,102	3,205	/	3,326	2,259	/	1,930										
	BEGIN PEAK HR		7:15 AM																				
	VOLUMES	115	925	200	224	1,895	122	138	922	179	242	614	143	5,717						0	0	0	0
	APPROACH %	9%	75%	16%	10%	85%	5%	11%	74%	14%	24%	61%	14%										
	PEAK HR FACTOR		0.958			0.948			0.950			0.875		0.960									
	APP/DEPART	1,239	/	1,200	2,240	/	2,337	1,238	/	1,339	999	/	840										
PM	03:00 PM	62	351	56	54	252	31	38	154	31	50	170	36	1,285	7	5	5	0	17	0	0	0	0
	3:15 PM	56	342	61	62	261	33	36	170	29	49	178	35	1,311	4	10	5	0	19	0	0	0	0
	3:30 PM	53	340	54	64	252	34	45	171	33	51	203	41	1,342	7	7	4	0	18	0	0	0	0
	3:45 PM	62	342	39	66	289	39	31	186	30	48	217	45	1,394	3	6	4	0	13	0	0	0	0
	4:00 PM	59	343	48	67	271	34	36	169	35	49	232	49	1,393	5	7	7	0	19	0	0	0	0
	4:15 PM	62	364	45	60	273	36	30	180	28	53	230	38	1,398	6	7	5	0	18	0	0	0	0
	4:30 PM	62	363	33	60	256	34	34	196	38	46	235	41	1,399	8	6	6	0	21	0	0	0	0
	4:45 PM	61	372	39	64	292	34	39	176	28	65	231	36	1,438	6	6	5	0	17	0	0	0	0
	5:00 PM	63	366	35	64	309	37	42	183	29	61	263	42	1,494	8	5	8	0	21	0	0	0	0
	5:15 PM	63	371	42	67	298	44	35	189	31	57	276	39	1,512	7	4	10	0	20	0	0	0	0
	5:30 PM	64	363	40	63	303	43	34	192	44	56	280	43	1,524	6	6	11	0	23	0	0	0	0
	5:45 PM	66	364	46	59	295	39	41	194	39	53	243	49	1,489	7	7	5	0	19	0	0	0	0
	6:00 PM	71	350	43	57	265	35	41	190	35	51	244	41	1,423	9	5	7	0	20	0	0	0	0
	6:15 PM	66	364	40	59	275	34	45	173	39	45	231	47	1,418	5	6	7	0	18	0	0	0	0
	6:30 PM	64	350	49	69	247	48	36	164	36	45	208	37	1,354	9	3	5	0	17	0	0	0	0
	6:45 PM	58	317	45	62	257	36	39	134	35	47	172	40	1,244	8	5	6	0	19	0	0	0	0
	VOLUMES	991	5,664	717	998	4,394	590	602	2,822	541	827	3,613	659	22,717	106	94	99	1	299	0	0	0	0
	APPROACH %	13%	76%	10%	16%	72%	10%	15%	69%	13%	16%	71%	13%										
	APP/DEPART	7,478	/	7,019	6,075	/	5,868	4,063	/	4,537	5,100	/	5,293										
	BEGIN PEAK HR		5:00 PM																				
	VOLUMES	284	1,465	162	275	1,205	162	186	758	143	227	1,062	173	6,102						0	0	0	0
	APPROACH %	15%	77%	8%	17%	73%	10%	17%	70%	13%	16%	73%	12%										
	PEAK HR FACTOR		0.988			0.990			0.969			0.964		0.986									
	APP/DEPART	1,911	/	1,811	1,642	/	1,603	1,087	/	1,174	1,462	/	1,514										



		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	6:00 AM	4	19	4	12	38	3	17	4	10	34	1	1	0	2	5
	6:15 AM	1	14	3	10	28	1	12	2	10	25	0	2	1	0	3
	6:30 AM	2	17	2	12	33	2	15	2	11	30	0	2	0	1	3
	6:45 AM	3	19	4	16	42	2	17	3	14	36	1	2	1	3	6
	7:00 AM	5	19	7	11	42	4	17	6	9	36	1	2	0	2	5
	7:15 AM	7	25	11	30	74	7	24	11	28	71	0	1	0	2	3
	7:30 AM	6	28	9	29	72	6	26	8	26	66	1	2	1	3	7
	7:45 AM	5	21	6	18	51	3	19	6	17	45	2	2	1	1	6
	8:00 AM	5	18	4	17	45	5	16	4	15	39	0	3	0	2	6
	8:15 AM	7	16	7	17	47	5	14	6	15	40	2	2	1	1	6
	8:30 AM	8	16	4	13	41	5	14	4	12	34	3	2	1	1	7
	8:45 AM	8	22	9	17	55	6	19	8	15	47	2	3	1	1	8
	TOTAL	63	234	71	201	568	48	210	64	181	503	15	24	7	20	65
	AM BEGIN PEAK HR			7:15 AM			21	85	29	85	220	3	8	2	9	22
PM	3:00 PM	9	26	3	23	62	7	23	3	22	55	2	3	0	2	7
	3:15 PM	16	35	13	25	90	15	34	12	25	86	1	1	1	0	4
	3:30 PM	15	23	8	28	73	13	22	7	25	67	1	2	0	3	6
	3:45 PM	14	29	9	28	80	12	27	8	27	74	3	1	1	1	6
	4:00 PM	13	27	10	28	78	11	24	8	24	67	2	3	2	4	11
	4:15 PM	13	33	5	25	77	12	32	4	24	72	1	2	1	1	5
	4:30 PM	18	20	10	24	72	16	18	10	22	66	2	1	1	2	6
	4:45 PM	13	27	7	22	69	12	25	6	19	62	2	2	1	3	7
	5:00 PM	7	26	3	26	62	4	24	3	23	55	2	1	1	3	7
	5:15 PM	11	33	7	27	78	10	29	5	25	69	1	4	2	2	9
	5:30 PM	12	18	7	19	56	10	16	5	17	49	2	2	2	1	7
	5:45 PM	13	29	9	29	81	11	26	9	25	70	3	3	1	4	11
	6:00 PM	16	19	10	25	70	14	17	9	24	64	1	2	1	1	6
	6:15 PM	10	23	7	22	62	8	18	7	19	52	1	5	0	4	10
	6:30 PM	10	18	3	18	49	8	16	2	13	40	1	2	1	5	9
	6:45 PM	7	21	4	19	52	6	18	4	18	46	1	3	0	2	6
	TOTAL	197	408	116	390	1,110	170	370	102	352	994	27	38	13	38	116
	PM BEGIN PEAK HR			5:00 PM			35	95	22	91	243	8	11	5	10	34

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Wed, Feb 10, 16

LOCATION: Santa Ana
NORTH & SOUTH: Harbor
EAST & WEST: McFadden

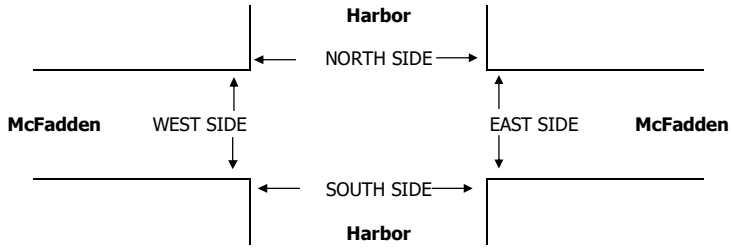
PROJECT #: SC0846
LOCATION #: 32
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Harbor			SOUTHBOUND Harbor			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	21	170	13	33	480	10	31	54	24	35	57	17	945	5	6	0	0	11
	7:15 AM	20	214	17	34	533	10	24	67	18	45	74	21	1,077	3	9	0	0	12
	7:30 AM	19	238	18	26	536	15	36	95	27	51	102	27	1,190	3	4	0	0	7
	7:45 AM	25	260	34	45	488	12	39	94	30	48	117	30	1,222	3	3	0	0	6
	8:00 AM	32	250	25	55	425	22	47	102	36	44	110	33	1,181	5	10	0	0	15
	8:15 AM	23	269	20	48	395	12	38	127	31	39	84	28	1,114	7	9	0	0	16
	8:30 AM	21	245	30	71	407	26	36	95	27	47	85	18	1,108	8	13	0	0	21
	8:45 AM	15	198	28	47	456	15	21	96	30	47	76	23	1,052	7	11	0	0	18
	VOLUMES	176	1,844	185	359	3,720	122	272	730	223	356	705	197	8,889	41	65	0	0	106
	APPROACH %	8%	84%	8%	9%	89%	3%	22%	60%	18%	28%	56%	16%						
	APP/DEPART	2,205	/	2,378	4,201	/	4,340	1,225	/	1,209	1,258	/	962	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	99	1,017	97	174	1,844	61	160	418	124	182	413	118	4,707					
	APPROACH %	8%	84%	8%	8%	89%	3%	23%	60%	18%	26%	58%	17%						
	PEAK HR FACTOR		0.951			0.901			0.895			0.914		0.963					
	APP/DEPART	1,213	/	1,321	2,079	/	2,168	702	/	663	713	/	555	0					
PM	4:00 PM	51	346	34	67	266	22	34	135	19	44	109	47	1,174	5	12	0	0	17
	4:15 PM	35	416	33	67	277	30	50	130	18	53	125	29	1,263	5	13	0	1	19
	4:30 PM	35	421	36	62	284	24	43	122	22	50	99	26	1,224	5	11	0	1	17
	4:45 PM	38	405	36	74	317	29	46	115	14	44	117	31	1,266	3	14	0	0	17
	5:00 PM	35	425	27	74	286	27	50	117	11	49	121	40	1,262	6	18	0	0	24
	5:15 PM	38	429	29	71	305	15	56	129	15	52	125	38	1,302	5	13	0	0	18
	5:30 PM	47	411	34	66	300	32	52	127	20	48	134	35	1,306	5	10	0	1	16
	5:45 PM	40	384	30	75	332	36	47	126	16	53	106	27	1,272	4	10	0	0	14
	VOLUMES	319	3,237	259	556	2,367	215	378	1,001	135	393	936	273	10,069	38	101	0	3	142
	APPROACH %	8%	85%	7%	18%	75%	7%	25%	66%	9%	25%	58%	17%						
	APP/DEPART	3,815	/	3,989	3,138	/	2,930	1,514	/	1,718	1,602	/	1,432	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	160	1,649	120	286	1,223	110	205	499	62	202	486	140	5,142					
	APPROACH %	8%	85%	6%	18%	76%	7%	27%	65%	8%	24%	59%	17%						
	PEAK HR FACTOR		0.972			0.914			0.958			0.954		0.984					
	APP/DEPART	1,929	/	2,045	1,619	/	1,506	766	/	855	828	/	736	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	3	18	5	4	30	3	14	5	3	25	0	4	0	1	5
	7:15 AM	8	22	14	6	50	6	19	12	2	39	2	3	2	4	11
	7:30 AM	11	8	14	9	42	10	8	12	7	37	1	0	2	2	5
	7:45 AM	16	16	13	8	53	15	12	13	6	46	1	4	0	2	7
	8:00 AM	14	27	22	13	76	12	24	21	11	68	2	3	1	2	8
	8:15 AM	12	17	11	12	52	11	17	11	9	48	1	0	0	3	4
	8:30 AM	9	14	9	6	38	8	12	9	3	32	1	2	0	3	6
	8:45 AM	20	14	14	10	58	16	13	10	9	48	4	1	4	1	10
	TOTAL	93	136	102	68	399	81	119	93	50	343	12	17	9	18	56
PM	4:00 PM	4	27	15	11	57	3	25	13	6	47	1	2	2	5	10
	4:15 PM	17	24	33	19	93	14	22	30	13	79	3	2	3	6	14
	4:30 PM	22	27	19	23	91	14	20	15	16	65	8	7	4	7	26
	4:45 PM	22	28	31	19	100	18	26	27	14	85	4	2	4	5	15
	5:00 PM	14	31	21	7	73	8	27	16	3	54	6	4	5	4	19
	5:15 PM	18	32	22	21	93	17	30	18	20	85	1	2	4	1	8
	5:30 PM	19	17	21	16	73	14	14	15	13	56	5	3	6	3	17
	5:45 PM	9	47	18	13	87	7	42	9	13	71	2	5	9	0	16
	TOTAL	125	233	180	129	667	95	206	143	98	542	30	27	37	31	125

T218

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Harbor
EAST & WEST: Edinger

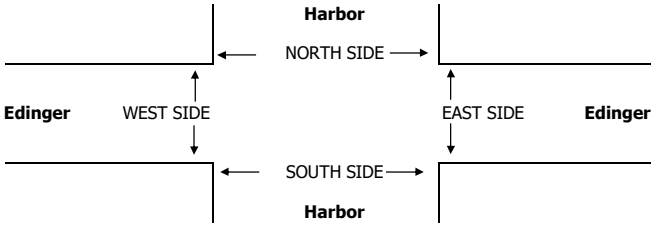
PROJECT #: SC2183
LOCATION #: 5
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

Add U-Turns to Left Turns

		NORTHBOUND Harbor			SOUTHBOUND Harbor			EASTBOUND Edinger			WESTBOUND Edinger				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 1	EL 2	ET 2.5	ER 0.5	WL 2	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	20	139	20	58	478	5	16	144	56	27	90	24	1,077	4	4	0	0	8
	7:15 AM	24	159	40	44	513	12	23	165	79	33	118	49	1,259	5	2	2	1	10
	7:30 AM	28	202	37	55	538	15	25	147	82	63	120	55	1,367	5	5	0	0	10
	7:45 AM	20	226	43	43	552	18	27	138	65	74	125	53	1,384	2	4	1	2	9
	8:00 AM	29	177	24	39	481	15	30	187	93	48	123	44	1,290	3	2	3	1	9
	8:15 AM	20	149	21	43	530	11	33	150	56	39	101	32	1,185	6	3	0	0	9
	8:30 AM	13	164	22	43	489	10	37	129	66	27	105	25	1,130	0	4	1	0	5
	8:45 AM	17	148	25	50	477	6	25	117	47	50	98	28	1,088	2	6	1	0	9
	VOLUMES	171	1,364	232	375	4,058	92	216	1,177	544	361	880	310	9,780	27	30	8	4	69
	APPROACH %	10%	77%	13%	8%	90%	2%	11%	61%	28%	23%	57%	20%						
	APP/DEPART	1,767	/	1,912	4,525	/	4,986	1,937	/	1,758	1,551	/	1,124	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	101	764	144	181	2,084	60	105	637	319	218	486	201	5,300					
	APPROACH %	10%	76%	14%	8%	90%	3%	10%	60%	30%	24%	54%	22%						
	PEAK HR FACTOR		0.873			0.948			0.856			0.898		0.957					
	APP/DEPART	1,009	/	1,077	2,325	/	2,632	1,061	/	953	905	/	638	0					
PM	4:00 PM	58	404	47	60	205	21	41	134	26	47	164	62	1,269	1	5	2	1	9
	4:15 PM	52	416	37	74	229	15	31	127	20	40	203	81	1,325	0	9	1	1	11
	4:30 PM	68	450	43	73	210	20	36	137	26	30	179	72	1,344	1	13	6	1	21
	4:45 PM	65	451	48	63	208	17	35	137	23	25	205	65	1,342	4	4	3	1	12
	5:00 PM	66	434	53	66	197	20	32	128	28	31	190	66	1,311	2	11	7	0	20
	5:15 PM	83	443	48	77	197	18	33	155	18	44	222	62	1,400	4	7	3	0	14
	5:30 PM	65	427	62	74	211	19	32	138	30	38	187	75	1,358	1	14	3	0	18
	5:45 PM	63	410	47	82	198	11	22	154	29	48	190	86	1,340	1	5	3	0	9
	VOLUMES	520	3,435	385	569	1,655	141	262	1,110	200	303	1,540	569	10,689	14	68	28	4	114
	APPROACH %	12%	79%	9%	24%	70%	6%	17%	71%	13%	13%	64%	24%						
	APP/DEPART	4,340	/	4,306	2,365	/	2,168	1,572	/	2,000	2,412	/	2,215	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	279	1,755	211	280	813	74	132	558	99	138	804	268	5,411					
	APPROACH %	12%	78%	9%	24%	70%	6%	17%	71%	13%	11%	66%	22%						
	PEAK HR FACTOR		0.978			0.960			0.958			0.922		0.966					
	APP/DEPART	2,245	/	2,175	1,167	/	1,060	789	/	1,014	1,210	/	1,162	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T319

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Feb 26, 19

LOCATION: Santa Ana
NORTH & SOUTH: Harbor
EAST & WEST: Warner

PROJECT #: CMP2019
LOCATION #: 191
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Harbor			SOUTHBOUND Harbor			EASTBOUND Warner			WESTBOUND Warner			
	LANES:	NL 2	NT 3	NR 0	SL 2	ST 3	SR 1	EL 2	ET 3	ER 1	WL 2	WT 3	WR 1	TOTAL
AM	6:00 AM	10	71	22	50	246	3	2	129	28	26	87	9	683
	6:15 AM	15	56	15	47	302	12	9	136	36	40	99	17	784
	6:30 AM	19	70	11	95	470	27	7	166	35	35	113	10	1,058
	6:45 AM	19	98	24	99	473	22	12	233	58	41	138	14	1,231
	7:00 AM	24	132	33	111	491	13	15	272	73	32	121	14	1,331
	7:15 AM	25	154	40	117	523	16	24	358	89	31	194	22	1,593
	7:30 AM	40	196	40	104	527	32	26	318	106	33	216	30	1,668
	7:45 AM	17	163	38	114	509	36	23	350	78	44	210	37	1,619
	8:00 AM	31	181	58	117	479	37	23	345	87	41	164	43	1,606
	8:15 AM	28	174	54	107	515	29	25	316	69	38	182	23	1,560
	8:30 AM	28	141	42	106	476	29	23	280	95	34	162	27	1,443
	8:45 AM	27	140	42	83	512	29	17	224	85	24	188	22	1,393
	VOLUMES	283	1,576	419	1,150	5,523	285	206	3,127	839	419	1,874	268	15,969
	APPROACH %	12%	69%	18%	17%	79%	4%	5%	75%	20%	16%	73%	10%	
	APP/DEPART	2,278	/	2,049	6,958	/	6,793	4,172	/	4,727	2,561	/	2,400	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	113	694	176	452	2,038	121	96	1,371	360	149	784	132	6,486
	APPROACH %	11%	71%	18%	17%	78%	5%	5%	75%	20%	14%	74%	12%	
	PEAK HR FACTOR		0.890			0.985			0.970			0.915		0.972
	APP/DEPART	983	/	922	2,611	/	2,549	1,827	/	2,008	1,065	/	1,007	0
PM	03:00 PM	77	408	43	57	185	22	37	238	49	54	250	91	1,511
	3:15 PM	67	424	26	53	198	27	51	227	41	44	267	87	1,512
	3:30 PM	82	446	34	39	186	30	21	182	53	50	299	106	1,528
	3:45 PM	82	422	30	36	207	24	23	221	53	35	350	120	1,603
	4:00 PM	101	467	46	28	163	22	12	224	46	45	337	94	1,585
	4:15 PM	84	439	40	37	149	19	32	213	49	22	320	94	1,498
	4:30 PM	107	446	53	28	179	21	26	197	40	28	326	106	1,557
	4:45 PM	90	478	24	47	214	17	43	190	38	29	321	109	1,600
	5:00 PM	100	454	28	32	196	28	52	254	50	43	320	122	1,679
	5:15 PM	106	472	31	34	193	27	39	237	47	35	342	99	1,662
	5:30 PM	104	498	24	30	208	22	19	154	63	26	357	109	1,614
	5:45 PM	117	456	29	32	199	22	28	149	43	34	323	90	1,522
	6:00 PM	112	438	27	26	175	20	31	197	50	34	308	73	1,491
	6:15 PM	123	381	26	36	166	26	28	163	35	23	313	91	1,411
	6:30 PM	110	412	26	33	155	31	18	196	29	29	317	53	1,409
	6:45 PM	92	349	32	32	153	19	19	165	30	28	229	54	1,202
	VOLUMES	1,554	6,990	519	580	2,926	377	479	3,207	716	559	4,979	1,498	24,384
	APPROACH %	17%	77%	6%	15%	75%	10%	11%	73%	16%	8%	71%	21%	
	APP/DEPART	9,063	/	8,939	3,883	/	4,218	4,402	/	4,326	7,036	/	6,901	0
	BEGIN PEAK HR		4:45 PM											
	VOLUMES	766	3,676	276	271	1,509	180	238	1,690	386	257	2,673	853	12,775
	APPROACH %	16%	78%	6%	14%	77%	9%	10%	73%	17%	7%	71%	23%	
	PEAK HR FACTOR		1.884			1.763			1.625			1.922		1.902
	APP/DEPART	4,718	/	4,758	1,960	/	2,164	2,314	/	2,239	3,783	/	3,614	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	
5	1	0	2	8
3	1	0	5	9
6	0	0	2	8
4	0	0	2	6
9	1	0	6	16
3	1	1	1	6
3	0	0	3	6
5	2	1	3	11
3	0	1	5	9
2	0	2	3	7
1	0	2	3	6
5	0	0	2	7
49	6	7	37	99
6	1	2	2	11
0	0	2	1	3
3	0	2	6	11
0	0	2	1	3
3	0	0	5	8
3	1	2	0	6
2	0	4	0	6
2	0	3	0	5
5	0	2	2	9
8	1	5	0	14
0	0	0	1	1
1	0	4	1	6
1	0	2	2	5
5	1	0	2	8
2	1	3	1	7
1	0	0	1	2
42	5	33	25	105

Right-turn Overlap

NRR X	SRR X	ERR X	WRR X
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Harbor

NORTH SIDE

Warner WEST SIDE EAST SIDE **Warner**

SOUTH SIDE

Harbor

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	6:00 AM	1	0	1	1	3	1	0	1	0	2	0	0	0	1	1
	6:15 AM	1	1	2	3	7	1	1	1	0	3	0	0	1	3	4
	6:30 AM	0	8	1	0	9	0	7	1	0	8	0	1	0	0	1
	6:45 AM	0	6	0	2	8	0	5	0	2	7	0	1	0	0	1
	7:00 AM	0	2	1	4	7	0	2	1	4	7	0	0	0	0	0
	7:15 AM	6	6	4	1	17	6	6	3	1	16	0	0	1	0	1
	7:30 AM	3	7	2	2	14	2	5	1	2	10	1	2	1	0	4
	7:45 AM	1	0	0	1	2	0	0	0	1	1	1	0	0	0	1
	8:00 AM	4	13	4	6	27	3	13	3	6	25	1	0	1	0	2
	8:15 AM	1	0	4	0	5	1	0	4	0	5	0	0	0	0	0
	8:30 AM	1	2	0	3	6	1	2	0	3	6	0	0	0	0	0
	8:45 AM	1	0	4	5	10	1	0	3	4	8	0	0	1	1	2
	TOTAL	19	45	23	28	115	16	41	18	23	98	3	4	5	5	17
	AM BEGIN PEAK HR			7:15 AM			11	24	7	10	52	3	2	3	0	8
PM	3:00 PM	0	5	5	0	10	0	5	4	0	9	0	0	1	0	1
	3:15 PM	7	2	2	3	14	7	2	2	3	14	0	0	0	0	0
	3:30 PM	4	4	6	2	16	3	3	6	2	14	1	1	0	0	2
	3:45 PM	1	3	3	3	10	1	1	1	3	6	0	2	2	0	4
	4:00 PM	4	8	5	0	17	4	7	5	0	16	0	1	0	0	1
	4:15 PM	2	2	0	4	8	2	1	0	3	6	0	1	0	1	2
	4:30 PM	1	9	9	2	21	0	9	8	1	18	1	0	1	1	3
	4:45 PM	2	2	5	2	11	2	2	4	2	10	0	0	1	0	1
	5:00 PM	2	6	8	1	17	0	6	6	1	13	2	0	2	0	4
	5:15 PM	0	3	8	1	12	0	2	8	1	11	0	1	0	0	1
	5:30 PM	4	2	7	0	13	4	2	7	0	13	0	0	0	0	0
	5:45 PM	0	1	2	1	4	0	1	0	1	2	0	0	2	0	2
	6:00 PM	2	3	6	3	14	1	3	4	2	10	1	0	2	1	4
	6:15 PM	1	1	0	1	3	1	0	0	1	2	0	1	0	0	1
	6:30 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	6:45 PM	2	1	0	1	4	2	0	0	0	2	0	1	0	1	2
	TOTAL	33	52	66	24	175	28	44	55	20	147	5	8	11	4	28
	PM BEGIN PEAK HR			4:45 PM			6	12	25	4	47	2	1	3	0	6

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Harbor
EAST & WEST: Segerstrom

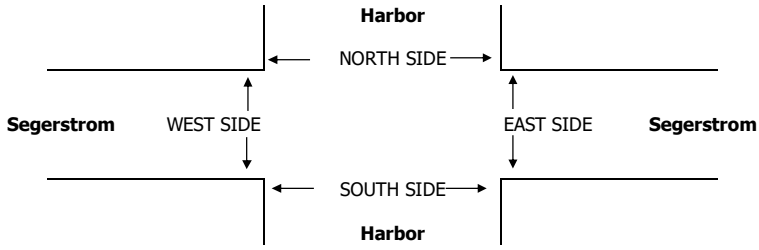
PROJECT #: SC0846
LOCATION #: 45
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Harbor			SOUTHBOUND Harbor			EASTBOUND Segerstrom			WESTBOUND Segerstrom				U-TURNS				
	LANES:	NL 2	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	19	119	13	39	581	13	10	143	46	19	53	13	1,068	0	0	0	0	0
	7:15 AM	21	169	20	29	555	13	21	198	76	15	48	16	1,181	1	0	0	0	1
	7:30 AM	18	180	12	45	588	24	17	193	77	23	65	20	1,262	0	0	0	0	0
	7:45 AM	31	176	11	39	556	20	18	189	66	37	101	25	1,269	4	0	0	0	4
	8:00 AM	35	233	15	38	503	18	30	167	65	32	107	16	1,259	3	1	1	0	5
	8:15 AM	22	171	10	42	562	20	19	159	77	20	74	17	1,193	2	2	0	0	4
	8:30 AM	20	218	15	24	509	16	19	129	76	14	56	10	1,106	1	0	1	0	2
	8:45 AM	19	202	9	28	501	19	24	132	58	16	64	15	1,087	0	0	0	0	0
	VOLUMES	185	1,468	105	284	4,355	143	158	1,310	541	176	568	132	9,425	11	3	2	0	16
	APPROACH %	11%	84%	6%	6%	91%	3%	8%	65%	27%	20%	65%	15%						
	APP/DEPART	1,758	/	1,759	4,782	/	5,083	2,009	/	1,696	876	/	887	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	106	760	48	164	2,209	82	84	708	285	112	347	78	4,983					
	APPROACH %	12%	83%	5%	7%	90%	3%	8%	66%	26%	21%	65%	15%						
	PEAK HR FACTOR		0.807			0.934			0.938			0.824		0.982					
	APP/DEPART	914	/	924	2,455	/	2,615	1,077	/	917	537	/	527	0					
PM	4:00 PM	47	410	21	32	218	18	37	108	46	19	249	74	1,279	1	4	0	0	5
	4:15 PM	50	455	13	19	198	13	27	101	45	22	263	65	1,271	2	0	0	0	2
	4:30 PM	58	456	12	28	230	18	39	112	43	33	237	84	1,350	1	5	0	0	6
	4:45 PM	66	429	10	23	243	18	25	121	50	31	248	87	1,351	2	1	1	0	4
	5:00 PM	67	455	16	21	254	25	40	151	48	25	251	76	1,429	1	1	4	0	6
	5:15 PM	80	454	16	23	262	26	21	144	43	21	271	114	1,475	0	3	1	0	4
	5:30 PM	74	469	15	20	227	18	20	114	32	18	262	97	1,366	1	2	0	0	3
	5:45 PM	52	479	13	15	223	18	18	122	31	16	261	92	1,340	1	0	0	0	1
	VOLUMES	494	3,607	116	181	1,855	154	227	973	338	185	2,042	689	10,861	9	16	6	0	31
	APPROACH %	12%	86%	3%	8%	85%	7%	15%	63%	22%	6%	70%	24%						
	APP/DEPART	4,217	/	4,533	2,190	/	2,387	1,538	/	1,254	2,916	/	2,687	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	287	1,807	57	87	986	87	106	530	173	95	1,032	374	5,621					
	APPROACH %	13%	84%	3%	8%	85%	8%	13%	66%	21%	6%	69%	25%						
	PEAK HR FACTOR		0.964			0.932			0.846			0.924		0.953					
	APP/DEPART	2,151	/	2,288	1,160	/	1,258	809	/	667	1,501	/	1,408	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	1	3	5	10	1	0	1	4	6	0	1	2	1	4
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	4	3	2	2	11	1	2	2	1	6	3	1	0	1	5
	7:45 AM	3	1	0	6	10	2	0	0	4	6	1	1	0	2	4
	8:00 AM	0	1	0	2	3	0	1	0	1	2	0	0	0	1	1
	8:15 AM	0	3	0	6	9	0	1	0	5	6	0	2	0	1	3
	8:30 AM	3	4	0	2	9	0	2	0	1	3	3	2	0	1	6
	8:45 AM	2	0	1	2	5	1	0	0	2	3	1	0	1	0	2
	TOTAL	13	13	6	25	57	5	6	3	18	32	8	7	3	7	25
PM	4:00 PM	0	0	3	0	3	0	0	0	0	0	0	0	3	0	3
	4:15 PM	0	0	3	1	4	0	0	2	0	2	0	0	1	1	2
	4:30 PM	2	6	0	4	12	0	1	0	4	5	2	5	0	0	7
	4:45 PM	2	0	1	0	3	2	0	0	0	2	0	0	1	0	1
	5:00 PM	2	3	1	2	8	2	3	0	1	6	0	0	1	1	2
	5:15 PM	2	0	0	0	2	1	0	0	0	1	1	0	0	0	1
	5:30 PM	2	3	1	1	7	1	0	1	1	3	1	3	0	0	4
	5:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	TOTAL	10	12	9	9	40	6	4	3	6	19	4	8	6	3	21

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Mar 1, 16

LOCATION: Santa Ana
NORTH & SOUTH: Hyland
EAST & WEST: MacArthur

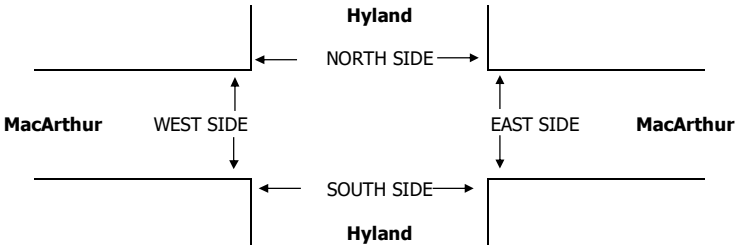
PROJECT #: SC0846
LOCATION #: 9
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Hyland			SOUTHBOUND Hyland			EASTBOUND MacArthur			WESTBOUND MacArthur				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	2	0.5	0.5	1	1	1	1	3	1	1	3	1		0	0	0	0	
AM	7:00 AM	10	0	8	2	1	1	1	258	105	12	78	3	479	0	0	0	0	0
	7:15 AM	10	0	2	2	0	13	2	434	157	10	88	5	723	0	0	0	1	1
	7:30 AM	20	0	6	1	0	2	0	505	178	12	92	6	822	0	0	0	0	0
	7:45 AM	10	0	8	1	1	2	3	491	226	22	138	2	904	0	0	0	0	0
	8:00 AM	26	2	2	3	0	1	1	446	183	17	152	6	839	0	0	1	0	1
	8:15 AM	13	1	5	5	0	0	3	412	154	13	106	4	716	0	0	0	0	0
	8:30 AM	9	2	6	1	0	3	5	415	134	20	107	6	708	0	0	0	0	0
	8:45 AM	21	4	13	4	1	0	6	319	111	13	127	4	623	0	0	0	0	0
	VOLUMES	119	9	50	19	3	22	21	3,280	1,248	119	888	36	5,814	0	0	1	1	2
	APPROACH %	67%	5%	28%	43%	7%	50%	0%	72%	27%	11%	85%	3%						
	APP/DEPART	178	/	65	44	/	1,369	4,549	/	3,350	1,043	/	1,030	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	66	2	18	7	1	18	6	1,876	744	61	470	19	3,288					
	APPROACH %	77%	2%	21%	27%	4%	69%	0%	71%	28%	11%	85%	3%						
	PEAK HR FACTOR		0.717			0.433			0.912			0.786		0.909					
	APP/DEPART	86	/	26	26	/	805	2,626	/	1,902	550	/	555	0					
PM	4:00 PM	250	2	18	4	1	6	6	192	29	6	476	2	992	0	0	3	0	3
	4:15 PM	254	3	10	3	0	8	3	184	34	3	582	3	1,087	0	0	2	0	2
	4:30 PM	270	0	15	6	3	2	6	227	45	10	532	5	1,121	0	0	5	0	5
	4:45 PM	282	0	14	3	2	1	9	200	45	6	561	1	1,124	0	0	4	1	5
	5:00 PM	284	2	24	3	0	2	7	218	32	10	556	1	1,139	0	0	4	0	4
	5:15 PM	302	2	18	3	1	7	9	233	38	3	556	5	1,177	0	0	4	1	5
	5:30 PM	286	2	11	2	0	3	9	205	38	5	585	4	1,150	0	0	1	0	1
	5:45 PM	280	2	6	2	2	4	7	195	44	3	566	5	1,116	0	0	2	0	2
	VOLUMES	2,208	13	116	26	9	33	56	1,654	305	46	4,414	26	8,906	0	0	25	2	27
	APPROACH %	94%	1%	5%	38%	13%	49%	3%	82%	15%	1%	98%	1%						
	APP/DEPART	2,337	/	70	68	/	358	2,015	/	1,798	4,486	/	6,680	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	1,154	6	67	11	3	13	34	856	153	24	2,258	11	4,590					
	APPROACH %	94%	0%	5%	41%	11%	48%	3%	82%	15%	1%	98%	0%						
	PEAK HR FACTOR		0.953			0.614			0.931			0.965		0.975					
	APP/DEPART	1,227	/	38	27	/	178	1,043	/	936	2,293	/	3,438	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	2	2	1	0	5	1	2	0	0	3	1	0	1	0	2
	7:30 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	7:45 AM	3	2	0	0	5	1	2	0	0	3	2	0	0	0	2
	8:00 AM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	8:15 AM	5	0	0	0	5	5	0	0	0	5	0	0	0	0	0
	8:30 AM	1	1	0	0	2	0	0	0	0	0	1	1	0	0	2
	8:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	TOTAL	13	6	1	0	20	8	5	0	0	13	5	1	1	0	7
PM	4:00 PM	4	2	0	0	6	1	2	0	0	3	3	0	0	0	3
	4:15 PM	4	1	2	0	7	2	0	1	0	3	2	1	1	0	4
	4:30 PM	3	0	2	0	5	0	0	1	0	1	3	0	1	0	4
	4:45 PM	1	5	3	0	9	0	3	2	0	5	1	2	1	0	4
	5:00 PM	2	1	3	0	6	0	1	2	0	3	2	0	1	0	3
	5:15 PM	3	1	1	0	5	1	0	1	0	2	2	1	0	0	3
	5:30 PM	8	0	0	0	8	1	0	0	0	1	7	0	0	0	7
	5:45 PM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
	TOTAL	26	11	11	0	48	6	7	7	0	20	20	4	4	0	28

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 22, 18

LOCATION: Costa Mesa
NORTH & SOUTH: Harbor
EAST & WEST: MacArthur

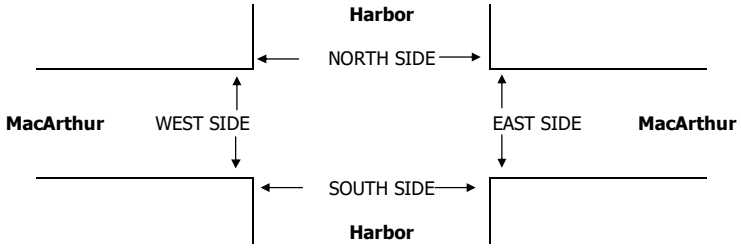
PROJECT #: SC
LOCATION #: 1
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Harbor			SOUTHBOUND Harbor			EASTBOUND MacArthur			WESTBOUND MacArthur				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 1	EL 1	ET 3	ER 1	WL 1	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	21	181	7	74	415	39	33	217	36	14	54	16	1,107	0	0	0	3	3
	7:15 AM	18	188	9	70	474	26	37	249	65	16	78	28	1,258	0	2	0	3	5
	7:30 AM	27	197	19	89	468	20	36	322	102	29	93	38	1,440	3	0	0	2	5
	7:45 AM	33	212	24	79	422	34	23	293	74	39	125	29	1,387	0	3	0	10	13
	8:00 AM	41	251	24	59	454	35	32	254	76	33	119	38	1,416	1	1	0	10	12
	8:15 AM	24	220	23	82	440	34	32	249	85	29	97	24	1,339	3	0	0	6	9
	8:30 AM	39	192	21	73	412	40	30	212	68	31	80	26	1,224	3	0	0	9	12
	8:45 AM	36	203	23	75	438	39	26	177	78	28	76	28	1,227	4	0	0	6	10
	VOLUMES	239	1,644	150	601	3,523	267	249	1,973	584	219	722	227	10,398	14	6	0	49	69
	APPROACH %	12%	81%	7%	14%	80%	6%	9%	70%	21%	19%	62%	19%						
	APP/DEPART	2,033	/	2,126	4,391	/	4,291	2,806	/	2,767	1,168	/	1,214	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	125	880	90	309	1,784	123	123	1,118	337	130	434	129	5,582					
	APPROACH %	11%	80%	8%	14%	81%	6%	8%	71%	21%	19%	63%	19%						
	PEAK HR FACTOR		0.866			0.960			0.858			0.898		0.969					
	APP/DEPART	1,095	/	1,136	2,216	/	2,230	1,578	/	1,541	693	/	675	0					
PM	4:00 PM	131	418	18	47	237	38	37	138	45	26	358	73	1,566	4	4	0	7	15
	4:15 PM	138	393	32	43	250	41	23	110	41	22	362	55	1,510	3	1	2	8	14
	4:30 PM	144	377	26	48	291	32	38	125	35	32	340	81	1,569	2	7	1	9	19
	4:45 PM	144	358	23	50	244	47	30	105	47	13	370	53	1,484	0	1	0	5	6
	5:00 PM	141	355	22	64	284	67	37	126	55	18	369	61	1,599	1	2	3	2	8
	5:15 PM	147	399	15	46	232	26	32	123	40	22	359	75	1,516	1	3	2	6	12
	5:30 PM	112	407	13	50	253	29	45	99	43	20	346	86	1,503	2	3	3	6	14
	5:45 PM	130	411	16	51	220	34	29	98	30	14	356	69	1,458	0	3	1	6	10
	VOLUMES	1,087	3,118	165	399	2,011	314	271	924	336	167	2,860	553	12,205	13	24	12	49	98
	APPROACH %	25%	71%	4%	15%	74%	12%	18%	60%	22%	5%	80%	15%						
	APP/DEPART	4,370	/	3,954	2,724	/	2,478	1,531	/	1,513	3,580	/	4,260	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	576	1,489	86	208	1,051	172	137	479	177	85	1,438	270	6,168					
	APPROACH %	27%	69%	4%	15%	73%	12%	17%	60%	22%	5%	80%	15%						
	PEAK HR FACTOR		0.959			0.862			0.909			0.983		0.964					
	APP/DEPART	2,151	/	1,903	1,431	/	1,295	793	/	782	1,793	/	2,188	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:30 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Mar 1, 16

LOCATION: Santa Ana
NORTH & SOUTH: Harbor
EAST & WEST: Sunflower

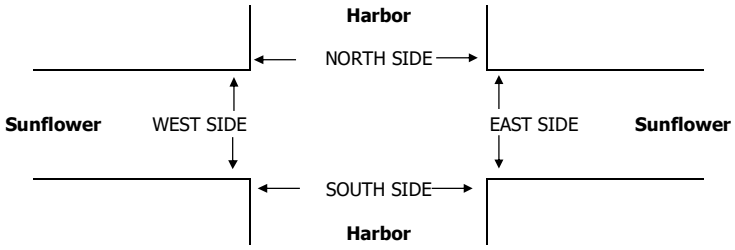
PROJECT #: SC0846
LOCATION #: 11
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND (Harbor)			SOUTHBOUND (Harbor)			EASTBOUND (Sunflower)			WESTBOUND (Sunflower)				U-TURNS				
	LANES:	NL 2	NT 3	NR 0	SL 2	ST 3	SR 1	EL 1	ET 2	ER 0	WL 1.5	WT 1.5	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	33	170	24	36	445	5	5	22	7	17	31	8	803	0	0	0	0	0
	7:15 AM	48	224	32	58	556	15	0	21	6	16	16	13	1,005	1	0	0	0	1
	7:30 AM	39	272	53	71	616	8	3	32	17	26	34	24	1,195	0	0	0	0	0
	7:45 AM	52	334	70	57	530	16	1	33	8	41	58	19	1,219	2	1	0	0	3
	8:00 AM	69	233	42	50	531	15	4	18	9	41	51	34	1,097	0	0	0	0	0
	8:15 AM	69	246	40	56	453	14	0	17	14	26	34	14	983	1	1	0	0	2
	8:30 AM	54	268	40	62	454	18	2	8	11	13	26	15	971	1	4	0	0	5
	8:45 AM	62	241	27	39	463	13	7	20	8	26	26	15	947	2	1	0	0	3
	VOLUMES	426	1,988	328	429	4,048	104	22	171	80	206	276	142	8,220	7	7	0	0	14
	APPROACH %	16%	73%	12%	9%	88%	2%	8%	63%	29%	33%	44%	23%						
	APP/DEPART	2,742	/	2,159	4,581	/	4,341	273	/	921	624	/	799	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	208	1,063	197	236	2,233	54	8	104	40	124	159	90	4,516					
	APPROACH %	14%	72%	13%	9%	89%	2%	5%	68%	26%	33%	43%	24%						
	PEAK HR FACTOR		0.805			0.908			0.731			0.740		0.926					
	APP/DEPART	1,468	/	1,162	2,523	/	2,400	152	/	536	373	/	418	0					
PM	4:00 PM	39	466	41	31	338	13	12	29	39	65	92	33	1,198	3	3	0	0	6
	4:15 PM	47	493	42	26	300	6	8	21	29	51	110	39	1,172	2	1	0	0	3
	4:30 PM	37	463	58	18	355	11	20	45	57	65	106	44	1,279	2	2	0	0	4
	4:45 PM	48	467	53	30	326	12	9	30	32	55	127	58	1,247	1	2	0	0	3
	5:00 PM	46	358	65	28	330	9	28	56	50	68	132	32	1,202	4	3	0	0	7
	5:15 PM	40	413	76	31	327	8	7	43	42	56	147	57	1,247	1	1	0	0	2
	5:30 PM	41	440	70	35	306	8	8	32	30	53	148	53	1,224	2	3	0	0	5
	5:45 PM	49	485	59	25	266	10	4	31	29	61	151	46	1,216	1	1	0	2	4
	VOLUMES	347	3,585	464	224	2,548	77	96	287	308	474	1,013	362	9,785	16	16	0	2	34
	APPROACH %	8%	82%	11%	8%	89%	3%	14%	42%	45%	26%	55%	20%						
	APP/DEPART	4,396	/	4,059	2,849	/	3,344	691	/	961	1,849	/	1,421	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	171	1,701	252	107	1,338	40	64	174	181	244	512	191	4,975					
	APPROACH %	8%	80%	12%	7%	90%	3%	15%	42%	43%	26%	54%	20%						
	PEAK HR FACTOR		0.935			0.967			0.782			0.911		0.972					
	APP/DEPART	2,124	/	1,964	1,485	/	1,771	419	/	525	947	/	715	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	7:15 AM	2	0	0	2	4	2	0	0	0	2	0	0	0	2	2
	7:30 AM	1	1	1	1	4	1	0	1	1	3	0	1	0	0	1
	7:45 AM	4	2	2	2	10	3	0	2	2	7	1	2	0	0	3
	8:00 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3
	8:15 AM	2	1	2	3	8	2	0	2	1	5	0	1	0	2	3
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	4	1	4	3	12	2	0	2	1	5	2	1	2	2	7
	TOTAL	14	8	9	11	42	11	0	7	5	23	3	8	2	6	19
PM	4:00 PM	2	1	4	1	8	1	1	2	0	4	1	0	2	1	4
	4:15 PM	2	0	2	1	5	1	0	1	1	3	1	0	1	0	2
	4:30 PM	3	4	2	2	11	0	0	2	1	3	3	4	0	1	8
	4:45 PM	5	1	3	1	10	3	0	3	1	7	2	1	0	0	3
	5:00 PM	2	1	1	2	6	1	0	0	1	2	1	1	1	1	4
	5:15 PM	2	1	3	1	7	1	0	1	0	2	1	1	2	1	5
	5:30 PM	3	2	2	0	7	2	0	2	0	4	1	2	0	0	3
	5:45 PM	1	1	4	0	6	0	0	4	0	4	1	1	0	0	2
	TOTAL	20	11	21	8	60	9	1	15	4	29	11	10	6	4	31

INTERSECTION TURNING MOVEMENT COUNTS

T319

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Mar 12, 19

LOCATION: Costa Mesa
NORTH & SOUTH: Harbor
EAST & WEST: NB I-405 Ramps

PROJECT #: CMP2019
LOCATION #: 48
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

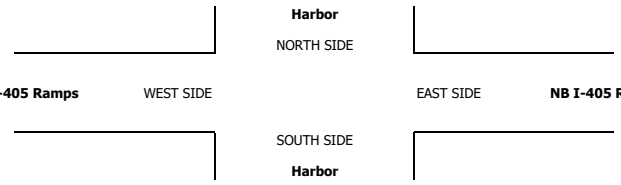
		NORTHBOUND Harbor			SOUTHBOUND Harbor			EASTBOUND NB I-405 Ramps			WESTBOUND NB I-405 Ramps			
	LANES:	NL X	NT 4	NR 2	SL X	ST 5	SR X	EL X	ET X	ER X	WL 1,5	WT X	WR 1,5	TOTAL
AM	6:00 AM	0	118	82	0	193	0	0	0	0	29	0	76	498
	6:15 AM	0	95	79	0	234	0	0	0	0	42	0	87	537
	6:30 AM	0	157	99	0	369	0	0	0	0	51	0	88	764
	6:45 AM	0	177	90	0	441	0	0	0	0	53	0	179	940
	7:00 AM	0	200	119	0	448	0	0	0	0	77	0	156	1,000
	7:15 AM	0	261	133	0	551	0	0	0	0	80	0	169	1,194
	7:30 AM	0	305	132	0	623	0	0	0	0	114	0	172	1,346
	7:45 AM	0	381	161	0	628	0	0	0	0	157	0	230	1,557
	8:00 AM	0	404	130	0	525	0	0	0	0	111	0	204	1,374
	8:15 AM	0	384	135	0	571	0	0	0	0	106	0	211	1,407
	8:30 AM	0	382	144	0	579	0	0	0	0	128	0	240	1,473
	8:45 AM	0	369	112	0	541	0	0	0	0	127	0	218	1,367
	VOLUMES	0	3,233	1,416	0	5,703	0	0	0	0	1,075	0	2,030	13,457
	APPROACH %	0%	70%	30%	0%	100%	0%	0%	0%	0%	35%	0%	65%	
	APP/DEPART	4,649	/	5,263	5,703	/	6,778	0	/	1,416	3,105	/	0	0
	BEGIN PEAK HR		7:45 AM											
	VOLUMES	0	1,551	570	0	2,303	0	0	0	0	502	0	885	5,811
	APPROACH %	0%	73%	27%	0%	100%	0%	0%	0%	0%	36%	0%	64%	
	PEAK HR FACTOR		0.978			0.917			0.000			0.896		0.933
	APP/DEPART	2,121	/	2,436	2,303	/	2,805	0	/	570	1,387	/	0	0
PM	03:00 PM	0	395	118	0	488	0	0	0	0	193	0	240	1,434
	3:15 PM	0	391	135	0	465	0	0	0	0	194	0	233	1,418
	3:30 PM	0	358	113	0	474	0	0	0	0	193	0	291	1,429
	3:45 PM	0	398	105	0	480	0	0	0	0	172	0	268	1,423
	4:00 PM	0	385	137	0	543	0	0	0	0	174	0	280	1,519
	4:15 PM	0	409	151	0	493	0	0	0	0	192	0	267	1,512
	4:30 PM	0	407	156	0	547	0	0	0	0	173	0	287	1,570
	4:45 PM	0	368	112	0	556	0	0	0	0	159	0	301	1,496
	5:00 PM	0	381	188	0	664	0	0	0	0	183	0	265	1,681
	5:15 PM	0	357	148	0	683	0	0	0	0	179	0	267	1,634
	5:30 PM	0	422	117	0	553	0	0	0	0	178	0	241	1,511
	5:45 PM	0	331	139	0	485	0	0	0	0	187	0	234	1,376
	6:00 PM	0	342	155	0	464	0	0	0	0	196	0	242	1,399
	6:15 PM	0	336	124	0	437	0	0	0	0	211	0	260	1,368
	6:30 PM	0	333	79	0	398	0	0	0	0	204	0	233	1,247
	6:45 PM	0	302	89	0	370	0	0	0	0	206	0	180	1,147
	VOLUMES	0	5,915	2,066	0	8,100	0	0	0	0	2,994	0	4,089	23,164
	APPROACH %	0%	74%	26%	0%	100%	0%	0%	0%	0%	42%	0%	58%	
	APP/DEPART	7,981	/	10,004	8,100	/	11,094	0	/	2,066	7,083	/	0	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	1,513	604	0	2,450	0	0	0	0	694	0	1,120	6,381
	APPROACH %	0%	71%	29%	0%	100%	0%	0%	0%	0%	38%	0%	62%	
	PEAK HR FACTOR		0.930			0.897			0.000			0.986		0.949
	APP/DEPART	2,117	/	2,633	2,450	/	3,144	0	/	604	1,814	/	0	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

Right-turn Overlap

NRR X	SRR X	ERR X	WRR X
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0



ALL PED AND BIKE

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
6:00 AM	0	0	0	0	0
6:15 AM	0	1	0	0	1
6:30 AM	0	0	1	0	1
6:45 AM	0	1	0	0	1
7:00 AM	0	0	1	0	1
7:15 AM	0	0	2	0	2
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	3	0	0	3
8:15 AM	0	1	0	0	1
8:30 AM	0	0	4	0	4
8:45 AM	0	0	2	0	2
TOTAL	0	6	10	0	16
AM BEGIN PEAK HR			7:45 AM		
3:00 PM	0	0	0	0	0
3:15 PM	0	3	1	0	4
3:30 PM	0	0	0	0	0
3:45 PM	0	0	3	0	3
4:00 PM	0	1	1	0	2
4:15 PM	0	0	1	0	1
4:30 PM	0	1	2	0	3
4:45 PM	0	0	1	0	1
5:00 PM	0	2	1	0	3
5:15 PM	0	0	1	0	1
5:30 PM	0	1	0	0	1
5:45 PM	0	2	5	0	7
6:00 PM	0	5	0	0	5
6:15 PM	0	2	0	0	2
6:30 PM	0	1	1	0	2
6:45 PM	0	1	0	0	1
TOTAL	0	19	17	0	36
PM BEGIN PEAK HR			4:30 PM		

PEDESTRIAN CROSSINGS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
6:00 AM	0	0	0	0	0
6:15 AM	0	0	0	0	0
6:30 AM	0	0	1	0	1
6:45 AM	0	0	0	0	0
7:00 AM	0	0	1	0	1
7:15 AM	0	0	2	0	2
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	4	0	4
8:45 AM	0	0	2	0	2
TOTAL	0	0	10	0	10
AM BEGIN PEAK HR	0	0	4	0	4
3:00 PM	0	0	0	0	0
3:15 PM	0	0	1	0	1
3:30 PM	0	0	0	0	0
3:45 PM	0	0	3	0	3
4:00 PM	0	0	1	0	1
4:15 PM	0	0	1	0	1
4:30 PM	0	0	2	0	2
4:45 PM	0	0	1	0	1
5:00 PM	0	0	1	0	1
5:15 PM	0	0	1	0	1
5:30 PM	0	0	0	0	0
5:45 PM	0	0	5	0	5
6:00 PM	0	0	0	0	0
6:15 PM	0	0	0	0	0
6:30 PM	0	0	1	0	1
6:45 PM	0	0	0	0	0
TOTAL	0	0	17	0	17
PM BEGIN PEAK HR	0	0	5	0	5

BICYCLE CROSSINGS

NS	SS	ES	WS	TOTAL
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	3	0	0	3
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	6	0	0	6
0	4	0	0	4
0	0	0	0	0
0	3	0	0	3
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	1	0	0	1
0	0	0	0	0
0	2	0	0	2
0	0	0	0	0
0	1	0	0	1
0	2	0	0	2
0	5	0	0	5
0	2	0	0	2
0	1	0	0	1
0	1	0	0	1
0	19	0	0	19
0	3	0	0	3

INTERSECTION TURNING MOVEMENT COUNTS

T319

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Apr 16, 19

LOCATION: Costa Mesa
NORTH & SOUTH: Harbor
EAST & WEST: SB I-405 Ramps

PROJECT #: CMP2019
LOCATION #: 42
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

N / W / E / S

Add U-Turns to Left Turns

		NORTHBOUND Harbor			SOUTHBOUND Harbor			EASTBOUND SB I-405 Ramps			WESTBOUND SB I-405 Ramps			
	LANES:	NL X	NT 3.5	NR 1.5	SL X	ST 4	SR 1	EL 1.5	ET X	ER 1.5	WL X	WT X	WR X	TOTAL
AM	6:00 AM	0	161	102	0	99	131	63	0	95	0	0	0	651
	6:15 AM	0	160	146	0	146	177	59	0	71	0	0	0	759
	6:30 AM	0	197	226	0	204	258	49	0	86	0	0	0	1,020
	6:45 AM	0	260	244	0	210	229	52	0	90	0	0	0	1,085
	7:00 AM	0	269	289	0	258	313	42	0	110	0	0	0	1,281
	7:15 AM	0	313	349	0	303	349	74	0	89	0	0	0	1,477
	7:30 AM	0	389	353	0	386	344	105	0	96	0	0	0	1,673
	7:45 AM	0	475	309	0	332	271	80	0	99	0	0	0	1,566
	8:00 AM	0	431	327	0	398	266	104	0	113	0	0	0	1,639
	8:15 AM	0	416	277	0	373	260	92	0	116	0	0	0	1,534
	8:30 AM	0	400	276	0	400	265	109	0	127	0	0	0	1,577
	8:45 AM	0	316	258	0	430	198	112	0	120	0	0	0	1,434
	VOLUMES	0	3,787	3,156	0	3,539	3,061	941	0	1,212	0	0	0	15,696
	APPROACH %	0%	55%	45%	0%	54%	46%	44%	0%	56%	0%	0%	0%	
	APP/DEPART	6,943	/	4,728	6,600	/	4,751	2,153	/	3,156	0	/	3,061	0
	BEGIN PEAK HR		7:30 AM											
	VOLUMES	0	1,711	1,266	0	1,489	1,141	381	0	424	0	0	0	6,412
	APPROACH %	0%	57%	43%	0%	57%	43%	47%	0%	53%	0%	0%	0%	
	PEAK HR FACTOR		0.949			0.901			0.927			0.000		0.958
	APP/DEPART	2,977	/	2,092	2,630	/	1,913	805	/	1,266	0	/	1,141	0
PM	03:00 PM	0	468	180	0	456	213	51	0	139	0	0	0	1,507
	3:15 PM	0	467	199	0	444	191	46	0	139	0	0	0	1,486
	3:30 PM	0	411	169	0	428	203	52	0	180	0	0	0	1,443
	3:45 PM	0	478	205	0	447	205	44	0	163	0	0	0	1,542
	4:00 PM	0	483	188	0	495	250	40	0	167	0	0	0	1,623
	4:15 PM	0	454	201	0	465	222	37	0	161	0	0	0	1,540
	4:30 PM	0	440	156	0	508	241	35	0	178	0	0	0	1,558
	4:45 PM	0	451	171	0	546	256	41	0	165	0	0	0	1,630
	5:00 PM	0	503	170	0	534	352	43	0	172	0	0	0	1,774
	5:15 PM	0	448	170	0	537	299	36	0	199	0	0	0	1,689
	5:30 PM	0	448	163	0	497	241	23	0	170	0	0	0	1,542
	5:45 PM	0	427	182	0	511	211	30	0	184	0	0	0	1,545
	6:00 PM	0	406	178	0	451	222	43	0	158	0	0	0	1,458
	6:15 PM	0	426	200	0	469	175	40	0	169	0	0	0	1,479
	6:30 PM	0	399	180	0	443	148	46	0	160	0	0	0	1,376
	6:45 PM	0	351	141	0	381	133	39	0	138	0	0	0	1,183
	VOLUMES	0	7,060	2,853	0	7,612	3,562	646	0	2,642	0	0	0	24,377
	APPROACH %	0%	71%	29%	0%	68%	32%	20%	0%	80%	0%	0%	0%	
	APP/DEPART	9,913	/	7,708	11,176	/	10,254	3,288	/	2,853	0	/	3,562	0
	BEGIN PEAK HR		4:30 PM											
	VOLUMES	0	1,842	667	0	2,125	1,148	155	0	714	0	0	0	6,651
	APPROACH %	0%	73%	27%	0%	65%	35%	18%	0%	82%	0%	0%	0%	
	PEAK HR FACTOR		0.932			0.924			0.924			0.000		0.937
	APP/DEPART	2,509	/	1,997	3,273	/	2,839	869	/	667	0	/	1,148	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Fairview
EAST & WEST: Civic Center

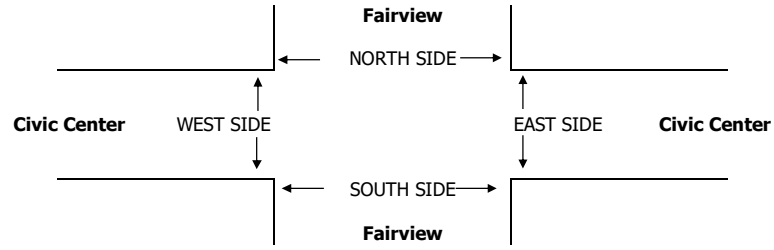
PROJECT #: SC0846
LOCATION #: 12
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Fairview			SOUTHBOUND Fairview			EASTBOUND Civic Center			WESTBOUND Civic Center				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	3	0	1	3	0	0.5	1	0.5	1.5	0.5	1		0	0	0	0	
AM	7:00 AM	1	313	65	39	371	1	1	5	4	78	3	22	903	0	3	0	0	3
	7:15 AM	0	331	87	57	342	2	2	6	8	82	1	49	967	0	5	0	0	5
	7:30 AM	2	277	122	68	316	1	2	4	3	67	3	45	910	0	1	0	0	1
	7:45 AM	2	307	123	69	318	1	0	7	7	61	1	32	928	0	1	0	0	1
	8:00 AM	3	272	78	49	332	3	2	2	3	63	6	21	834	0	3	0	0	3
	8:15 AM	2	253	64	28	357	1	0	0	3	48	3	39	798	0	1	0	0	1
	8:30 AM	3	247	56	22	373	0	2	1	8	53	2	29	796	0	1	0	0	1
	8:45 AM	2	236	53	19	335	0	1	3	1	61	1	20	732	0	0	0	0	0
	VOLUMES	15	2,236	648	351	2,744	9	10	28	37	513	20	257	6,868	0	15	0	0	15
	APPROACH %	1%	77%	22%	11%	88%	0%	13%	37%	49%	65%	3%	33%						
	APP/DEPART	2,899	/	2,518	3,104	/	3,294	75	/	1,012	790	/	44	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	5	1,228	397	233	1,347	5	5	22	22	288	8	148	3,708					
	APPROACH %	0%	75%	24%	15%	85%	0%	10%	45%	45%	65%	2%	33%						
	PEAK HR FACTOR		0.943			0.964			0.766			0.841		0.959					
	APP/DEPART	1,630	/	1,391	1,585	/	1,657	49	/	642	444	/	18	0					
PM	4:00 PM	1	335	69	36	307	2	4	1	3	74	0	41	873	0	2	0	0	2
	4:15 PM	3	358	78	22	317	0	0	0	3	76	0	41	898	2	2	0	0	4
	4:30 PM	2	360	82	28	291	0	2	1	2	113	1	34	916	1	1	0	0	2
	4:45 PM	0	337	82	26	314	0	1	1	2	111	0	38	912	0	1	0	0	1
	5:00 PM	1	325	93	29	296	0	1	3	2	112	0	50	912	0	5	0	0	5
	5:15 PM	0	340	99	34	330	0	0	1	1	126	0	32	963	0	2	0	0	2
	5:30 PM	0	351	102	32	342	0	0	0	0	88	0	41	956	0	3	0	0	3
	5:45 PM	3	358	92	43	317	0	0	0	0	94	0	32	939	2	6	0	0	8
	VOLUMES	10	2,764	697	250	2,514	2	8	7	13	794	1	309	7,369	5	22	0	0	27
	APPROACH %	0%	80%	20%	9%	91%	0%	29%	25%	46%	72%	0%	28%						
	APP/DEPART	3,471	/	3,103	2,766	/	3,326	28	/	932	1,104	/	8	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	4	1,374	386	138	1,285	0	1	4	3	420	0	155	3,770					
	APPROACH %	0%	78%	22%	10%	90%	0%	13%	50%	38%	73%	0%	27%						
	PEAK HR FACTOR		0.974			0.951			0.333			0.887		0.979					
	APP/DEPART	1,764	/	1,546	1,423	/	1,710	8	/	512	575	/	2	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	30	0	8	16	54	29	0	6	15	50	1	0	2	1	4
	7:15 AM	24	0	0	20	44	23	0	0	18	41	1	0	0	2	3
	7:30 AM	36	0	8	25	69	34	0	4	24	62	2	0	4	1	7
	7:45 AM	33	0	4	25	62	33	0	4	25	62	0	0	0	0	0
	8:00 AM	8	0	1	2	11	6	0	1	1	8	2	0	0	1	3
	8:15 AM	10	0	2	7	19	10	0	2	7	19	0	0	0	0	0
	8:30 AM	4	0	5	2	11	4	0	1	2	7	0	0	4	0	4
	8:45 AM	4	0	2	5	11	3	0	2	4	9	1	0	0	1	2
	TOTAL	149	0	30	102	281	142	0	20	96	258	7	0	10	6	23
PM	4:00 PM	7	0	6	0	13	6	0	4	0	10	1	0	2	0	3
	4:15 PM	10	0	1	5	16	6	0	1	2	9	4	0	0	3	7
	4:30 PM	6	0	2	4	12	6	0	2	3	11	0	0	0	1	1
	4:45 PM	5	0	0	5	10	4	0	0	5	9	1	0	0	0	1
	5:00 PM	5	0	4	5	14	4	0	3	3	10	1	0	1	2	4
	5:15 PM	3	0	4	3	10	1	0	1	0	2	2	0	3	3	8
	5:30 PM	5	0	6	1	12	5	0	3	1	9	0	0	3	0	3
	5:45 PM	2	0	4	2	8	2	0	4	2	8	0	0	0	0	0
	TOTAL	43	0	27	25	95	34	0	18	16	68	9	0	9	9	27

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: FAIRVIEW STREET
E-W Direction: 1ST STREET

File Name : H1702002
Site Code : 00000000
Start Date : 2/7/2017
Page No : 1

Groups Printed- Turning Movements

	FAIRVIEW STREET Southbound				1ST STREET Westbound				FAIRVIEW STREET Northbound				1ST STREET Eastbound				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00	20	352	41	1	39	136	32	2	45	284	30	0	54	254	59	0	1349
07:15	28	383	54	1	43	148	49	5	45	283	28	4	34	311	59	0	1475
07:30	40	378	65	2	67	177	47	4	44	302	29	2	34	290	48	0	1529
07:45	53	298	60	3	71	203	38	2	69	303	49	0	52	290	53	4	1548
Total	141	1411	220	7	220	664	166	13	203	1172	136	6	174	1145	219	4	5901
08:00	35	300	54	1	56	182	24	7	62	282	46	0	65	305	47	4	1470
08:15	28	338	53	2	32	123	29	5	39	243	34	0	56	261	53	1	1297
08:30	19	363	50	2	42	116	20	5	43	225	20	0	34	230	48	1	1218
08:45	26	293	33	0	53	127	27	7	40	206	26	4	27	230	50	1	1150
Total	108	1294	190	5	183	548	100	24	184	956	126	4	182	1026	198	7	5135
*** BREAK ***																	
16:00	51	246	45	6	45	275	31	7	30	240	43	0	43	218	30	3	1313
16:15	49	268	48	3	60	220	34	7	41	275	25	0	32	181	49	1	1293
16:30	72	277	56	2	49	281	38	13	36	259	32	2	38	173	40	1	1369
16:45	63	264	42	6	51	274	38	10	31	285	45	3	28	200	49	3	1392
Total	235	1055	191	17	205	1050	141	37	138	1059	145	5	141	772	168	8	5367
17:00	75	299	50	5	45	300	38	7	30	277	43	3	34	214	58	2	1480
17:15	57	346	48	2	39	292	39	7	32	273	25	2	30	213	59	0	1464
17:30	63	279	49	3	51	277	35	5	14	268	42	0	36	212	46	3	1383
17:45	48	302	50	2	45	299	42	11	20	243	34	2	46	205	45	3	1397
Total	243	1226	197	12	180	1168	154	30	96	1061	144	7	146	844	208	8	5724
Grand Total	727	4986	798	41	788	3430	561	104	621	4248	551	22	643	3787	793	27	22127
Apprch %	11.1	76.1	12.2	0.6	16.1	70.2	11.5	2.1	11.4	78.1	10.1	0.4	12.2	72.1	15.1	0.5	
Total %	3.3	22.5	3.6	0.2	3.6	15.5	2.5	0.5	2.8	19.2	2.5	0.1	2.9	17.1	3.6	0.1	

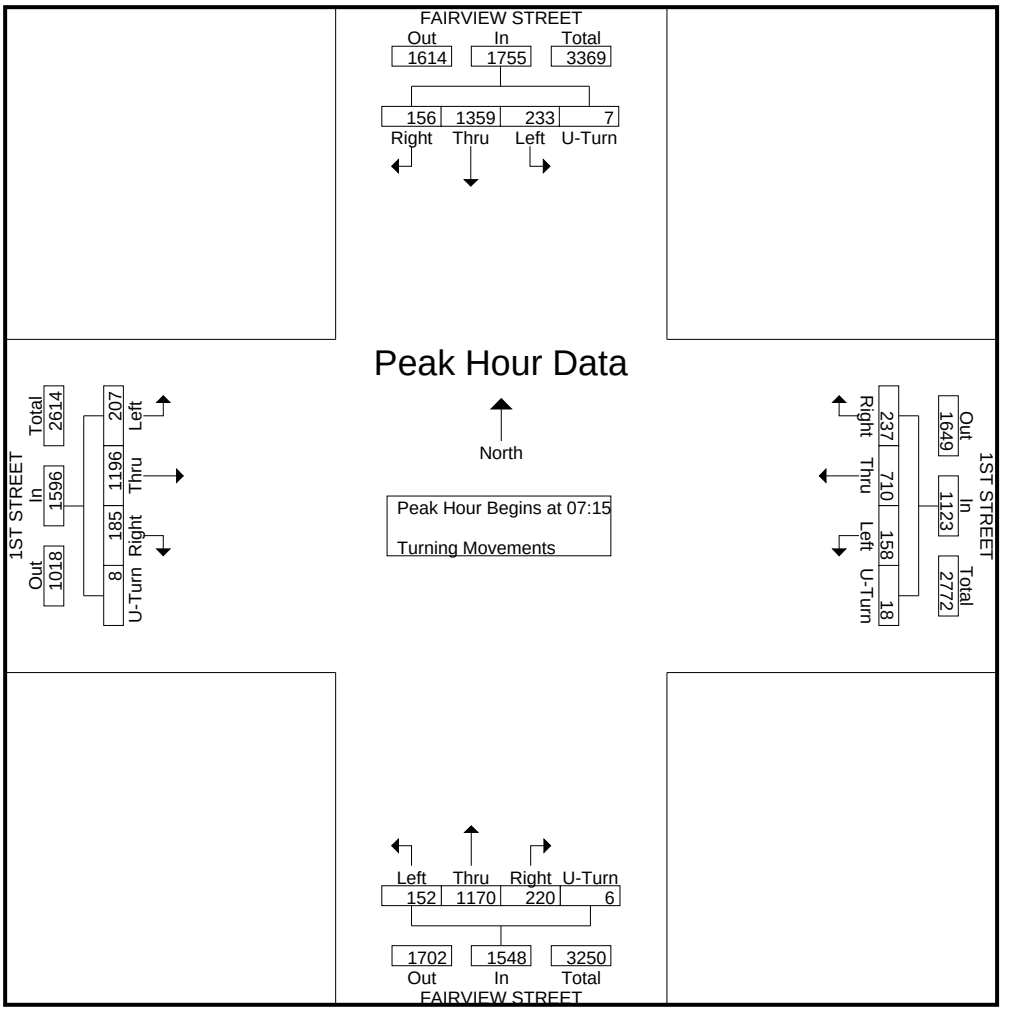
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: FAIRVIEW STREET
E-W Direction: 1ST STREET

File Name : H1702002
Site Code : 00000000
Start Date : 2/7/2017
Page No : 2

	FAIRVIEW STREET Southbound					1ST STREET Westbound					FAIRVIEW STREET Northbound					1ST STREET Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15																					
07:15	28	383						49						4	360	34	311	**59**			
07:30	40	378	**65**		**485**	67	177	47	4	295	44	302	29	2	377	34	290	48	0	372	1529
07:45	**53**			**3**		**71**	**203**			**314**	**69**	**303**	**49**		**421**	52	290	53	**4**	399	**1548**
08:00	**35**	**300**	**54**	**1**	**390**	**56**	**182**	**24**	**7**	269	62	282	46	0	390	**65**	305	47	4	**421**	**1470**
Total Volume	156	1359	233	7	1755	237	710	158	18	1123	220	1170	152	6	1548	185	1196	207	8	1596	6022
% App. Total																					
PHF	.736	.887	.896	.583	.905	.835	.874	.806	.643	.894	.797	.965	.776	.375	.919	.712	.961	.877	.500	.948	.973



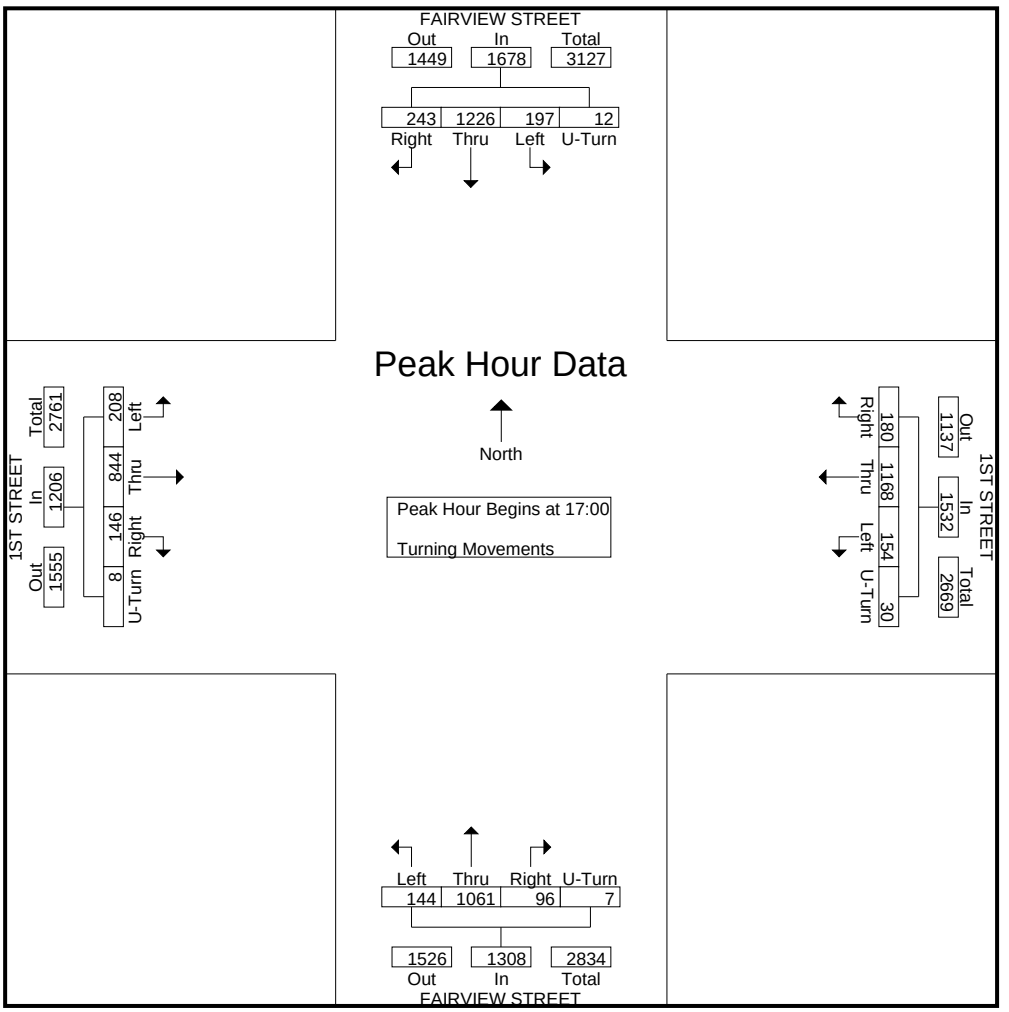
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: FAIRVIEW STREET
E-W Direction: 1ST STREET

File Name : H1702002
Site Code : 00000000
Start Date : 2/7/2017
Page No : 3

	FAIRVIEW STREET Southbound					1ST STREET Westbound					FAIRVIEW STREET Northbound					1ST STREET Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	75	299	50	5	429	45	300	38	7	390	30	**277**	**43**	**3**	**353**	34	**214**			**308**	**1480**
17:15	**57**	**346**	48	2	**453**	39	292	39	7	377	**32**	**273**	**25**	**2**	**332**	**30**	**213**	**59**	0	302	1464
17:30	63	279	49	3	394	**51**	277	35	5	368	14	268	42	0	324	36	212	46	**3**	297	1383
17:45	48	302	50	2	402	45	299	**42**	**11**	**397**						**46**	205	45	3	299	1397
Total Volume	243	1226	197	12	1678	180	1168	154	30	1532	96	1061	144	7	1308	146	844	208	8	1206	5724
% App. Total	14.5	73.1	11.7	0.7		11.7	76.2	10.1	2		7.3	81.1	11	0.5		12.1	70	17.2	0.7		
PHF	.810	.886	.985	.600	.926	.882	.973	.917	.682	.965	.750	.958	.837	.583	.926	.793	.986	.881	.667	.979	.967



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Fairview
EAST & WEST: McFadden

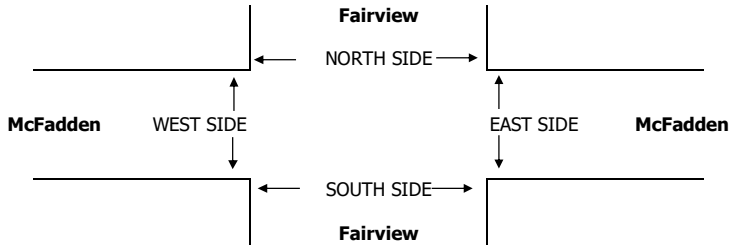
PROJECT #: SC0846
LOCATION #: 33
CONTROL: SIGNAL

NOTES:

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Fairview			SOUTHBOUND Fairview			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 1	NT 3	NR 1	SL 1	ST 3	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	20	257	19	17	393	28	44	97	23	46	79	14	1,037	0	3	0	0	3
	7:15 AM	20	321	30	14	493	25	57	102	30	54	105	13	1,264	4	3	0	0	7
	7:30 AM	29	325	41	41	426	26	54	128	26	56	152	5	1,309	4	6	0	0	10
	7:45 AM	30	326	51	39	395	39	49	140	37	49	114	11	1,280	0	4	0	0	4
	8:00 AM	37	271	44	42	345	30	52	131	22	27	109	9	1,119	3	10	0	0	13
	8:15 AM	29	239	27	41	344	27	54	130	43	30	88	33	1,085	2	13	0	0	15
	8:30 AM	24	194	19	28	415	27	43	109	56	25	102	18	1,060	1	8	0	0	9
	8:45 AM	19	186	17	38	398	26	34	110	43	33	84	21	1,009	3	7	0	0	10
	VOLUMES	208	2,119	248	260	3,209	228	387	947	280	320	833	124	9,163	17	54	0	0	71
	APPROACH %	8%	82%	10%	7%	87%	6%	24%	59%	17%	25%	65%	10%						
	APP/DEPART	2,575	/	2,684	3,697	/	3,826	1,614	/	1,401	1,277	/	1,252	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	116	1,243	166	136	1,659	120	212	501	115	186	480	38	4,972					
	APPROACH %	8%	82%	11%	7%	87%	6%	26%	61%	14%	26%	68%	5%						
	PEAK HR FACTOR		0.937			0.900			0.916			0.826		0.950					
	APP/DEPART	1,525	/	1,516	1,915	/	1,971	828	/	780	704	/	705	0					
PM	4:00 PM	32	372	34	36	235	43	46	153	21	30	117	32	1,151	0	9	0	0	9
	4:15 PM	42	388	35	34	236	38	40	116	37	30	134	21	1,151	1	3	0	0	4
	4:30 PM	35	369	35	35	277	54	37	146	27	29	133	24	1,201	0	4	0	0	4
	4:45 PM	32	367	38	37	284	46	53	152	29	31	124	16	1,209	0	1	0	0	1
	5:00 PM	48	338	29	35	314	49	53	158	31	38	125	37	1,255	0	4	0	0	4
	5:15 PM	26	346	25	30	300	51	55	141	46	39	150	34	1,243	1	5	0	0	6
	5:30 PM	36	361	41	36	293	48	59	165	39	35	118	28	1,259	0	9	0	0	9
	5:45 PM	42	359	27	47	300	40	67	169	40	39	130	29	1,289	1	3	0	0	4
	VOLUMES	293	2,900	264	290	2,239	369	410	1,200	270	271	1,031	221	9,758	3	38	0	0	41
	APPROACH %	8%	84%	8%	10%	77%	13%	22%	64%	14%	18%	68%	15%						
	APP/DEPART	3,457	/	3,569	2,898	/	2,783	1,880	/	1,716	1,523	/	1,690	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	152	1,404	122	148	1,207	188	234	633	156	151	523	128	5,046					
	APPROACH %	9%	84%	7%	10%	78%	12%	23%	62%	15%	19%	65%	16%						
	PEAK HR FACTOR		0.958			0.969			0.927			0.899		0.979					
	APP/DEPART	1,678	/	1,787	1,543	/	1,516	1,023	/	882	802	/	861	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	18	15	27	25	85	14	14	25	21	74	4	1	2	4	11
	7:15 AM	26	46	46	34	152	26	43	44	30	143	0	3	2	4	9
	7:30 AM	120	117	87	110	434	118	110	82	104	414	2	7	5	6	20
	7:45 AM	83	96	44	81	304	81	90	42	76	289	2	6	2	5	15
	8:00 AM	33	27	28	22	110	27	27	26	21	101	6	0	2	1	9
	8:15 AM	8	39	29	5	81	7	36	26	5	74	1	3	3	0	7
	8:30 AM	12	11	11	13	47	9	10	10	10	39	3	1	1	3	8
	8:45 AM	8	5	9	9	31	8	3	6	8	25	0	2	3	1	6
	TOTAL	308	356	281	299	1,244	290	333	261	275	1,159	18	23	20	24	85
PM	4:00 PM	7	25	33	4	69	6	23	31	1	61	1	2	2	3	8
	4:15 PM	52	4	15	13	84	50	2	13	10	75	2	2	2	3	9
	4:30 PM	12	7	18	9	46	6	6	17	7	36	6	1	1	2	10
	4:45 PM	48	18	18	7	91	46	14	16	5	81	2	4	2	2	10
	5:00 PM	4	6	18	4	32	4	5	15	3	27	0	1	3	1	5
	5:15 PM	18	8	21	13	60	11	6	19	8	44	7	2	2	5	16
	5:30 PM	17	10	24	14	65	11	6	22	7	46	6	4	2	7	19
	5:45 PM	17	16	30	13	76	14	15	28	11	68	3	1	2	2	8
	TOTAL	175	94	177	77	523	148	77	161	52	438	27	17	16	25	85

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: Fairview
EAST & WEST: Edinger

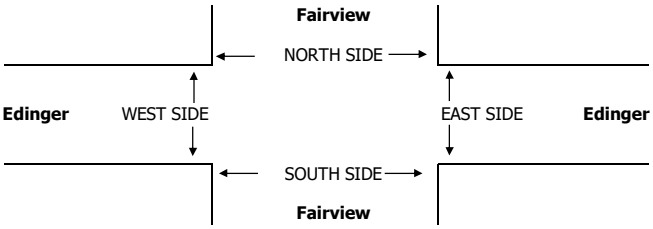
PROJECT #: SC2183
LOCATION #: 10
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Fairview			SOUTHBOUND Fairview			EASTBOUND Edinger			WESTBOUND Edinger				U-TURNS				
	LANES:	NL 2	NT 3	NR 0	SL 2	ST 3	SR 0	EL 2	ET 3	ER 0	WL 2	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	34	179	28	44	430	28	24	127	34	88	86	29	1,131	2	1	0	0	3
	7:15 AM	40	186	27	63	336	21	58	215	54	110	126	22	1,258	1	0	1	0	2
	7:30 AM	55	226	31	50	363	37	66	154	45	96	164	28	1,315	4	0	0	0	4
	7:45 AM	57	231	28	55	359	39	86	154	41	122	171	29	1,372	3	1	0	0	4
	8:00 AM	31	193	26	38	289	43	67	130	39	31	134	49	1,070	1	3	0	1	5
	8:15 AM	35	149	16	36	298	36	48	160	38	57	137	28	1,038	1	1	0	0	2
	8:30 AM	22	138	22	37	424	32	56	154	31	48	101	21	1,086	0	2	0	0	2
	8:45 AM	27	127	12	38	324	33	28	122	40	30	90	22	893	0	2	0	0	2
	VOLUMES	301	1,429	190	361	2,823	269	433	1,216	322	582	1,009	228	9,163	12	10	1	1	24
	APPROACH %	16%	74%	10%	10%	82%	8%	22%	62%	16%	32%	55%	13%						
	APP/DEPART	1,920	/	2,099	3,453	/	3,738	1,971	/	1,758	1,819	/	1,568	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	186	822	114	212	1,488	125	234	650	174	416	547	108	5,076					
	APPROACH %	17%	73%	10%	12%	82%	7%	22%	61%	16%	39%	51%	10%						
	PEAK HR FACTOR		0.888			0.909			0.809			0.832		0.925					
	APP/DEPART	1,122	/	1,165	1,825	/	2,088	1,058	/	974	1,071	/	849	0					
PM	4:00 PM	25	398	32	46	152	31	25	187	39	96	173	40	1,244	0	2	1	0	3
	4:15 PM	45	411	25	63	155	25	49	199	59	93	178	32	1,334	0	0	0	0	0
	4:30 PM	51	473	34	50	159	37	57	173	46	103	204	39	1,426	2	0	0	0	2
	4:45 PM	59	435	26	52	143	39	55	162	44	89	201	43	1,348	5	0	0	0	5
	5:00 PM	31	456	23	31	152	48	66	162	37	84	198	57	1,345	3	0	2	0	5
	5:15 PM	34	444	22	39	140	41	52	173	41	72	192	36	1,286	2	1	0	0	3
	5:30 PM	23	501	26	37	129	32	60	180	30	66	189	36	1,309	0	1	0	1	2
	5:45 PM	29	477	20	37	153	38	57	172	39	56	181	32	1,291	1	0	0	2	3
	VOLUMES	297	3,595	208	355	1,183	291	421	1,408	335	659	1,516	315	10,583	13	4	3	3	23
	APPROACH %	7%	88%	5%	19%	65%	16%	19%	65%	15%	26%	61%	13%						
	APP/DEPART	4,100	/	4,332	1,829	/	2,187	2,164	/	1,970	2,490	/	2,094	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	186	1,775	108	196	609	149	227	696	186	369	781	171	5,453					
	APPROACH %	9%	86%	5%	21%	64%	16%	20%	63%	17%	28%	59%	13%						
	PEAK HR FACTOR		0.927			0.970			0.903			0.954		0.956					
	APP/DEPART	2,069	/	2,171	954	/	1,174	1,109	/	1,000	1,321	/	1,108	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:00 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:15 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Fairview
EAST & WEST: Warner

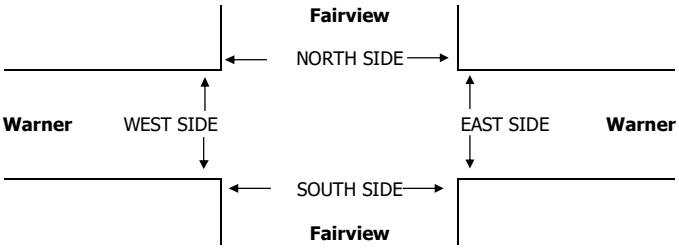
PROJECT #: SC0846
LOCATION #: 42
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND (Fairview)			SOUTHBOUND (Fairview)			EASTBOUND (Warner)			WESTBOUND (Warner)				U-TURNS				
	LANES:	NL 2	NT 3	NR 0	SL 2	ST 3	SR 0	EL 2	ET 3	ER 0	WL 2	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	30	152	19	57	397	21	18	173	43	48	131	41	1,130	4	3	0	6	13
	7:15 AM	49	211	34	35	427	28	11	272	78	56	193	49	1,443	1	0	0	8	9
	7:30 AM	40	240	38	64	381	26	15	287	84	95	236	87	1,593	2	0	0	9	11
	7:45 AM	65	236	21	51	351	25	16	183	59	89	247	93	1,436	3	1	0	5	9
	8:00 AM	52	227	27	47	405	35	24	228	68	55	213	59	1,440	5	0	1	3	9
	8:15 AM	42	172	29	56	381	32	31	270	72	56	150	38	1,329	3	2	0	6	11
	8:30 AM	42	136	30	47	419	24	24	277	77	47	184	17	1,324	1	1	0	3	5
	8:45 AM	28	174	24	42	410	24	32	193	46	49	171	24	1,217	4	0	1	5	10
	VOLUMES	348	1,548	222	399	3,171	215	171	1,883	527	495	1,525	408	10,912	23	7	2	45	77
	APPROACH %	16%	73%	10%	11%	84%	6%	7%	73%	20%	20%	63%	17%						
	APP/DEPART	2,118	/	2,132	3,785	/	4,171	2,581	/	2,542	2,428	/	2,067	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	206	914	120	197	1,564	114	66	970	289	295	889	288	5,912					
	APPROACH %	17%	74%	10%	11%	83%	6%	5%	73%	22%	20%	60%	20%						
	PEAK HR FACTOR		0.963			0.957			0.858			0.858		0.928					
	APP/DEPART	1,240	/	1,268	1,875	/	2,134	1,325	/	1,311	1,472	/	1,199	0					
PM	4:00 PM	51	414	39	54	212	23	56	210	35	31	197	26	1,348	3	2	0	5	10
	4:15 PM	53	396	42	42	202	25	39	205	42	41	225	37	1,349	4	3	1	7	15
	4:30 PM	43	395	37	46	201	27	47	228	43	46	241	37	1,391	4	3	0	7	14
	4:45 PM	34	415	38	37	209	25	49	231	45	41	230	53	1,407	1	3	0	8	12
	5:00 PM	49	393	41	40	259	23	65	254	47	41	249	50	1,511	5	0	2	12	19
	5:15 PM	47	432	37	51	202	32	44	240	36	38	278	49	1,486	3	2	2	6	13
	5:30 PM	49	419	43	38	233	24	44	217	30	48	283	65	1,493	4	0	1	12	17
	5:45 PM	63	416	33	51	219	13	36	206	29	53	254	66	1,439	2	4	0	12	18
	VOLUMES	389	3,280	310	359	1,737	192	380	1,791	307	339	1,957	383	11,424	26	17	6	69	118
	APPROACH %	10%	82%	8%	16%	76%	8%	15%	72%	12%	13%	73%	14%						
	APP/DEPART	3,979	/	4,054	2,288	/	2,340	2,478	/	2,512	2,679	/	2,518	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	208	1,660	154	180	913	92	189	917	142	180	1,064	230	5,929					
	APPROACH %	10%	82%	8%	15%	77%	8%	15%	73%	11%	12%	72%	16%						
	PEAK HR FACTOR		0.980			0.920			0.852			0.931		0.981					
	APP/DEPART	2,022	/	2,080	1,185	/	1,207	1,248	/	1,287	1,474	/	1,355	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	1	4	0	6	0	1	3	0	4	1	0	1	0	2
	7:15 AM	2	8	6	4	20	0	6	5	4	15	2	2	1	0	5
	7:30 AM	1	3	3	4	11	0	3	3	2	8	1	0	0	2	3
	7:45 AM	2	3	2	4	11	0	3	1	4	8	2	0	1	0	3
	8:00 AM	7	9	6	8	30	2	8	2	8	20	5	1	4	0	10
	8:15 AM	3	5	7	9	24	2	4	7	8	21	1	1	0	1	3
	8:30 AM	1	3	5	2	11	1	1	4	0	6	0	2	1	2	5
	8:45 AM	1	2	4	2	9	1	2	3	1	7	0	0	1	1	2
	TOTAL	18	34	37	33	122	6	28	28	27	89	12	6	9	6	33
PM	4:00 PM	5	16	15	9	45	4	11	9	7	31	1	5	6	2	14
	4:15 PM	6	5	13	2	26	4	3	11	1	19	2	2	2	1	7
	4:30 PM	5	8	7	2	22	4	5	6	1	16	1	3	1	1	6
	4:45 PM	3	6	19	2	30	3	3	13	1	20	0	3	6	1	10
	5:00 PM	1	7	20	3	31	1	4	12	2	19	0	3	8	1	12
	5:15 PM	7	5	9	14	35	3	5	5	9	22	4	0	4	5	13
	5:30 PM	5	0	5	5	15	5	0	4	4	13	0	0	1	1	2
	5:45 PM	1	5	6	3	15	1	2	4	2	9	0	3	2	1	6
	TOTAL	33	52	94	40	219	25	33	64	27	149	8	19	30	13	70

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: Fairview
EAST & WEST: MacArthur

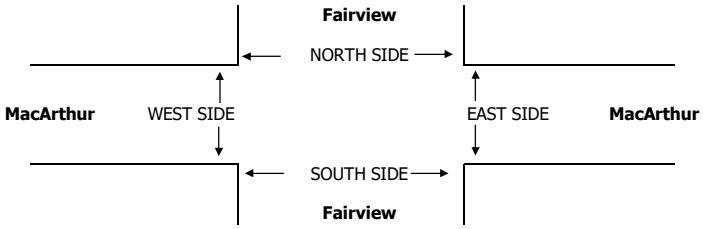
PROJECT #: SC2183
LOCATION #: 11
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Fairview			SOUTHBOUND Fairview			EASTBOUND MacArthur			WESTBOUND MacArthur				U-TURNS				
	LANES:	NL 2	NT 3	NR 0	SL 2	ST 3	SR 1	EL 2	ET 3	ER 1	WL 2	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	25	129	15	55	313	33	18	188	35	38	81	14	944	5	1	0	3	9
	7:15 AM	48	175	15	63	416	29	20	233	36	51	108	25	1,219	11	1	2	2	16
	7:30 AM	71	199	21	65	381	34	34	248	44	50	113	44	1,304	20	0	0	4	24
	7:45 AM	67	213	22	80	372	54	31	258	37	75	146	37	1,392	24	0	0	2	26
	8:00 AM	59	176	30	95	361	54	38	269	31	56	122	32	1,323	18	0	0	2	20
	8:15 AM	41	193	17	47	303	51	27	230	39	32	131	27	1,138	9	1	0	3	13
	8:30 AM	38	140	10	66	353	22	26	195	40	41	104	21	1,056	4	2	0	1	7
	8:45 AM	30	158	17	54	343	42	26	166	24	40	106	17	1,023	4	0	0	3	7
	VOLUMES	379	1,383	147	525	2,842	319	220	1,787	286	383	911	217	9,399	95	5	2	20	122
	APPROACH %	20%	72%	8%	14%	77%	9%	10%	78%	12%	25%	60%	14%						
	APP/DEPART	1,909	/	1,823	3,686	/	3,586	2,293	/	2,474	1,511	/	1,516	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	245	763	88	303	1,530	171	123	1,008	148	232	489	138	5,238					
	APPROACH %	22%	70%	8%	15%	76%	9%	10%	79%	12%	27%	57%	16%						
	PEAK HR FACTOR		0.907			0.982			0.946			0.832		0.941					
	APP/DEPART	1,096	/	1,023	2,004	/	1,973	1,279	/	1,408	859	/	834	0					
PM	4:00 PM	72	367	32	52	217	34	73	165	59	40	373	47	1,531	3	3	0	5	11
	4:15 PM	66	451	13	38	205	24	65	175	55	36	304	54	1,486	6	6	0	1	13
	4:30 PM	69	424	24	31	235	19	74	196	44	37	322	49	1,524	7	3	1	4	15
	4:45 PM	69	452	27	32	228	23	56	169	49	41	354	67	1,567	4	5	1	9	19
	5:00 PM	47	351	17	64	232	21	80	189	82	47	353	67	1,550	4	7	0	5	16
	5:15 PM	55	428	22	42	250	24	67	169	68	52	322	53	1,552	3	2	0	4	9
	5:30 PM	60	395	32	42	223	26	68	163	44	47	349	64	1,513	8	4	0	6	18
	5:45 PM	71	429	34	39	194	35	46	146	42	47	299	57	1,439	1	5	1	3	10
	VOLUMES	509	3,297	201	340	1,784	206	529	1,372	443	347	2,676	458	12,162	36	35	3	37	111
	APPROACH %	13%	82%	5%	15%	77%	9%	23%	59%	19%	10%	77%	13%						
	APP/DEPART	4,007	/	4,316	2,330	/	2,573	2,344	/	1,915	3,481	/	3,358	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	240	1,655	90	169	945	87	277	723	243	177	1,351	236	6,193					
	APPROACH %	12%	83%	5%	14%	79%	7%	22%	58%	20%	10%	77%	13%						
	PEAK HR FACTOR		0.906			0.947			0.885			0.944		0.988					
	APP/DEPART	1,985	/	2,183	1,201	/	1,361	1,243	/	987	1,764	/	1,662	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:30 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Mar 1, 16

LOCATION: Santa Ana
NORTH & SOUTH: Fairview
EAST & WEST: Sunflower

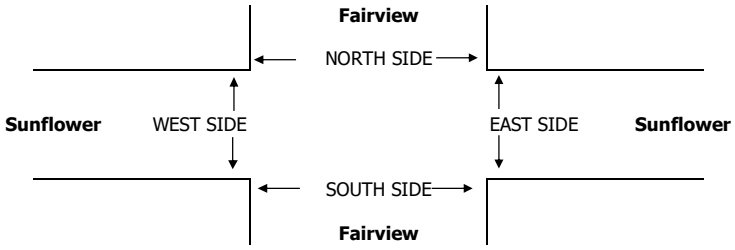
PROJECT #: SC0846
LOCATION #: 12
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Fairview			SOUTHBOUND Fairview			EASTBOUND Sunflower			WESTBOUND Sunflower				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 0	EL 2	ET 2	ER 0	WL 2	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	27	152	19	17	322	12	10	45	17	47	22	14	704	0	2	0	0	2
	7:15 AM	30	254	31	40	416	23	4	64	10	61	22	18	973	0	5	0	0	5
	7:30 AM	47	294	36	38	411	13	12	76	14	88	58	35	1,122	0	1	2	0	3
	7:45 AM	52	255	32	55	419	31	14	91	14	73	102	46	1,184	1	4	10	0	15
	8:00 AM	48	226	57	63	424	39	17	78	24	72	64	27	1,139	0	4	6	0	10
	8:15 AM	32	224	41	56	376	38	6	59	16	61	34	16	959	0	5	1	0	6
	8:30 AM	29	182	33	37	395	39	11	46	9	40	25	10	856	0	3	3	0	6
	8:45 AM	33	210	22	51	379	32	10	48	9	60	34	9	897	2	2	1	0	5
	VOLUMES	298	1,797	271	357	3,142	227	84	507	113	502	361	175	7,834	3	26	23	0	52
	APPROACH %	13%	76%	11%	10%	84%	6%	12%	72%	16%	48%	35%	17%						
	APP/DEPART	2,366	/	2,059	3,726	/	3,760	704	/	1,109	1,038	/	906	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	177	1,029	156	196	1,670	106	47	309	62	294	246	126	4,418					
	APPROACH %	13%	76%	11%	10%	85%	5%	11%	74%	15%	44%	37%	19%						
	PEAK HR FACTOR		0.903			0.937			0.878			0.753		0.933					
	APP/DEPART	1,362	/	1,198	1,972	/	2,027	418	/	647	666	/	546	0					
PM	4:00 PM	29	400	51	31	238	7	24	61	14	53	112	34	1,054	0	7	1	0	8
	4:15 PM	35	472	74	26	257	15	13	60	11	58	137	43	1,201	1	4	3	1	9
	4:30 PM	32	413	80	24	321	22	37	84	21	71	150	40	1,295	0	2	6	0	8
	4:45 PM	32	436	63	30	277	11	51	83	17	69	169	47	1,285	0	4	5	1	10
	5:00 PM	40	448	67	27	305	27	60	106	26	57	150	46	1,359	0	3	1	0	4
	5:15 PM	46	444	98	31	287	12	52	124	23	60	162	36	1,375	1	5	3	0	9
	5:30 PM	58	450	100	39	308	22	44	90	26	55	153	42	1,387	0	5	4	0	9
	5:45 PM	49	393	112	41	249	18	39	93	16	82	173	42	1,307	2	6	4	0	12
	VOLUMES	321	3,456	645	249	2,242	134	320	701	154	505	1,206	330	10,263	4	36	27	2	69
	APPROACH %	7%	78%	15%	9%	85%	5%	27%	60%	13%	25%	59%	16%						
	APP/DEPART	4,422	/	4,115	2,625	/	2,903	1,175	/	1,561	2,041	/	1,684	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	193	1,735	377	138	1,149	79	195	413	91	254	638	166	5,428					
	APPROACH %	8%	75%	16%	10%	84%	6%	28%	59%	13%	24%	60%	16%						
	PEAK HR FACTOR		0.948			0.925			0.878			0.891		0.978					
	APP/DEPART	2,305	/	2,103	1,366	/	1,497	699	/	909	1,058	/	919	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	3	1	1	3	8	0	1	1	2	4	3	0	0	1	4
	7:15 AM	2	1	1	1	5	0	0	1	1	2	2	1	0	0	3
	7:30 AM	2	3	2	3	10	0	1	1	2	4	2	2	1	1	6
	7:45 AM	3	3	1	3	10	1	1	1	3	6	2	2	0	0	4
	8:00 AM	2	2	2	3	9	0	0	2	2	4	2	2	0	1	5
	8:15 AM	2	7	0	3	12	0	4	0	2	6	2	3	0	1	6
	8:30 AM	2	0	1	5	8	0	0	1	4	5	2	0	0	1	3
	8:45 AM	5	1	0	3	9	2	0	0	3	5	3	1	0	0	4
	TOTAL	21	18	8	24	71	3	7	7	19	36	18	11	1	5	35
PM	4:00 PM	2	2	1	0	5	0	0	1	0	1	2	2	0	0	4
	4:15 PM	1	1	1	2	5	0	1	1	1	3	1	0	0	1	2
	4:30 PM	3	3	4	1	11	0	2	3	1	6	3	1	1	0	5
	4:45 PM	6	4	1	0	11	3	3	0	0	6	3	1	1	0	5
	5:00 PM	5	13	2	0	20	0	3	1	0	4	5	10	1	0	16
	5:15 PM	6	2	2	3	13	4	0	0	2	6	2	2	2	1	7
	5:30 PM	6	5	3	1	15	2	2	2	0	6	4	3	1	1	9
	5:45 PM	3	8	0	3	14	1	3	0	3	7	2	5	0	0	7
	TOTAL	32	38	14	10	94	10	14	8	7	39	22	24	6	3	55

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GREENVILLE STREET
E-W Direction: EDINGER AVENUE

File Name : H1702003
Site Code : 00000000
Start Date : 2/7/2017

Groups Printed- Turning Movements

	DEAD END Southbound			EDINGER AVENUE Westbound			GREENVILLE AVENUE Northbound			EDINGER AVENUE Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	0	0	0	0	183	30	48	0	32	40	220	0	553
07:15	0	0	0	0	234	36	46	0	38	64	268	0	686
07:30	0	0	0	0	234	59	64	0	48	61	232	0	698
07:45	0	0	0	0	237	41	85	0	62	62	211	0	698
Total	0	0	0	0	888	166	243	0	180	227	931	0	2635
08:00	0	0	0	0	217	22	49	0	31	37	189	0	545
08:15	0	0	0	0	197	8	20	0	20	28	210	0	483
08:30	0	0	0	0	173	11	33	0	24	23	239	0	503
08:45	0	0	0	0	179	21	29	0	23	16	151	0	419
Total	0	0	0	0	766	62	131	0	98	104	789	0	1950
*** BREAK ***													
16:00	0	0	0	0	244	31	51	0	61	50	232	0	669
16:15	0	0	0	0	264	29	54	0	66	44	265	0	722
16:30	0	0	0	0	276	25	52	0	67	41	231	0	692
16:45	0	0	0	0	280	19	55	0	78	49	236	0	717
Total	0	0	0	0	1064	104	212	0	272	184	964	0	2800
17:00	0	0	0	0	270	30	49	0	78	54	245	0	726
17:15	0	0	0	0	274	24	53	0	85	52	208	0	696
17:30	0	0	0	0	270	19	54	0	76	39	264	0	722
17:45	0	0	0	0	275	31	40	0	69	45	199	0	659
Total	0	0	0	0	1089	104	196	0	308	190	916	0	2803
Grand Total	0	0	0	0	3807	436	782	0	858	705	3600	0	10188
Apprch %	0	0	0	0	89.7	10.3	47.7	0	52.3	16.4	83.6	0	
Total %	0	0	0	0	37.4	4.3	7.7	0	8.4	6.9	35.3	0	

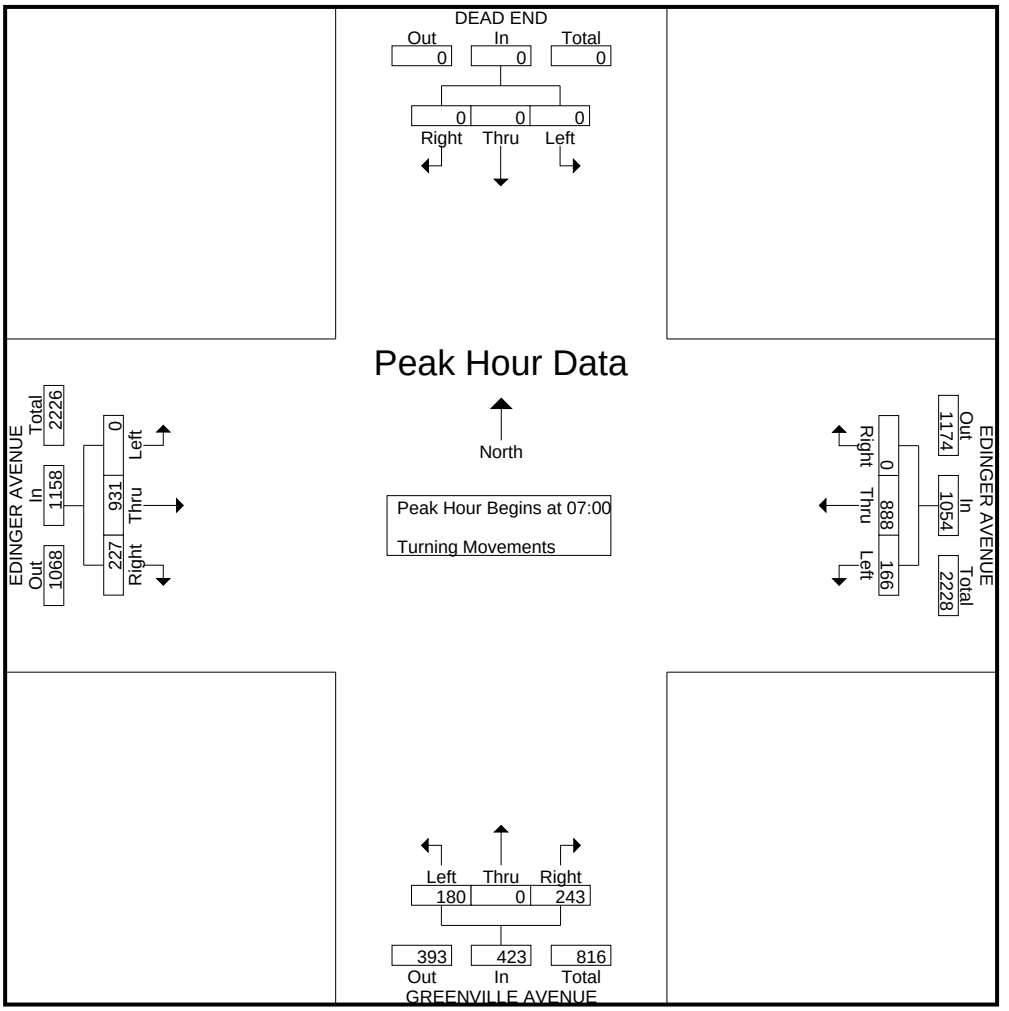
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GREENVILLE STREET
E-W Direction: EDINGER AVENUE

File Name : H1702003
Site Code : 00000000
Start Date : 2/7/2017

	DEAD END Southbound				EDINGER AVENUE Westbound				GREENVILLE AVENUE Northbound				EDINGER AVENUE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	0	0	0	0	0	183	30	213	48	0	32	80	40	220	0	260	553
07:15	0	0	0	0	0	234	36	270	46	0	38	84	**64**	**268**	0	**332**	686
07:30	0	0	0	0	0	234	**59**	**293**	64	0	48	112	61	232	0	293	**698**
07:45	0	0	0	0	0	**237**	41	278	**85**	0	**62**	**147**	62	211	0	273	698
Total Volume	0	0	0	0	0	888	166	1054	243	0	180	423	227	931	0	1158	2635
% App. Total	0	0	0		0	84.3	15.7		57.4	0	42.6		19.6	80.4	0		
PHF	.000	.000	.000	.000	.000	.937	.703	.899	.715	.000	.726	.719	.887	.868	.000	.872	.944



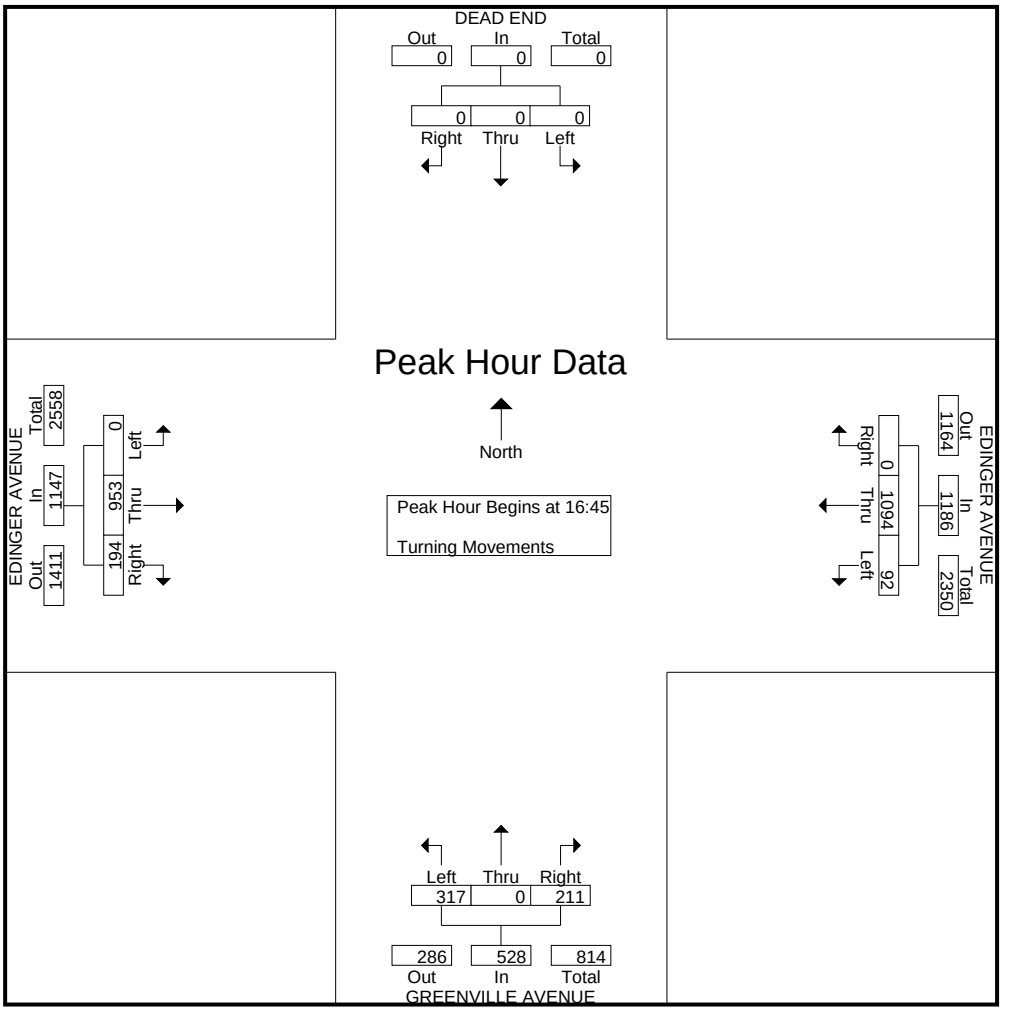
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GREENVILLE STREET
E-W Direction: EDINGER AVENUE

File Name : H1702003
Site Code : 00000000
Start Date : 2/7/2017
Page No : 3

	DEAD END Southbound				EDINGER AVENUE Westbound				GREENVILLE AVENUE Northbound				EDINGER AVENUE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	0	0	0	0	0	**280**	19	299	**55**	0	78	133	49	236	0	285	717
17:00	0	0	0	0	0	270	**30**	**300**	49	0	78	127	**54**	245	0	299	**726**
17:15	0	0	0	0	0	274	24	298	53	0	**85**	**138**	52	208	0	260	696
17:30	0	0	0	0	0	270	19	289	54	0	76	130	39	**264**	0	**303**	722
Total Volume	0	0	0	0	0	1094	92	1186	211	0	317	528	194	953	0	1147	2861
% App. Total	0	0	0		0	92.2	7.8		40	0	60		16.9	83.1	0		
PHF	.000	.000	.000	.000	.000	.977	.767	.988	.959	.000	.932	.957	.898	.902	.000	.946	.985



Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GREENVILLE STREET
E-W Direction: SEGERSTROM AVENUE

File Name : H1702004
Site Code : 00000000
Start Date : 2/7/2017
Page No : 1

Groups Printed- Turning Movements

	GREENVILLE STREET Southbound			SEGERSTROM AVENUE Westbound			GREENVILLE STREET Northbound			SEGERSTROM AVENUE Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	18	44	21	11	97	9	10	9	6	11	119	5	360
07:15	23	88	27	12	114	24	8	41	6	26	175	10	554
07:30	44	139	49	12	161	40	17	37	9	31	193	10	742
07:45	53	138	45	29	189	57	27	62	12	29	191	5	837
Total	138	409	142	64	561	130	62	149	33	97	678	30	2493
08:00	35	93	28	20	178	38	23	47	18	28	158	7	673
08:15	17	59	32	8	98	6	6	31	10	7	176	9	459
08:30	15	50	14	7	99	1	7	10	5	9	185	7	409
08:45	11	28	8	4	97	6	6	11	3	5	130	6	315
Total	78	230	82	39	472	51	42	99	36	49	649	29	1856
*** BREAK ***													
16:00	8	36	8	25	215	7	4	69	13	7	167	32	591
16:15	12	38	12	25	254	8	4	112	15	12	147	24	663
16:30	14	45	14	27	229	5	6	101	11	5	174	37	668
16:45	6	35	6	24	252	8	9	111	21	8	166	25	671
Total	40	154	40	101	950	28	23	393	60	32	654	118	2593
17:00	13	38	13	35	223	4	7	121	17	12	207	30	720
17:15	14	52	14	37	280	6	12	128	15	10	207	31	806
17:30	15	58	15	38	246	6	5	105	8	11	213	28	748
17:45	17	46	17	33	257	10	10	108	15	12	171	15	711
Total	59	194	59	143	1006	26	34	462	55	45	798	104	2985
Grand Total	315	987	323	347	2989	235	161	1103	184	223	2779	281	9927
Apprch %	19.4	60.7	19.9	9.7	83.7	6.6	11.1	76.2	12.7	6.8	84.6	8.6	
Total %	3.2	9.9	3.3	3.5	30.1	2.4	1.6	11.1	1.9	2.2	28	2.8	

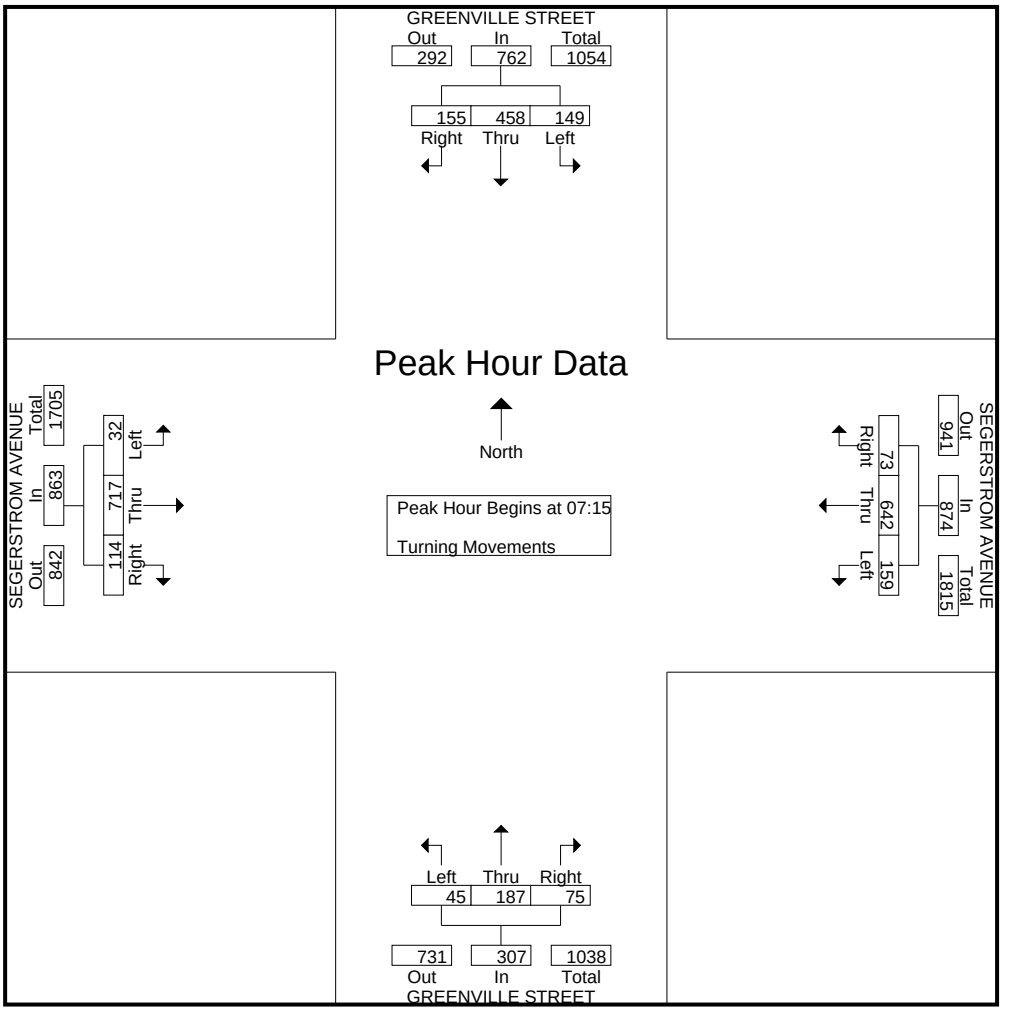
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GREENVILLE STREET
E-W Direction: SEGERSTROM AVENUE

File Name : H1702004
Site Code : 00000000
Start Date : 2/7/2017

	GREENVILLE STREET Southbound				SEGERSTROM AVENUE Westbound				GREENVILLE STREET Northbound				SEGERSTROM AVENUE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	23	88	27	138	12	114	24	150	8	41	6	55	26	175	**10**	211	554
07:30	44	**139**	**49**	232	12	161	40	213	17	37	9	63	**31**	**193**	10	**234**	742
07:45	**53**	138	45	**236**	**29**	**189**	**57**	**275**	**27**	**62**	12	**101**	29	191	5	225	**837**
08:00	35	93	28	156	20	178	38	236	23	47	**18**	88	28	158	7	193	673
Total Volume	155	458	149	762	73	642	159	874	75	187	45	307	114	717	32	863	2806
% App. Total	20.3	60.1	19.6		8.4	73.5	18.2		24.4	60.9	14.7		13.2	83.1	3.7		
PHF	.731	.824	.760	.807	.629	.849	.697	.795	.694	.754	.625	.760	.919	.929	.800	.922	.838



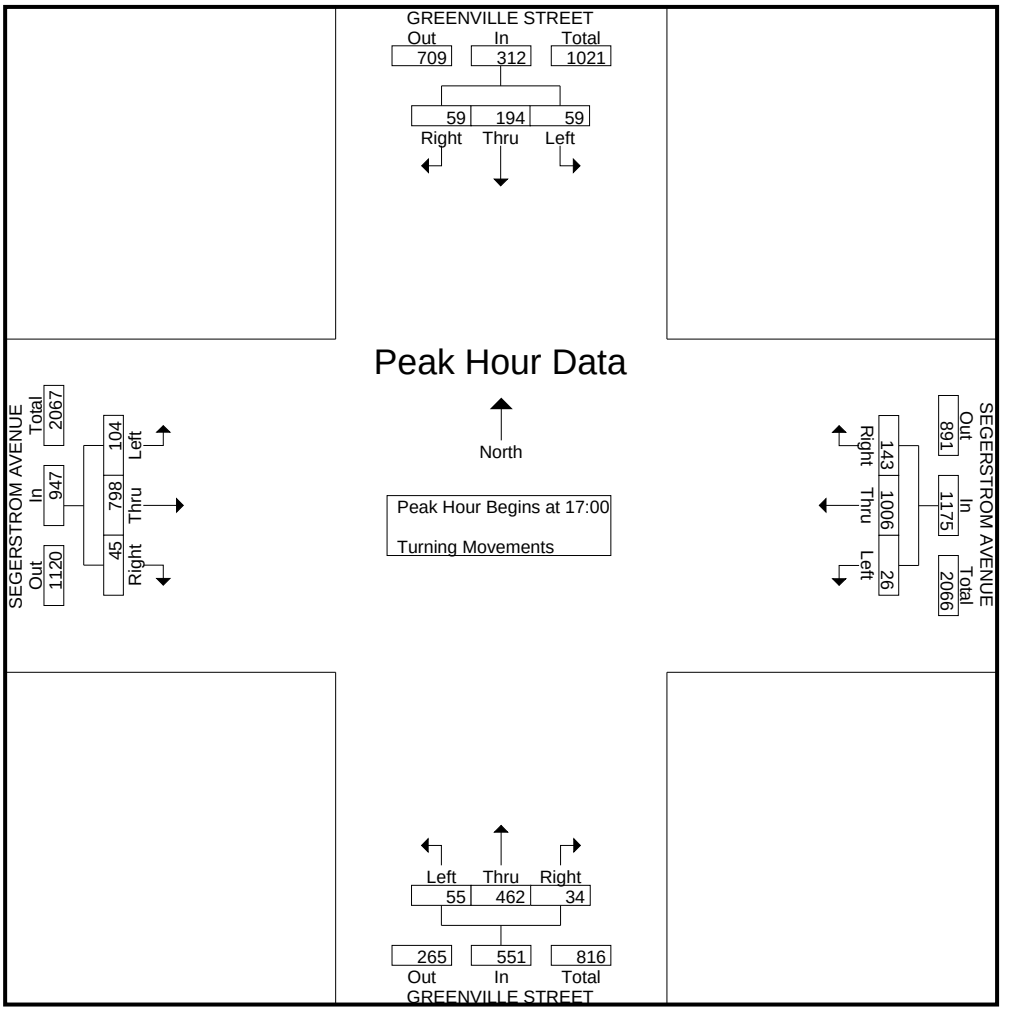
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GREENVILLE STREET
E-W Direction: SEGERSTROM AVENUE

File Name : H1702004
Site Code : 00000000
Start Date : 2/7/2017
Page No : 3

	GREENVILLE STREET Southbound				SEGERSTROM AVENUE Westbound				GREENVILLE STREET Northbound				SEGERSTROM AVENUE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	13	38	13	64	35	223	4	262	7	121	**17**	145	**12**	207	30	249	720
17:15	14	52	14	80	37	**280**	6	**323**	**12**	**128**	15	**155**	10	207	**31**	248	**806**
17:30	15	**58**	15	**88**	**38**	246	6	290	5	105	8	118	11	**213**	28	**252**	748
17:45	**17**	46	**17**	80	33	257	**10**	300	10	108	15	133	12	171	15	198	711
Total Volume	59	194	59	312	143	1006	26	1175	34	462	55	551	45	798	104	947	2985
% App. Total	18.9	62.2	18.9		12.2	85.6	2.2		6.2	83.8	10		4.8	84.3	11		
PHF	.868	.836	.868	.886	.941	.898	.650	.909	.708	.902	.809	.889	.938	.937	.839	.939	.926



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Raitt
EAST & WEST: McFadden

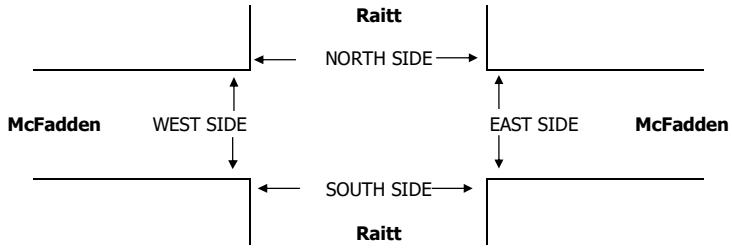
PROJECT #: SC0846
LOCATION #: 34
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Raitt			SOUTHBOUND Raitt			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	6	75	22	9	149	13	12	142	21	24	87	10	570	0	0	0	0	0
	7:15 AM	8	109	20	20	231	25	24	130	25	39	124	18	773	0	0	0	0	0
	7:30 AM	8	153	21	27	213	25	24	175	22	54	155	26	903	0	0	0	0	0
	7:45 AM	20	137	18	28	183	27	23	190	25	47	133	22	853	0	0	0	0	0
	8:00 AM	23	148	27	21	105	22	40	181	14	25	108	27	741	0	0	0	0	0
	8:15 AM	9	88	15	20	95	14	24	137	18	13	105	10	548	0	0	0	0	0
	8:30 AM	11	62	16	10	82	14	18	132	11	10	120	14	500	0	0	0	0	0
	8:45 AM	7	63	13	11	58	15	16	123	2	12	109	13	442	0	0	0	0	0
	VOLUMES	92	835	152	146	1,116	155	181	1,210	138	224	941	140	5,330	0	0	0	0	0
	APPROACH %	9%	77%	14%	10%	79%	11%	12%	79%	9%	17%	72%	11%						
	APP/DEPART	1,079	/	1,156	1,417	/	1,478	1,529	/	1,508	1,305	/	1,188	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	59	547	86	96	732	99	111	676	86	165	520	93	3,270					
	APPROACH %	9%	79%	12%	10%	79%	11%	13%	77%	10%	21%	67%	12%						
	PEAK HR FACTOR		0.874			0.840			0.917			0.828		0.905					
	APP/DEPART	692	/	751	927	/	983	873	/	858	778	/	678	0					
PM	4:00 PM	12	184	34	11	91	12	23	157	8	18	114	17	681	0	0	0	0	0
	4:15 PM	13	171	32	8	93	17	15	160	6	31	174	21	741	0	0	0	0	0
	4:30 PM	16	191	29	11	92	17	28	151	11	21	158	22	747	0	0	0	0	0
	4:45 PM	12	198	17	11	109	13	19	160	11	19	184	25	778	0	0	0	0	0
	5:00 PM	18	181	39	10	98	12	24	180	14	24	158	29	787	0	0	0	0	0
	5:15 PM	11	209	31	9	114	21	30	172	10	12	193	29	841	0	0	0	0	0
	5:30 PM	17	210	30	11	121	18	37	190	18	21	166	22	861	0	0	0	0	0
	5:45 PM	9	202	24	13	122	22	30	175	20	27	196	18	858	0	0	0	0	0
	VOLUMES	108	1,546	236	84	840	132	206	1,345	98	173	1,343	183	6,294	0	0	0	0	0
	APPROACH %	6%	82%	12%	8%	80%	13%	12%	82%	6%	10%	79%	11%						
	APP/DEPART	1,890	/	1,935	1,056	/	1,111	1,649	/	1,665	1,699	/	1,583	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	55	802	124	43	455	73	121	717	62	84	713	98	3,347					
	APPROACH %	6%	82%	13%	8%	80%	13%	13%	80%	7%	9%	80%	11%						
	PEAK HR FACTOR		0.954			0.909			0.918			0.928		0.972					
	APP/DEPART	981	/	1,021	571	/	601	900	/	884	895	/	841	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	19	8	1	16	44	17	6	1	14	38	2	2	0	2	6
	7:15 AM	12	8	6	24	50	9	6	3	22	40	3	2	3	2	10
	7:30 AM	23	30	12	36	101	23	28	10	35	96	0	2	2	1	5
	7:45 AM	62	19	13	44	138	60	18	11	42	131	2	1	2	2	7
	8:00 AM	16	15	5	27	63	13	12	1	25	51	3	3	4	2	12
	8:15 AM	6	19	2	12	39	4	18	1	12	35	2	1	1	0	4
	8:30 AM	11	14	0	10	35	10	12	0	10	32	1	2	0	0	3
	8:45 AM	5	8	4	3	20	4	7	4	3	18	1	1	0	0	2
	TOTAL	154	121	43	172	490	140	107	31	163	441	14	14	12	9	49
PM	4:00 PM	13	14	7	17	51	11	13	5	17	46	2	1	2	0	5
	4:15 PM	9	17	4	14	44	6	11	3	12	32	3	6	1	2	12
	4:30 PM	12	5	7	6	30	9	2	7	6	24	3	3	0	0	6
	4:45 PM	7	11	4	12	34	5	7	2	12	26	2	4	2	0	8
	5:00 PM	7	9	3	15	34	3	7	2	15	27	4	2	1	0	7
	5:15 PM	13	16	14	15	58	12	15	13	15	55	1	1	1	0	3
	5:30 PM	6	12	1	20	39	5	7	0	19	31	1	5	1	1	8
	5:45 PM	12	17	5	13	47	7	14	5	12	38	5	3	0	1	9
	TOTAL	79	101	45	112	337	58	76	37	108	279	21	25	8	4	58

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Raitt
EAST & WEST: Edinger

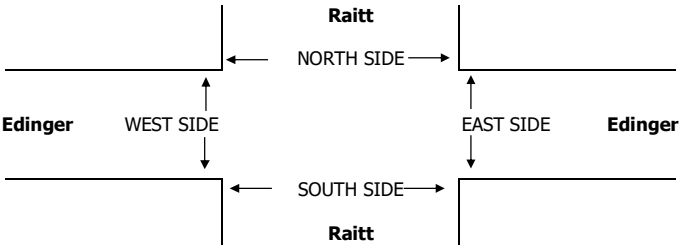
PROJECT #: SC0846
LOCATION #: 40
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Raitt			SOUTHBOUND Raitt			EASTBOUND Edinger			WESTBOUND Edinger				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	20	71	19	25	121	29	22	198	28	22	198	7	760	0	0	0	0	0
	7:15 AM	33	93	33	25	173	32	45	240	42	24	250	13	1,003	0	0	0	0	0
	7:30 AM	55	125	42	48	193	14	38	222	37	36	223	11	1,044	0	0	0	0	0
	7:45 AM	45	123	45	36	178	15	41	254	24	32	215	11	1,019	0	0	0	0	0
	8:00 AM	47	140	53	37	144	20	34	252	36	20	192	16	991	0	0	0	0	0
	8:15 AM	28	82	28	32	71	15	11	249	33	14	160	16	739	0	0	0	0	0
	8:30 AM	10	56	22	35	57	8	8	205	9	17	171	11	609	0	0	0	0	0
	8:45 AM	19	44	19	24	61	11	13	205	8	15	151	11	581	0	0	0	0	0
	VOLUMES	257	734	261	262	998	144	212	1,825	217	180	1,560	96	6,746	0	0	0	0	0
	APPROACH %	21%	59%	21%	19%	71%	10%	9%	81%	10%	10%	85%	5%						
	APP/DEPART	1,252	/	1,042	1,404	/	1,395	2,254	/	2,348	1,836	/	1,961	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	180	481	173	146	688	81	158	968	139	112	880	51	4,057					
	APPROACH %	22%	58%	21%	16%	75%	9%	12%	77%	11%	11%	84%	5%						
	PEAK HR FACTOR		0.869			0.897			0.967			0.909		0.972					
	APP/DEPART	834	/	690	915	/	939	1,265	/	1,287	1,043	/	1,141	0					
PM	4:00 PM	32	190	58	16	71	20	24	244	25	14	245	19	958	0	0	0	0	0
	4:15 PM	35	173	61	22	81	21	30	210	30	16	240	28	947	0	0	0	0	0
	4:30 PM	51	169	32	32	64	26	29	222	18	23	231	28	925	0	0	0	0	0
	4:45 PM	50	203	56	24	93	26	34	214	28	17	235	26	1,006	0	0	0	0	0
	5:00 PM	50	198	47	29	76	18	31	227	34	19	257	16	1,002	0	0	0	0	0
	5:15 PM	37	193	63	32	90	25	34	216	31	20	244	20	1,005	0	0	0	0	0
	5:30 PM	36	193	55	17	107	21	30	255	26	21	238	27	1,026	0	0	0	0	0
	5:45 PM	59	200	55	28	96	28	38	225	40	22	195	20	1,006	0	0	0	0	0
	VOLUMES	350	1,519	427	200	678	185	250	1,813	232	152	1,885	184	7,875	0	0	0	0	0
	APPROACH %	15%	66%	19%	19%	64%	17%	11%	79%	10%	7%	85%	8%						
	APP/DEPART	2,296	/	1,953	1,063	/	1,062	2,295	/	2,440	2,221	/	2,420	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	182	784	220	106	369	92	133	923	131	82	934	83	4,039					
	APPROACH %	15%	66%	19%	19%	65%	16%	11%	78%	11%	7%	85%	8%						
	PEAK HR FACTOR		0.944			0.933			0.954			0.941		0.984					
	APP/DEPART	1,186	/	1,000	567	/	582	1,187	/	1,249	1,099	/	1,208	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	12	32	8	17	69	10	26	6	16	58	2	6	2	1	11
	7:15 AM	48	33	7	27	115	46	27	7	26	106	2	6	0	1	9
	7:30 AM	86	52	24	78	240	81	47	24	75	227	5	5	0	3	13
	7:45 AM	91	65	41	70	267	87	60	39	68	254	4	5	2	2	13
	8:00 AM	51	57	29	55	192	48	53	28	52	181	3	4	1	3	11
	8:15 AM	11	29	8	15	63	10	28	7	15	60	1	1	1	0	3
	8:30 AM	7	4	2	2	15	6	2	2	2	12	1	2	0	0	3
	8:45 AM	8	3	2	5	18	8	2	2	5	17	0	1	0	0	1
	TOTAL	314	275	121	269	979	296	245	115	259	915	18	30	6	10	64
PM	4:00 PM	27	27	14	16	84	19	23	13	13	68	8	4	1	3	16
	4:15 PM	12	13	7	3	35	7	11	5	3	26	5	2	2	0	9
	4:30 PM	17	22	5	11	55	7	14	4	6	31	10	8	1	5	24
	4:45 PM	27	31	22	22	102	20	29	19	18	86	7	2	3	4	16
	5:00 PM	11	24	9	21	65	10	17	9	20	56	1	7	0	1	9
	5:15 PM	21	25	8	17	71	15	18	4	15	52	6	7	4	2	19
	5:30 PM	25	16	12	12	65	21	9	7	12	49	4	7	5	0	16
	5:45 PM	7	12	3	11	33	6	3	3	6	18	1	9	0	5	15
	TOTAL	147	170	80	113	510	105	124	64	93	386	42	46	16	20	124

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BEAR STREET
E-W Direction: MACARTHUR BOULEVARD

File Name : H1702005
Site Code : 00000000
Start Date : 2/7/2017

Groups Printed- Turning Movements

	BEAR STREET Southbound			MACARTHUR BOULEVARD Westbound			BEAR STREET Northbound			MACARTHUR BOULEVARD Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	22	100	28	11	160	5	26	63	9	17	271	9	721
07:15	56	154	42	19	294	16	27	66	21	23	382	11	1111
07:30	77	198	53	30	380	13	25	49	24	26	434	19	1328
07:45	111	199	45	31	342	17	30	72	20	36	392	34	1329
Total	266	651	168	91	1176	51	108	250	74	102	1479	73	4489
08:00	47	182	53	17	129	21	33	84	13	25	406	30	1040
08:15	26	155	43	13	136	14	36	85	5	27	346	14	900
08:30	18	127	37	6	109	11	36	69	10	53	386	7	869
08:45	19	95	23	14	110	16	34	46	10	30	276	10	683
Total	110	559	156	50	484	62	139	284	38	135	1414	61	3492
*** BREAK ***													
16:00	16	43	18	53	395	17	67	196	39	25	210	14	1093
16:15	13	74	19	66	388	16	59	210	59	18	214	16	1152
16:30	14	60	27	62	417	25	62	214	46	24	223	15	1189
16:45	17	62	24	65	396	25	59	227	51	20	213	21	1180
Total	60	239	88	246	1596	83	247	847	195	87	860	66	4614
17:00	17	63	25	69	386	18	58	242	46	20	240	29	1213
17:15	21	75	36	66	399	20	68	244	56	20	206	18	1229
17:30	24	63	23	58	442	27	58	220	41	31	224	26	1237
17:45	32	66	28	59	416	29	56	204	48	18	198	22	1176
Total	94	267	112	252	1643	94	240	910	191	89	868	95	4855
Grand Total	530	1716	524	639	4899	290	734	2291	498	413	4621	295	17450
Apprch %	19.1	61.9	18.9	11	84.1	5	20.8	65	14.1	7.8	86.7	5.5	
Total %	3	9.8	3	3.7	28.1	1.7	4.2	13.1	2.9	2.4	26.5	1.7	

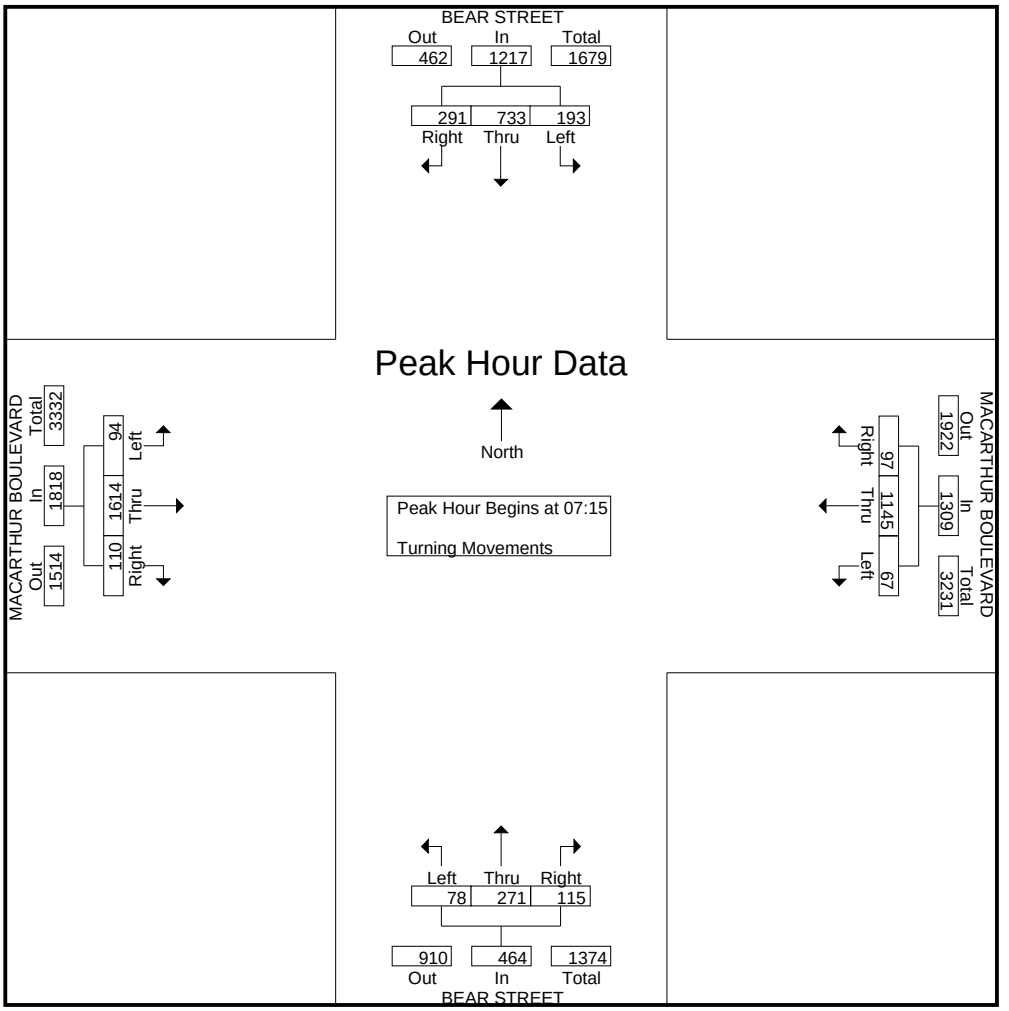
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BEAR STREET
E-W Direction: MACARTHUR BOULEVARD

File Name : H1702005
Site Code : 00000000
Start Date : 2/7/2017
Page No : 2

	BEAR STREET Southbound				MACARTHUR BOULEVARD Westbound				BEAR STREET Northbound				MACARTHUR BOULEVARD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	56	154	42	252	19	294	16	329	27	66	21	114	23	382	11	416	1111
07:30	77	198	**53**	328	30	**380**	13	**423**	25	49	**24**	98	26	**434**	19	**479**	1328
07:45	**111**	**199**	45	**355**	**31**	342	17	390	30	72	20	122	**36**	392	**34**	462	**1329**
08:00	47	182	53	282	17	129	**21**	167	**33**	**84**	13	**130**	25	406	30	461	1040
Total Volume	291	733	193	1217	97	1145	67	1309	115	271	78	464	110	1614	94	1818	4808
% App. Total	23.9	60.2	15.9		7.4	87.5	5.1		24.8	58.4	16.8		6.1	88.8	5.2		
PHF	.655	.921	.910	.857	.782	.753	.798	.774	.871	.807	.813	.892	.764	.930	.691	.949	.904



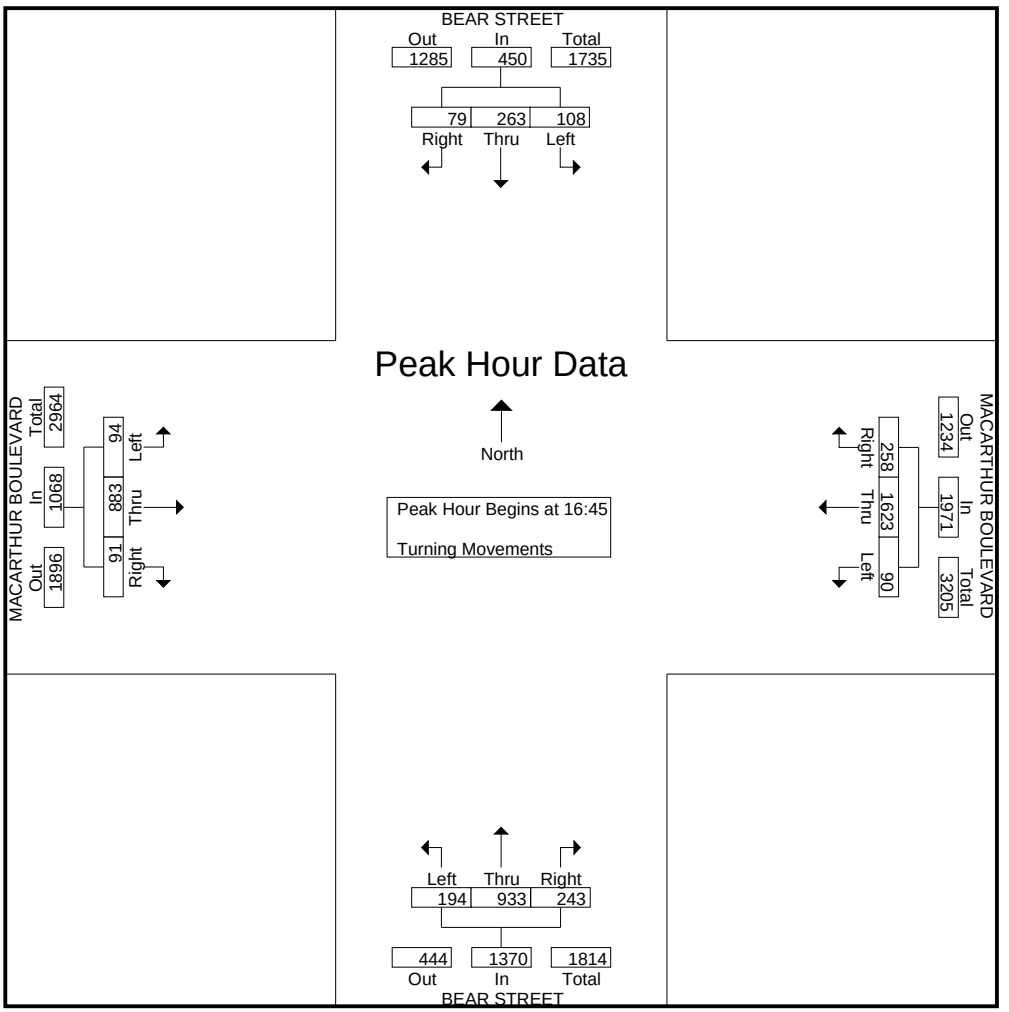
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BEAR STREET
E-W Direction: MACARTHUR BOULEVARD

File Name : H1702005
Site Code : 00000000
Start Date : 2/7/2017
Page No : 3

	BEAR STREET Southbound				MACARTHUR BOULEVARD Westbound				BEAR STREET Northbound				MACARTHUR BOULEVARD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	17	62	24	103	65	396	25	486	59	227	51	337	20	213	21	254	1180
17:00	17	63	25	105	**69**	386	18	473	58	242	46	346	20	**240**	**29**	**289**	1213
17:15	21	**75**	**36**	**132**	66	399	20	485	**68**	**244**	**56**	**368**	20	206	18	244	1229
17:30	**24**	63	23	110	58	**442**	**27**	**527**	58	220	41	319	**31**	224	26	281	**1237**
Total Volume	79	263	108	450	258	1623	90	1971	243	933	194	1370	91	883	94	1068	4859
% App. Total	17.6	58.4	24		13.1	82.3	4.6		17.7	68.1	14.2		8.5	82.7	8.8		
PHF	.823	.877	.750	.852	.935	.918	.833	.935	.893	.956	.866	.931	.734	.920	.810	.924	.982



INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Bristol
EAST & WEST: 17th

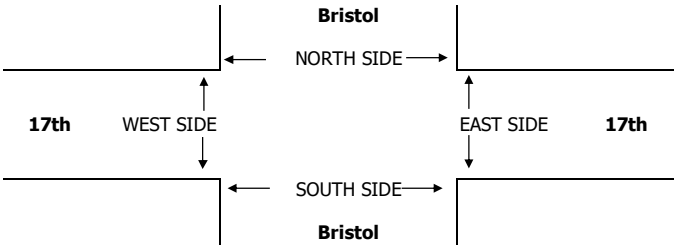
PROJECT #: SC2183
LOCATION #: 12
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Bristol			SOUTHBOUND Bristol			EASTBOUND 17th			WESTBOUND 17th				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 2	SR 1	EL 2	ET 3	ER 0	WL 2	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	23	254	42	59	328	28	47	230	34	46	116	51	1,258	4	0	0	2	6
	7:15 AM	32	285	28	83	324	26	67	258	35	48	141	69	1,396	3	0	0	3	6
	7:30 AM	45	270	41	102	342	21	78	281	38	76	202	92	1,588	3	0	0	8	11
	7:45 AM	59	234	49	94	311	40	86	250	33	87	225	73	1,541	2	1	1	8	12
	8:00 AM	39	248	39	83	368	46	71	183	42	91	184	51	1,445	4	0	0	11	15
	8:15 AM	47	226	36	52	341	72	85	239	41	101	204	54	1,498	7	0	1	2	10
	8:30 AM	39	256	43	53	361	61	63	203	26	51	129	22	1,307	5	0	0	5	10
	8:45 AM	37	246	38	65	280	63	55	174	37	51	93	31	1,170	5	1	1	6	13
	VOLUMES	321	2,019	316	591	2,655	357	552	1,818	286	551	1,294	443	11,203	33	2	3	45	83
	APPROACH %	12%	76%	12%	16%	74%	10%	21%	68%	11%	24%	57%	19%						
	APP/DEPART	2,656	/	3,013	3,603	/	3,480	2,656	/	2,768	2,288	/	1,942	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	190	978	165	331	1,362	179	320	953	154	355	815	270	6,072					
	APPROACH %	14%	73%	12%	18%	73%	10%	22%	67%	11%	25%	57%	19%						
	PEAK HR FACTOR		0.936			0.942			0.899			0.935		0.956					
	APP/DEPART	1,333	/	1,567	1,872	/	1,858	1,427	/	1,477	1,440	/	1,170	0					
PM	4:00 PM	43	282	37	68	272	60	85	168	25	48	260	76	1,424	2	2	2	7	13
	4:15 PM	45	282	37	66	295	50	61	178	33	63	234	67	1,411	4	1	0	12	17
	4:30 PM	40	277	26	53	286	48	69	193	34	55	308	71	1,460	2	1	0	7	10
	4:45 PM	36	281	40	68	308	45	74	177	28	70	255	87	1,469	3	0	2	6	11
	5:00 PM	61	284	58	50	311	56	85	192	40	57	286	107	1,587	5	0	1	7	13
	5:15 PM	53	264	41	62	317	54	97	223	30	71	247	81	1,540	2	0	2	8	12
	5:30 PM	55	304	42	75	322	57	71	163	37	77	265	93	1,561	2	0	1	8	11
	5:45 PM	64	284	48	53	330	50	79	164	27	76	260	77	1,512	8	0	0	11	19
	VOLUMES	397	2,258	329	495	2,441	420	621	1,458	254	517	2,115	659	11,964	28	4	8	66	106
	APPROACH %	13%	76%	11%	15%	73%	13%	27%	62%	11%	16%	64%	20%						
	APP/DEPART	2,984	/	3,534	3,356	/	3,174	2,333	/	2,344	3,291	/	2,912	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	233	1,136	189	240	1,280	217	332	742	134	281	1,058	358	6,200					
	APPROACH %	15%	73%	12%	14%	74%	12%	27%	61%	11%	17%	62%	21%						
	PEAK HR FACTOR		0.967			0.956			0.863			0.943		0.977					
	APP/DEPART	1,558	/	1,822	1,737	/	1,678	1,208	/	1,205	1,697	/	1,495	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	5:00 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Wed, Feb 10, 16

LOCATION: Santa Ana
NORTH & SOUTH: Bristol
EAST & WEST: Civic Center

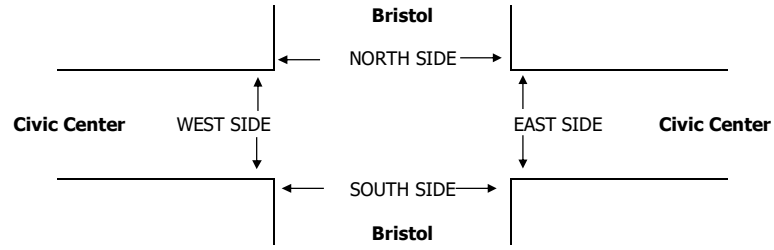
PROJECT #: SC0846
LOCATION #: 13
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Bristol			SOUTHBOUND Bristol			EASTBOUND Civic Center			WESTBOUND Civic Center				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	15	257	12	66	336	19	35	100	24	26	44	8	942	2	1	0	0	3
	7:15 AM	31	265	11	104	263	15	44	153	27	22	61	6	1,002	2	0	0	0	2
	7:30 AM	28	256	15	83	297	22	49	195	28	25	77	14	1,089	1	1	0	0	2
	7:45 AM	39	306	21	87	291	16	37	217	18	21	103	17	1,173	0	4	0	0	4
	8:00 AM	37	240	17	72	288	27	29	182	28	45	136	25	1,126	3	5	0	0	8
	8:15 AM	14	242	39	63	357	11	28	131	15	25	69	23	1,017	0	5	0	6	11
	8:30 AM	18	267	27	70	357	14	24	101	14	15	63	14	984	3	3	0	0	6
	8:45 AM	13	259	19	57	326	17	21	94	20	23	53	13	915	4	2	0	0	6
	VOLUMES	195	2,092	161	602	2,515	141	267	1,173	174	202	606	120	8,248	15	21	0	6	42
	APPROACH %	8%	85%	7%	18%	77%	4%	17%	73%	11%	22%	65%	13%						
	APP/DEPART	2,448	/	2,500	3,258	/	2,900	1,614	/	1,921	928	/	927	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	118	1,044	92	305	1,233	76	143	725	89	116	385	79	4,405					
	APPROACH %	9%	83%	7%	19%	76%	5%	15%	76%	9%	20%	66%	14%						
	PEAK HR FACTOR		0.857			0.936			0.880			0.704		0.939					
	APP/DEPART	1,254	/	1,281	1,614	/	1,436	957	/	1,113	580	/	575	0					
PM	4:00 PM	28	247	15	25	206	20	35	108	16	28	93	32	853	8	7	0	0	15
	4:15 PM	44	335	16	37	311	29	37	101	12	21	86	33	1,062	9	5	0	0	14
	4:30 PM	36	314	26	32	330	28	25	60	13	38	134	31	1,067	5	6	0	0	11
	4:45 PM	41	314	20	30	296	30	56	80	17	41	133	52	1,110	4	3	4	0	11
	5:00 PM	42	341	23	30	280	28	45	92	14	38	178	34	1,145	1	1	0	0	2
	5:15 PM	55	371	21	38	311	30	32	153	13	38	212	17	1,291	6	3	0	0	9
	5:30 PM	43	334	18	33	310	29	44	119	12	37	160	17	1,156	7	7	0	0	14
	5:45 PM	52	298	8	29	300	36	61	149	21	49	144	10	1,157	5	3	0	0	8
	VOLUMES	341	2,554	147	254	2,344	230	335	862	118	290	1,140	226	8,841	45	35	4	0	84
	APPROACH %	11%	84%	5%	9%	83%	8%	25%	66%	9%	18%	69%	14%						
	APP/DEPART	3,042	/	3,146	2,828	/	2,797	1,315	/	1,228	1,656	/	1,670	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	192	1,344	70	130	1,201	123	182	513	60	162	694	78	4,749					
	APPROACH %	12%	84%	4%	9%	83%	8%	24%	68%	8%	17%	74%	8%						
	PEAK HR FACTOR		0.898			0.959			0.817			0.875		0.920					
	APP/DEPART	1,606	/	1,618	1,454	/	1,442	755	/	699	934	/	990	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	2	7	10	5	24	2	7	8	5	22	0	0	2	0	2
	7:15 AM	10	4	8	11	33	8	3	8	7	26	2	1	0	4	7
	7:30 AM	9	12	3	10	34	7	10	3	6	26	2	2	0	4	8
	7:45 AM	10	10	5	12	37	10	9	2	12	33	0	1	3	0	4
	8:00 AM	7	6	2	6	21	5	6	2	5	18	2	0	0	1	3
	8:15 AM	7	9	2	2	20	7	8	0	2	17	0	1	2	0	3
	8:30 AM	1	9	3	5	18	1	6	3	2	12	0	3	0	3	6
	8:45 AM	3	6	2	12	23	2	6	1	10	19	1	0	1	2	4
	TOTAL	49	63	35	63	210	42	55	27	49	173	7	8	8	14	37
PM	4:00 PM	1	6	2	6	15	1	4	1	5	11	0	2	1	1	4
	4:15 PM	1	11	0	5	17	1	8	0	4	13	0	3	0	1	4
	4:30 PM	1	11	1	9	22	0	11	1	6	18	1	0	0	3	4
	4:45 PM	0	11	0	5	16	0	10	0	3	13	0	1	0	2	3
	5:00 PM	1	11	3	9	24	0	7	3	7	17	1	4	0	2	7
	5:15 PM	5	8	2	11	26	4	8	2	9	23	1	0	0	2	3
	5:30 PM	5	11	4	7	27	5	9	4	6	24	0	2	0	1	3
	5:45 PM	7	18	0	7	32	7	17	0	5	29	0	1	0	2	3
	TOTAL	21	87	12	59	179	18	74	11	45	148	3	13	1	14	31

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Bristol
EAST & WEST: Santa Ana

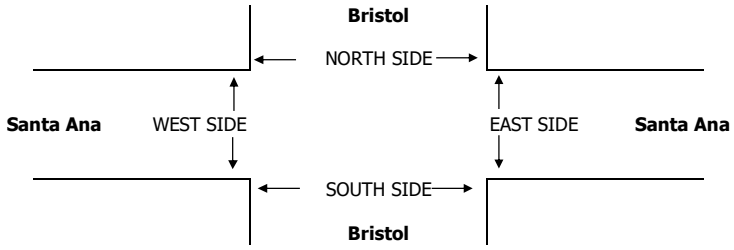
PROJECT #: SC0846
LOCATION #: 21
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Bristol			SOUTHBOUND Bristol			EASTBOUND Santa Ana			WESTBOUND Santa Ana				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	12	299	16	24	375	3	21	53	17	25	26	9	880	0	0	0	0	0
	7:15 AM	16	341	36	33	399	9	13	72	8	24	54	4	1,009	0	3	0	0	3
	7:30 AM	16	360	52	26	369	7	29	110	9	30	64	13	1,085	0	1	0	0	1
	7:45 AM	23	352	55	39	309	12	19	136	12	21	79	8	1,065	2	6	0	0	8
	8:00 AM	7	310	46	33	371	11	18	69	4	17	33	14	933	0	6	0	0	6
	8:15 AM	12	274	25	36	369	7	9	29	3	20	23	12	819	3	2	0	0	5
	8:30 AM	11	237	21	23	307	8	13	25	7	21	15	12	700	1	3	0	0	4
	8:45 AM	5	292	14	31	345	4	8	26	2	10	18	11	766	0	5	0	0	5
	VOLUMES	102	2,465	265	245	2,844	61	130	520	62	168	312	83	7,257	6	26	0	0	32
	APPROACH %	4%	87%	9%	8%	90%	2%	18%	73%	9%	30%	55%	15%						
	APP/DEPART	2,832	/	2,704	3,150	/	3,080	712	/	1,004	563	/	469	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	62	1,363	189	131	1,448	39	79	387	33	92	230	39	4,092					
	APPROACH %	4%	84%	12%	8%	89%	2%	16%	78%	7%	25%	64%	11%						
	PEAK HR FACTOR		0.938			0.917			0.747			0.836		0.943					
	APP/DEPART	1,614	/	1,497	1,618	/	1,575	499	/	691	361	/	329	0					
PM	4:00 PM	5	338	23	30	351	12	19	30	7	43	59	11	928	0	5	0	0	5
	4:15 PM	6	345	21	25	387	13	9	35	4	31	57	18	951	0	8	0	0	8
	4:30 PM	13	345	26	29	353	18	12	42	7	38	64	23	970	3	3	0	0	6
	4:45 PM	10	361	15	18	352	7	11	34	5	42	76	23	954	1	8	0	0	9
	5:00 PM	19	333	16	20	289	14	9	32	9	64	88	29	922	3	6	0	0	9
	5:15 PM	21	386	19	27	357	14	11	41	6	61	96	27	1,066	2	5	0	0	7
	5:30 PM	13	399	21	22	353	14	15	39	14	50	85	22	1,047	1	5	0	0	6
	5:45 PM	19	346	27	31	348	8	21	44	7	48	87	18	1,004	3	7	0	0	10
	VOLUMES	106	2,853	168	202	2,790	100	107	297	59	377	612	171	7,842	13	47	0	0	60
	APPROACH %	3%	91%	5%	7%	90%	3%	23%	64%	13%	33%	53%	15%						
	APP/DEPART	3,127	/	3,178	3,092	/	3,239	463	/	620	1,160	/	805	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	72	1,464	83	100	1,347	50	56	156	36	223	356	96	4,039					
	APPROACH %	4%	90%	5%	7%	90%	3%	23%	63%	15%	33%	53%	14%						
	PEAK HR FACTOR		0.935			0.940			0.861			0.917		0.947					
	APP/DEPART	1,619	/	1,639	1,497	/	1,615	248	/	316	675	/	469	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	13	6	9	9	37	13	4	6	8	31	0	2	3	1	6
	7:15 AM	42	16	13	11	82	40	16	12	7	75	2	0	1	4	7
	7:30 AM	40	26	14	26	106	39	26	12	23	100	1	0	2	3	6
	7:45 AM	43	21	5	17	86	40	20	2	16	78	3	1	3	1	8
	8:00 AM	32	7	10	12	61	31	7	9	10	57	1	0	1	2	4
	8:15 AM	5	3	5	7	20	5	3	4	6	18	0	0	1	1	2
	8:30 AM	16	10	5	6	37	15	5	3	3	26	1	5	2	3	11
	8:45 AM	7	13	8	4	32	5	12	7	2	26	2	1	1	2	6
	TOTAL	198	102	69	92	461	188	93	55	75	411	10	9	14	17	50
PM	4:00 PM	5	10	7	9	31	5	6	4	8	23	0	4	3	1	8
	4:15 PM	8	13	13	10	44	6	11	5	8	30	2	2	8	2	14
	4:30 PM	12	3	6	10	31	10	2	6	9	27	2	1	0	1	4
	4:45 PM	1	3	4	10	18	0	3	4	8	15	1	0	0	2	3
	5:00 PM	6	15	11	10	42	6	10	7	7	30	0	5	4	3	12
	5:15 PM	21	7	18	17	63	20	7	12	16	55	1	0	6	1	8
	5:30 PM	36	18	12	30	96	29	18	9	24	80	7	0	3	6	16
	5:45 PM	26	11	28	11	76	24	11	22	9	66	2	0	6	2	10
	TOTAL	115	80	99	107	401	100	68	69	89	326	15	12	30	18	75

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Bristol
EAST & WEST: 1st

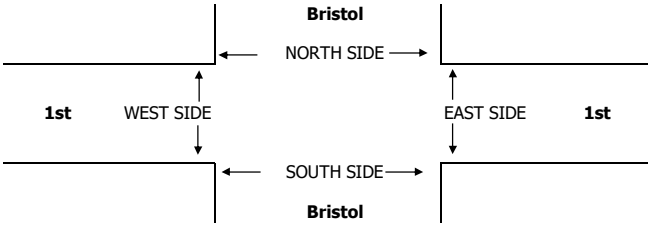
PROJECT #: SC2183
LOCATION #: 13
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Bristol			SOUTHBOUND Bristol			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	36	259	34	58	271	47	43	290	22	28	124	17	1,229	2	2	0	0	4
	7:15 AM	39	329	43	65	316	34	36	318	32	23	145	23	1,403	2	1	0	1	4
	7:30 AM	46	328	36	88	284	51	53	332	28	30	204	28	1,508	3	3	0	0	6
	7:45 AM	57	346	48	74	259	37	62	314	30	25	258	36	1,546	2	2	0	0	4
	8:00 AM	39	262	33	45	262	36	52	291	36	28	197	30	1,311	2	3	0	0	5
	8:15 AM	35	266	40	56	275	32	44	293	29	29	179	23	1,301	1	3	0	0	4
	8:30 AM	23	240	58	63	248	34	55	299	24	22	143	41	1,250	3	0	0	0	3
	8:45 AM	24	202	37	57	229	31	36	285	26	17	137	24	1,105	1	0	0	0	1
	VOLUMES	299	2,232	329	506	2,144	302	381	2,422	227	202	1,387	222	10,653	16	14	0	1	31
	APPROACH %	10%	78%	12%	17%	73%	10%	13%	80%	7%	11%	77%	12%						
	APP/DEPART	2,860	/	2,849	2,952	/	2,588	3,030	/	3,244	1,811	/	1,972	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	181	1,265	160	272	1,121	158	203	1,255	126	106	804	117	5,768					
	APPROACH %	11%	79%	10%	18%	72%	10%	13%	79%	8%	10%	78%	11%						
	PEAK HR FACTOR		0.890			0.917			0.959			0.805		0.933					
	APP/DEPART	1,606	/	1,594	1,551	/	1,361	1,584	/	1,679	1,027	/	1,134	0					
PM	4:00 PM	72	301	45	37	155	34	49	244	38	47	256	28	1,306	5	3	0	2	10
	4:15 PM	66	288	50	39	176	39	43	279	36	41	293	38	1,388	5	3	0	1	9
	4:30 PM	63	284	54	51	260	54	58	283	39	58	328	27	1,559	4	5	1	2	12
	4:45 PM	70	290	40	64	266	72	42	255	42	45	339	25	1,550	7	3	1	1	12
	5:00 PM	87	338	47	42	275	59	46	231	32	50	304	33	1,544	10	1	0	2	13
	5:15 PM	63	310	39	46	302	64	41	282	21	61	345	39	1,613	4	3	0	0	7
	5:30 PM	66	317	46	50	279	59	57	261	20	47	307	34	1,543	2	1	1	3	7
	5:45 PM	63	335	53	54	246	63	48	253	33	39	287	30	1,504	3	1	0	2	6
	VOLUMES	550	2,463	374	383	1,959	444	384	2,088	261	388	2,459	254	12,007	40	20	3	13	76
	APPROACH %	16%	73%	11%	14%	70%	16%	14%	76%	10%	13%	79%	8%						
	APP/DEPART	3,387	/	3,118	2,786	/	2,635	2,733	/	2,838	3,101	/	3,416	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	283	1,222	180	203	1,103	249	187	1,051	134	214	1,316	124	6,266					
	APPROACH %	17%	73%	11%	13%	71%	16%	14%	77%	10%	13%	80%	7%						
	PEAK HR FACTOR		0.892			0.944			0.903			0.929		0.971					
	APP/DEPART	1,685	/	1,543	1,555	/	1,471	1,372	/	1,427	1,654	/	1,825	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:30 PM					0	0	0	0	0					

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BRISTOL STREET
E-W Direction: MCFADDEN AVENUE

File Name : H1702008
Site Code : 00000000
Start Date : 2/7/2017
Page No : 1

Groups Printed- Turning Movements

	BRISTOL STREET Southbound				MCFADDEN AVENUE Westbound			BRISTOL STREET Northbound				MCFADDEN AVENUE Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
07:00	41	347	20	6	18	80	43	9	170	18	0	53	94	41	940
07:15	49	378	27	6	12	103	43	11	246	26	1	53	119	72	1146
07:30	28	388	30	8	9	110	34	18	264	35	0	53	115	80	1172
07:45	52	391	34	11	12	111	33	12	255	35	2	62	110	46	1166
Total	170	1504	111	31	51	404	153	50	935	114	3	221	438	239	4424
08:00	28	367	27	13	15	95	40	10	258	18	0	57	114	68	1110
08:15	25	350	28	5	14	66	23	14	174	19	2	33	76	48	877
08:30	24	323	16	6	10	74	24	10	218	19	0	32	81	47	884
08:45	25	320	23	7	11	54	26	11	193	24	1	22	78	47	842
Total	102	1360	94	31	50	289	113	45	843	80	3	144	349	210	3713
*** BREAK ***															
16:00	47	257	17	15	26	100	34	18	382	48	5	23	111	67	1150
16:15	61	258	27	6	22	102	31	17	368	41	2	24	98	71	1128
16:30	64	246	23	14	14	118	40	24	363	49	5	25	114	68	1167
16:45	62	268	21	14	19	116	32	19	384	46	3	30	122	57	1193
Total	234	1029	88	49	81	436	137	78	1497	184	15	102	445	263	4638
17:00	66	296	19	16	15	127	19	15	376	57	4	23	118	67	1218
17:15	65	298	25	8	12	122	22	30	382	43	2	23	136	63	1231
17:30	69	274	16	8	11	124	21	18	377	60	3	23	120	67	1191
17:45	56	286	19	16	11	121	28	22	320	64	1	28	113	71	1156
Total	256	1154	79	48	49	494	90	85	1455	224	10	97	487	268	4796
Grand Total	762	5047	372	159	231	1623	493	258	4730	602	31	564	1719	980	17571
Apprch %	12	79.6	5.9	2.5	9.8	69.2	21	4.6	84.1	10.7	0.6	17.3	52.7	30	
Total %	4.3	28.7	2.1	0.9	1.3	9.2	2.8	1.5	26.9	3.4	0.2	3.2	9.8	5.6	

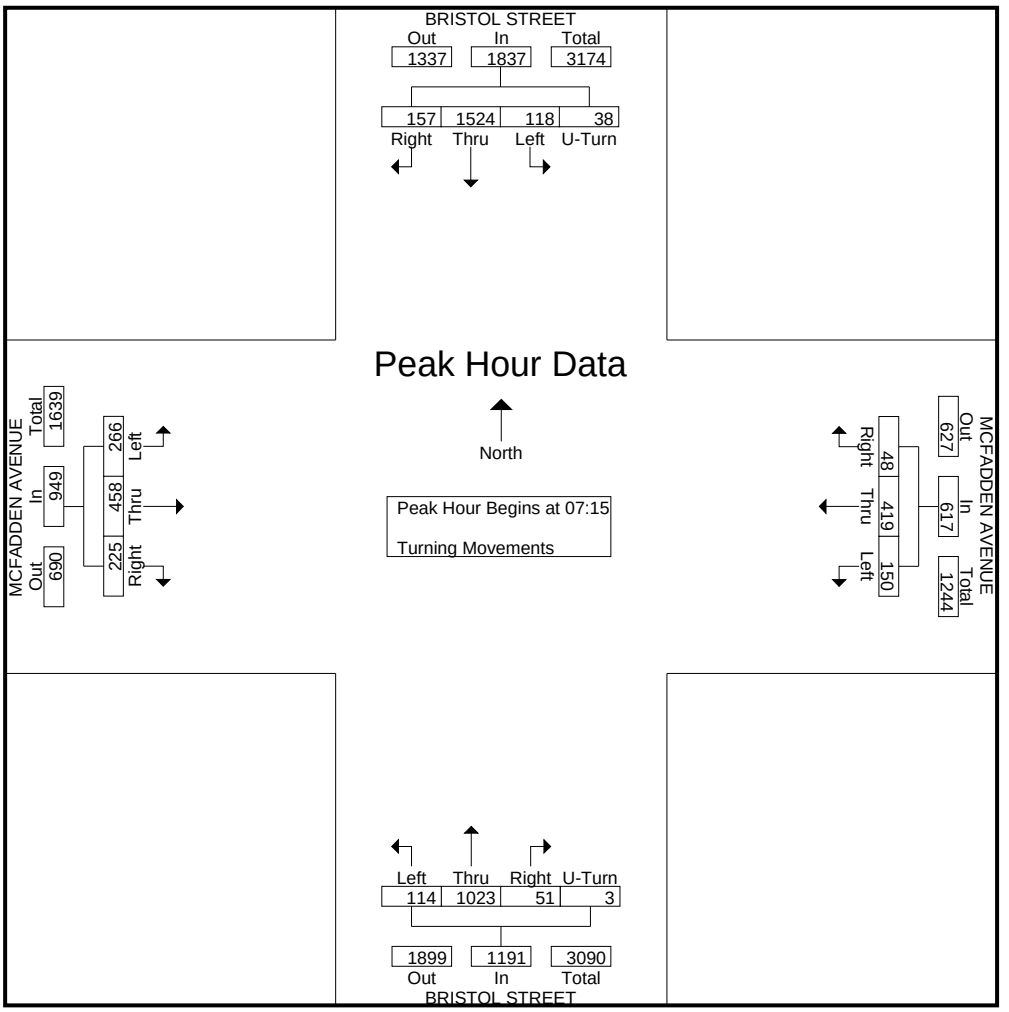
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BRISTOL STREET
E-W Direction: MCFADDEN AVENUE

File Name : H1702008
Site Code : 00000000
Start Date : 2/7/2017
Page No : 2

	BRISTOL STREET Southbound					MCFADDEN AVENUE Westbound				BRISTOL STREET Northbound					MCFADDEN AVENUE Eastbound				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15																			
07:15	49	378	27	6	460	12	103	43	158	11	246	26	1	284	53	119			
07:30	28	388	30	8	454	9	110	34	153	18	**264**	**35**	0	**317**	53	115	**80**	**248**	**1172**
07:45	**52**	**391**	**34**	11	**488**	12	**111**	33	156	12	255	35	**2**	304	**62**	110	46	218	1166
08:00	28	367	27	**13**	435	**15**													
Total Volume	157	1524	118	38	1837	48	419	150	617	51	1023	114	3	1191	225	458	266	949	4594
% App. Total	8.5	83	6.4	2.1		7.8	67.9	24.3		4.3	85.9	9.6	0.3		23.7	48.3	28		
PHF	.755	.974	.868	.731	.941	.800	.944	.872	.976	.708	.969	.814	.375	.939	.907	.962	.831	.957	.980



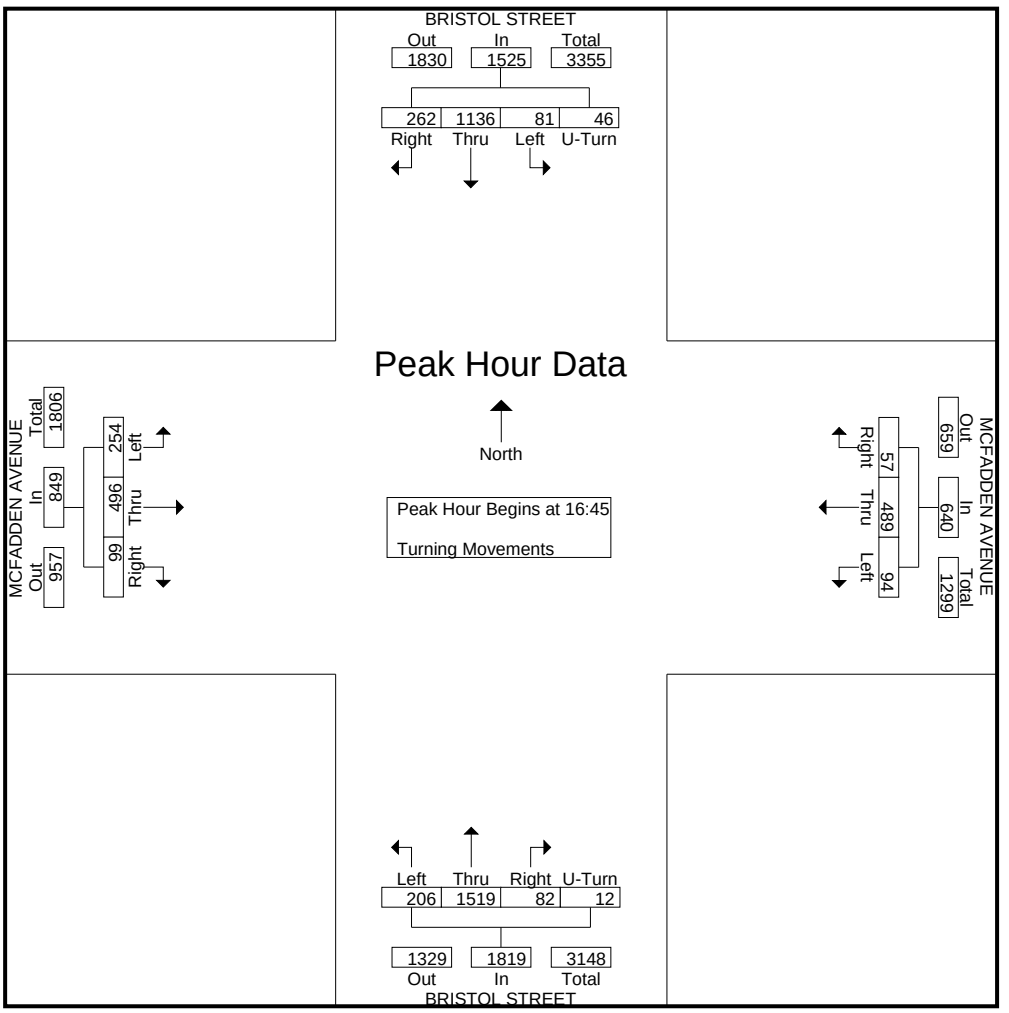
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BRISTOL STREET
E-W Direction: MCFADDEN AVENUE

File Name : H1702008
Site Code : 00000000
Start Date : 2/7/2017
Page No : 3

	BRISTOL STREET Southbound					MCFADDEN AVENUE Westbound				BRISTOL STREET Northbound					MCFADDEN AVENUE Eastbound				
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:45																			
16:45	62	268	21	14	365	19	116	32	167	19	384				30				
17:00	66	296	19	**16**	**397**	15	**127**	19	161	15	376	57	**4**	452	23	118	**67**	208	1218
17:15	65	**298**	**25**	8	396	12	122	22	156	**30**	382	43	2	457	23	**136**	63	**222**	**1231**
17:30	**69**	274	16	8	367	11	124	21	156	18	377	**60**	3	**458**	23	120	67	210	1191
Total Volume	262	1136	81	46	1525	57	489	94	640	82	1519	206	12	1819	99	496	254	849	4833
% App. Total	17.2	74.5	5.3	3		8.9	76.4	14.7		4.5	83.5	11.3	0.7		11.7	58.4	29.9		
PHF	.949	.953	.810	.719	.960	.750	.963	.734	.958	.683	.989	.858	.750	.993	.825	.912	.948	.956	.982



INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: Bristol
EAST & WEST: Warner

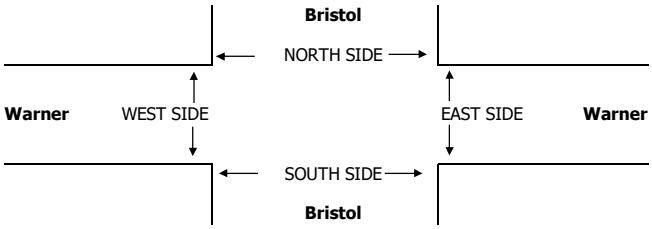
PROJECT #: SC2183
LOCATION #: 15
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND (Bristol)			SOUTHBOUND (Bristol)			EASTBOUND (Warner)			WESTBOUND (Warner)				U-TURNS				
	LANES:	NL 2	NT 2	NR 1	SL 2	ST 3	SR 0	EL 1	ET 3	ER 1	WL 1	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	40	125	29	104	291	34	30	297	55	36	143	25	1,209	0	2	0	0	2
	7:15 AM	43	163	24	110	327	37	48	304	71	35	199	25	1,386	2	0	0	1	3
	7:30 AM	49	182	42	79	336	33	52	292	64	54	230	35	1,448	1	1	0	1	3
	7:45 AM	53	250	34	90	316	36	50	266	72	49	243	37	1,496	0	1	0	1	2
	8:00 AM	45	258	57	103	315	40	53	275	76	48	179	47	1,496	0	1	0	0	1
	8:15 AM	36	272	81	84	324	40	53	217	72	35	126	41	1,381	0	0	0	0	0
	8:30 AM	26	205	62	74	322	36	48	221	65	49	127	29	1,264	1	0	0	2	3
	8:45 AM	36	127	35	72	310	35	33	197	72	52	110	30	1,109	0	2	0	0	2
	VOLUMES	328	1,582	364	716	2,541	291	367	2,069	547	358	1,357	269	10,789	4	7	0	5	16
	APPROACH %	14%	70%	16%	20%	72%	8%	12%	69%	18%	18%	68%	14%						
	APP/DEPART	2,274	/	2,225	3,548	/	3,445	2,983	/	3,147	1,984	/	1,972	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	190	853	157	382	1,294	146	203	1,137	283	186	851	144	5,826					
	APPROACH %	16%	71%	13%	21%	71%	8%	13%	70%	17%	16%	72%	12%						
	PEAK HR FACTOR		0.833			0.961			0.959			0.897		0.974					
	APP/DEPART	1,200	/	1,203	1,822	/	1,763	1,623	/	1,676	1,181	/	1,184	0					
PM	4:00 PM	68	304	50	84	211	30	53	206	36	32	219	93	1,386	0	0	1	0	1
	4:15 PM	80	289	54	72	192	43	43	227	36	35	247	79	1,397	1	0	1	1	3
	4:30 PM	73	295	54	44	205	35	44	208	44	45	243	77	1,367	2	0	0	2	4
	4:45 PM	80	284	44	77	195	36	51	193	36	38	255	72	1,361	2	0	0	0	2
	5:00 PM	72	277	56	55	237	47	53	231	35	53	265	68	1,449	2	0	0	1	3
	5:15 PM	59	254	50	81	202	42	51	210	46	36	257	69	1,357	0	2	1	0	3
	5:30 PM	70	291	63	66	176	36	54	207	49	40	260	72	1,384	1	0	2	0	3
	5:45 PM	72	282	50	70	192	47	54	207	30	42	260	67	1,373	0	1	0	0	1
	VOLUMES	574	2,276	421	549	1,610	316	403	1,689	312	321	2,006	597	11,074	8	3	5	4	20
	APPROACH %	18%	70%	13%	22%	65%	13%	17%	70%	13%	11%	69%	20%						
	APP/DEPART	3,271	/	3,274	2,475	/	2,247	2,404	/	2,660	2,924	/	2,893	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	305	1,145	208	248	829	161	191	859	151	171	1,010	296	5,574					
	APPROACH %	18%	69%	13%	20%	67%	13%	16%	72%	13%	12%	68%	20%						
	PEAK HR FACTOR		0.980			0.913			0.941			0.957		0.962					
	APP/DEPART	1,658	/	1,631	1,238	/	1,154	1,201	/	1,319	1,477	/	1,470	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:15 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Bristol
EAST & WEST: Segerstrom

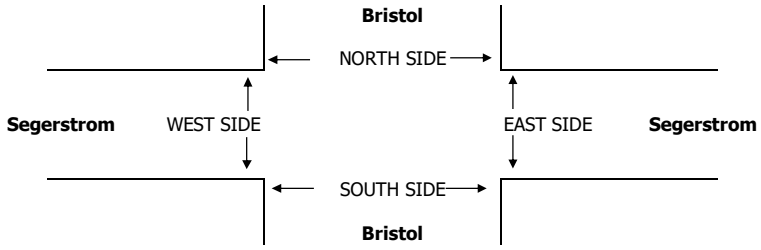
PROJECT #: SC0846
LOCATION #: 46
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Bristol			SOUTHBOUND Bristol			EASTBOUND Segerstrom			WESTBOUND Segerstrom				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	3	0	1	3	0	1	2	0	1	2	0		0	0	0	0	
AM	7:00 AM	6	92	12	45	252	33	14	166	16	19	100	11	766	0	0	0	0	0
	7:15 AM	12	143	29	62	244	39	41	232	10	23	122	11	968	0	0	0	0	0
	7:30 AM	17	188	30	80	249	25	26	232	24	25	171	18	1,085	0	0	0	0	0
	7:45 AM	22	176	32	76	234	21	64	220	20	44	151	24	1,084	0	0	0	0	0
	8:00 AM	11	189	39	53	244	29	50	193	26	25	88	15	962	0	0	0	0	0
	8:15 AM	12	179	23	38	250	25	49	166	21	26	62	12	863	1	0	0	0	1
	8:30 AM	4	236	21	27	259	36	56	164	20	18	51	12	904	0	0	0	0	0
	8:45 AM	9	223	13	33	265	36	55	143	18	16	77	22	910	0	0	0	0	0
	VOLUMES	93	1,426	199	414	1,997	244	355	1,516	155	196	822	125	7,542	1	0	0	0	1
	APPROACH %	5%	83%	12%	16%	75%	9%	18%	75%	8%	17%	72%	11%						
	APP/DEPART	1,718	/	1,906	2,655	/	2,349	2,026	/	2,129	1,143	/	1,158	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	62	696	130	271	971	114	181	877	80	117	532	68	4,099					
	APPROACH %	7%	78%	15%	20%	72%	8%	16%	77%	7%	16%	74%	9%						
	PEAK HR FACTOR		0.929			0.958			0.936			0.818		0.944					
	APP/DEPART	888	/	945	1,356	/	1,168	1,138	/	1,278	717	/	708	0					
PM	4:00 PM	33	218	38	20	165	31	43	135	11	32	248	24	998	0	0	0	0	0
	4:15 PM	17	229	32	20	179	43	48	141	15	30	259	16	1,029	0	1	0	0	1
	4:30 PM	21	269	29	21	188	27	53	152	11	26	249	13	1,059	0	0	0	0	0
	4:45 PM	30	328	43	25	183	35	45	139	6	37	243	20	1,134	0	0	0	0	0
	5:00 PM	38	320	50	26	195	39	47	154	11	34	272	10	1,196	1	0	0	0	1
	5:15 PM	38	319	69	26	185	40	47	191	13	29	258	15	1,230	0	0	0	0	0
	5:30 PM	46	321	49	16	200	48	46	189	13	19	250	18	1,215	0	0	0	0	0
	5:45 PM	50	310	55	20	230	42	52	154	17	32	252	8	1,222	1	0	0	0	1
	VOLUMES	273	2,314	365	174	1,525	305	381	1,255	97	239	2,031	124	9,083	2	1	0	0	3
	APPROACH %	9%	78%	12%	9%	76%	15%	22%	72%	6%	10%	85%	5%						
	APP/DEPART	2,952	/	2,820	2,004	/	1,863	1,733	/	1,793	2,394	/	2,607	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	172	1,270	223	88	810	169	192	688	54	114	1,032	51	4,863					
	APPROACH %	10%	76%	13%	8%	76%	16%	21%	74%	6%	10%	86%	4%						
	PEAK HR FACTOR		0.977			0.914			0.930			0.947		0.988					
	APP/DEPART	1,665	/	1,513	1,067	/	980	934	/	999	1,197	/	1,371	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	8	6	4	3	21	1	3	4	1	9	7	3	0	2	12
	7:15 AM	3	16	0	3	22	2	7	0	1	10	1	9	0	2	12
	7:30 AM	11	7	8	6	32	1	2	7	5	15	10	5	1	1	17
	7:45 AM	4	7	2	4	17	0	0	2	3	5	4	7	0	1	12
	8:00 AM	1	2	5	3	11	0	0	5	2	7	1	2	0	1	4
	8:15 AM	2	0	3	2	7	1	0	3	1	5	1	0	0	1	2
	8:30 AM	4	3	1	2	10	2	0	0	1	3	2	3	1	1	7
	8:45 AM	2	2	5	3	12	2	1	4	3	10	0	1	1	0	2
	TOTAL	35	43	28	26	132	9	13	25	17	64	26	30	3	9	68
PM	4:00 PM	16	3	10	8	37	3	1	6	4	14	13	2	4	4	23
	4:15 PM	10	6	3	5	24	0	1	2	1	4	10	5	1	4	20
	4:30 PM	16	5	8	7	36	1	3	4	3	11	15	2	4	4	25
	4:45 PM	6	5	6	6	23	1	0	4	3	8	5	5	2	3	15
	5:00 PM	9	2	6	6	23	0	2	5	4	11	9	0	1	2	12
	5:15 PM	13	1	4	7	25	1	1	3	6	11	12	0	1	1	14
	5:30 PM	8	3	17	2	30	3	1	16	1	21	5	2	1	1	9
	5:45 PM	6	0	3	4	13	1	0	1	3	5	5	0	2	1	8
	TOTAL	84	25	57	45	211	10	9	41	25	85	74	16	16	20	126

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BRISTOL STREET
E-W Direction: ALTON AVENUE

File Name : H1702006
Site Code : 00000000
Start Date : 2/15/2017
Page No : 1

Groups Printed- Turning Movements

	BRISTOL STREET Southbound				ALTON AVENUE Westbound			BRISTOL STREET Northbound				ALTON AVENUE Eastbound				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Peds	Int. Total
07:00	30	305	9	0	7	6	2	2	122	7	1	31	9	28	0	559
07:15	47	369	4	0	7	10	11	3	137	15	0	34	19	36	0	692
07:30	82	373	8	0	14	31	6	1	166	12	0	55	42	50	0	840
07:45	64	388	11	0	9	33	6	1	148	10	2	52	28	74	0	826
Total	223	1435	32	0	37	80	25	7	573	44	3	172	98	188	0	2917
08:00	27	394	11	0	9	10	7	1	158	8	0	43	24	76	0	768
08:15	21	343	7	0	10	11	4	2	143	6	0	35	15	75	0	672
08:30	19	312	6	0	11	7	3	0	142	6	2	20	16	36	0	580
08:45	18	306	13	1	4	12	4	3	126	7	0	13	12	18	0	537
Total	85	1355	37	1	34	40	18	6	569	27	2	111	67	205	0	2557
*** BREAK ***																
16:00	21	204	10	0	28	17	7	8	448	37	1	12	19	41	0	853
16:15	24	200	11	2	15	23	8	3	381	33	4	17	17	39	0	777
16:30	24	214	12	0	27	20	10	5	406	30	7	14	26	43	0	838
16:45	28	219	16	1	21	34	7	8	417	36	4	12	29	48	0	880
Total	97	837	49	3	91	94	32	24	1652	136	16	55	91	171	0	3348
17:00	31	204	9	1	26	26	7	5	383	35	3	13	26	45	0	814
17:15	27	212	17	1	25	51	7	5	405	48	6	23	22	46	0	895
17:30	25	234	12	1	16	34	7	7	426	34	3	24	24	50	0	897
17:45	25	220	19	0	29	34	7	9	381	37	3	22	23	35	0	844
Total	108	870	57	3	96	145	28	26	1595	154	15	82	95	176	0	3450
Grand Total	513	4497	175	7	258	359	103	63	4389	361	36	420	351	740	0	12272
Apprch %	9.9	86.6	3.4	0.1	35.8	49.9	14.3	1.3	90.5	7.4	0.7	27.8	23.2	49	0	
Total %	4.2	36.6	1.4	0.1	2.1	2.9	0.8	0.5	35.8	2.9	0.3	3.4	2.9	6	0	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BRISTOL STREET
E-W Direction: MACARTHUR BOULEVARD

File Name : H1702007
Site Code : 00000000
Start Date : 2/7/2017
Page No : 1

Groups Printed- Turning Movements

	BRISTOL STREET Southbound				MACARTHUR BOULEVARD Westbound				BRISTOL STREET Northbound				MACARTHUR BOULEVARD Eastbound				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00	20	276	34	0	26	139	44	0	21	78	15	4	23	172	23	0	875
07:15	37	323	48	1	30	241	41	4	16	86	10	2	19	291	37	1	1187
07:30	45	328	70	0	39	360	38	1	24	98	22	3	66	384	35	0	1513
07:45	34	336	83	1	33	292	49	2	28	121	30	5	69	324	51	1	1459
Total	136	1263	235	2	128	1032	172	7	89	383	77	14	177	1171	146	2	5034
08:00	32	379	86	1	31	122	39	4	26	119	11	2	64	351	50	1	1318
08:15	32	334	75	0	25	109	46	6	38	125	13	3	75	294	47	1	1223
08:30	20	274	44	0	32	92	51	8	34	107	11	1	70	332	62	0	1138
08:45	27	262	35	3	14	113	59	8	25	113	17	7	55	258	37	0	1033
Total	111	1249	240	4	102	436	195	26	123	464	52	13	264	1235	196	2	4712
*** BREAK ***																	
16:00	23	170	42	8	55	344	68	2	61	313	73	4	27	176	87	1	1454
16:15	30	174	39	6	59	370	83	0	56	350	62	11	31	166	92	1	1530
16:30	30	198	48	6	57	378	70	0	58	340	59	14	32	197	82	0	1569
16:45	27	183	57	5	74	355	61	0	72	346	67	13	46	195	87	0	1588
Total	110	725	186	25	245	1447	282	2	247	1349	261	42	136	734	348	2	6141
17:00	26	191	39	8	59	366	76	0	73	353	56	8	39	209	89	1	1593
17:15	31	210	45	11	74	385	63	0	58	350	67	13	45	190	80	2	1624
17:30	41	212	44	7	74	384	57	0	49	337	86	15	34	178	86	1	1605
17:45	34	213	57	7	92	339	61	0	51	295	91	16	45	183	89	1	1574
Total	132	826	185	33	299	1474	257	0	231	1335	300	52	163	760	344	5	6396
Grand Total	489	4063	846	64	774	4389	906	35	690	3531	690	121	740	3900	1034	11	22283
Apprch %	9	74.4	15.5	1.2	12.7	71.9	14.8	0.6	13.7	70.2	13.7	2.4	13	68.6	18.2	0.2	
Total %	2.2	18.2	3.8	0.3	3.5	19.7	4.1	0.2	3.1	15.8	3.1	0.5	3.3	17.5	4.6	0	

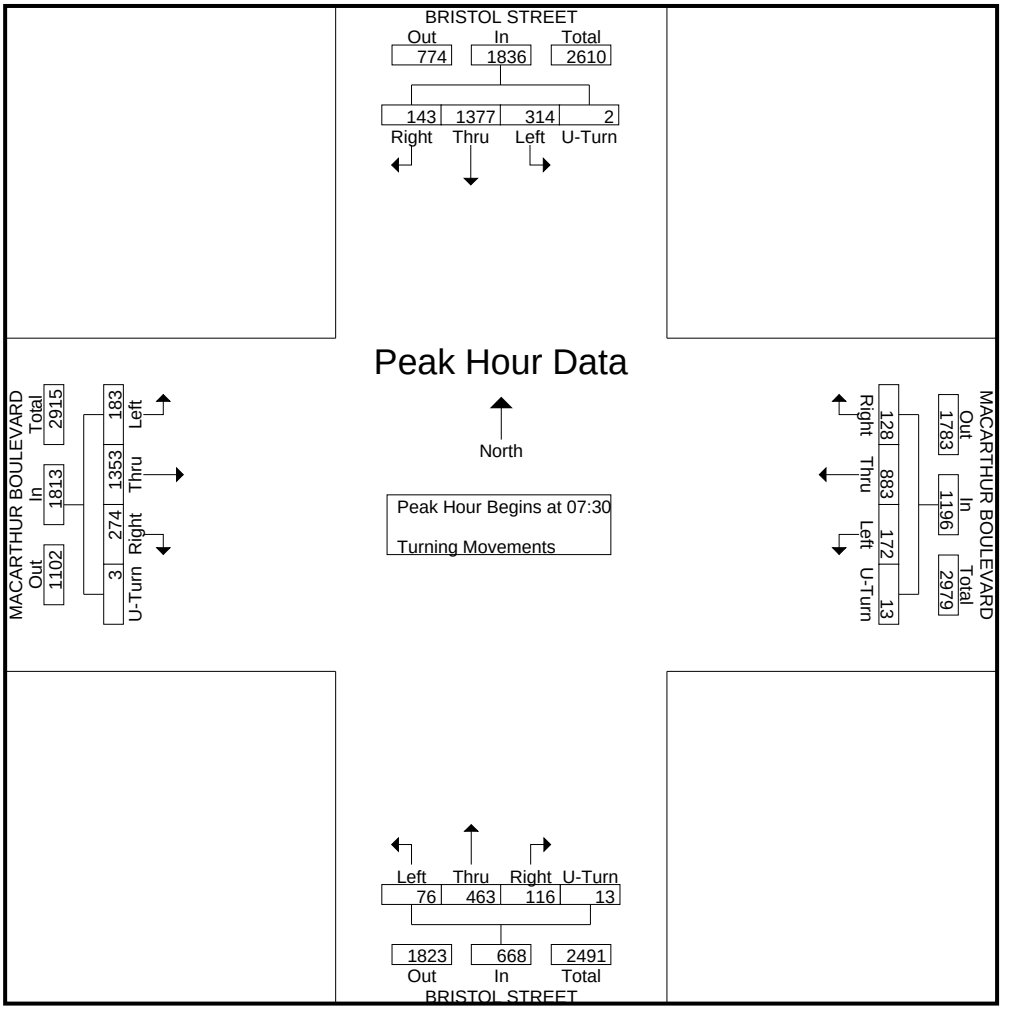
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BRISTOL STREET
E-W Direction: MACARTHUR BOULEVARD

File Name : H1702007
Site Code : 00000000
Start Date : 2/7/2017
Page No : 2

	BRISTOL STREET Southbound					MACARTHUR BOULEVARD Westbound					BRISTOL STREET Northbound					MACARTHUR BOULEVARD Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	45	328	70	0	443	39	360	38	1	438	24	98	22	3	147	66	**384**	**35**	**0**	**485**	**1513**
07:45	**34**	**336**	**83**	**1**	**454**	**33**	**292**	**49**	2	376	28	121	**30**	**5**	**184**	69	324	**51**	**1**	445	1459
08:00	32	**379**	**86**		**498**	31	122	39	4	196	26	119	11	2	158	64	351	50	1	466	1318
08:15	32	334	75	0	441	25	109	46	**6**	186	**38**	**125**	13	3	179	**75**	294	47	1	417	1223
Total Volume	143	1377	314	2	1836	128	883	172	13	1196	116	463	76	13	668	274	1353	183	3	1813	5513
% App. Total																					
PHF	.794	.908	.913	.500	.922	.821	.613	.878	.542	.683	.763	.926	.633	.650	.908	.913	.881	.897	.750	.935	.911



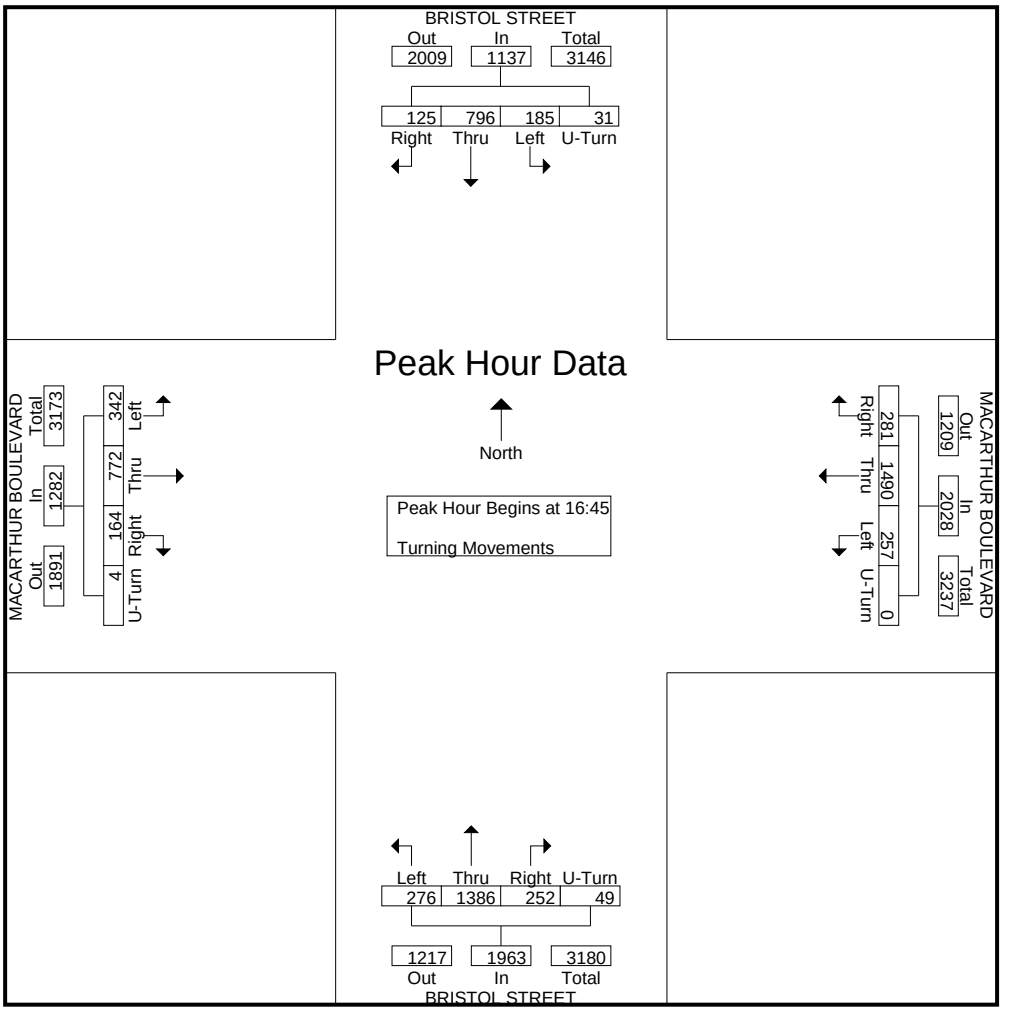
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: BRISTOL STREET
E-W Direction: MACARTHUR BOULEVARD

File Name : H1702007
Site Code : 00000000
Start Date : 2/7/2017
Page No : 3

	BRISTOL STREET Southbound					MACARTHUR BOULEVARD Westbound					BRISTOL STREET Northbound					MACARTHUR BOULEVARD Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	27	183	57	5	272	74									498	46					
17:00	26	191	39	8	264	59	366	**76**	0	501	**73**	**353**	56	8	490	39	**209**	**89**	1	**338**	
17:15	**31**	**210**	**45**	**11**	**297**	**74**	**385**	**63**	**0**	**522**	**58**	**350**	**67**	**13**	**488**	**45**	**190**	**80**	**2**	317	**1624**
17:30	**41**	**212**	44	7	**304**	74	384	57	0	515	49	337	**86**	**15**	**487**	**34**	**178**	**86**	**1**	**299**	**1605**
Total Volume	125	796	185	31	1137	281	1490	257	0	2028	252	1386	276	49	1963	164	772	342	4	1282	6410
% App. Total	11	70	16.3	2.7		13.9	73.5	12.7	0		12.8	70.6	14.1	2.5		12.8	60.2	26.7	0.3		
PHF	.762	.939	.811	.705	.935	.949	.968	.845	.000	.971	.863	.982	.802	.817	.985	.891	.923	.961	.500	.948	.987



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Mar 1, 16

LOCATION: Santa Ana
NORTH & SOUTH: Bristol
EAST & WEST: Sunflower

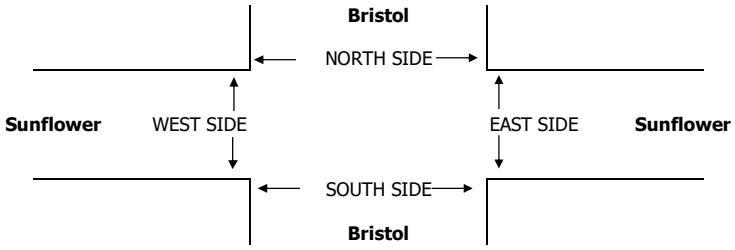
PROJECT #: SC0846
LOCATION #: 14
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Bristol			SOUTHBOUND Bristol			EASTBOUND Sunflower			WESTBOUND Sunflower				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	2	2.5	1.5	2	3	1	2	2.5	1.5	2	3	1		0	0	0	0	
AM	7:00 AM	20	112	12	30	301	14	15	94	61	59	55	32	805	0	2	0	4	6
	7:15 AM	16	121	19	41	356	9	16	115	79	54	68	25	919	0	0	0	2	2
	7:30 AM	20	97	26	43	351	18	34	205	85	74	108	34	1,095	0	2	0	3	5
	7:45 AM	32	104	35	84	339	29	15	265	111	49	140	34	1,237	2	0	0	0	2
	8:00 AM	23	103	26	47	284	29	27	259	101	55	76	35	1,065	2	0	0	4	6
	8:15 AM	15	139	43	61	359	23	33	176	69	58	60	29	1,065	3	1	0	5	9
	8:30 AM	17	117	28	47	254	27	23	134	69	69	51	38	874	1	1	0	7	9
	8:45 AM	20	114	28	56	285	26	22	98	63	49	82	33	876	0	1	0	7	8
	VOLUMES	163	907	217	409	2,529	175	185	1,346	638	467	640	260	7,936	8	7	0	32	47
	APPROACH %	13%	70%	17%	13%	81%	6%	9%	62%	29%	34%	47%	19%						
	APP/DEPART	1,287	/	1,359	3,113	/	3,610	2,169	/	1,997	1,367	/	970	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	90	443	130	235	1,333	99	109	905	366	236	384	132	4,462					
	APPROACH %	14%	67%	20%	14%	80%	6%	8%	66%	27%	31%	51%	18%						
	PEAK HR FACTOR		0.841			0.922			0.882			0.843		0.902					
	APP/DEPART	663	/	687	1,667	/	1,930	1,380	/	1,279	752	/	566	0					
PM	4:00 PM	139	353	49	33	143	36	63	104	49	42	162	65	1,238	3	1	4	3	11
	4:15 PM	152	356	47	28	158	46	81	125	47	52	168	63	1,323	5	2	6	4	17
	4:30 PM	148	341	54	44	185	41	64	102	39	56	218	83	1,375	6	5	3	7	21
	4:45 PM	150	347	44	43	152	38	67	111	53	65	253	70	1,393	4	2	7	8	21
	5:00 PM	138	339	67	48	167	44	68	122	47	52	228	80	1,400	6	2	3	5	16
	5:15 PM	165	318	46	40	173	50	68	131	53	62	246	87	1,439	4	4	3	6	17
	5:30 PM	155	331	48	57	188	54	73	149	54	53	259	64	1,485	0	4	5	6	15
	5:45 PM	161	321	50	48	192	58	72	148	59	85	239	78	1,511	2	2	4	6	14
	VOLUMES	1,208	2,706	405	341	1,358	367	556	992	401	467	1,773	590	11,164	30	22	35	45	132
	APPROACH %	28%	63%	9%	17%	66%	18%	29%	51%	21%	17%	63%	21%						
	APP/DEPART	4,319	/	3,839	2,066	/	2,211	1,949	/	1,761	2,830	/	3,353	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	619	1,309	211	193	720	206	281	550	213	252	972	309	5,835					
	APPROACH %	29%	61%	10%	17%	64%	18%	27%	53%	20%	16%	63%	20%						
	PEAK HR FACTOR		0.983			0.936			0.935			0.953		0.965					
	APP/DEPART	2,139	/	1,896	1,119	/	1,174	1,044	/	965	1,533	/	1,800	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	13	5	4	4	26	13	2	4	4	23	0	3	0	0	3
	7:15 AM	3	1	5	0	9	3	0	3	0	6	0	1	2	0	3
	7:30 AM	3	3	1	5	12	3	3	1	4	11	0	0	0	1	1
	7:45 AM	3	4	0	2	9	3	2	0	2	7	0	2	0	0	2
	8:00 AM	5	3	0	2	10	4	3	0	2	9	1	0	0	0	1
	8:15 AM	5	2	2	3	12	5	1	1	2	9	0	1	1	1	3
	8:30 AM	13	6	6	1	26	11	5	6	1	23	2	1	0	0	3
	8:45 AM	6	3	2	6	17	5	3	2	5	15	1	0	0	1	2
	TOTAL	51	27	20	23	121	47	19	17	20	103	4	8	3	3	18
PM	4:00 PM	13	4	7	8	32	12	4	6	8	30	1	0	1	0	2
	4:15 PM	9	5	5	1	20	7	5	5	1	18	2	0	0	0	2
	4:30 PM	21	13	5	11	50	17	11	5	9	42	4	2	0	2	8
	4:45 PM	18	9	3	11	41	15	8	3	11	37	3	1	0	0	4
	5:00 PM	11	4	13	10	38	11	3	9	10	33	0	1	4	0	5
	5:15 PM	8	4	7	6	25	8	4	6	6	24	0	0	1	0	1
	5:30 PM	13	5	5	6	29	12	4	4	5	25	1	1	1	1	4
	5:45 PM	16	5	7	5	33	16	4	6	5	31	0	1	1	0	2
	TOTAL	109	49	52	58	268	98	43	44	55	240	11	6	8	3	28

Prepared by National Data & Surveying Services

Bristol St & I-405 NB Ramps

Peak Hour Turning Movement Count

ID: Historical
City: Costa Mesa

Day: Thursday
Date: 10/11/2018

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Bristol St — SOUTHBOUND

AM	7	1928	0	0	2110	AM
NOON	0	0	0	0	0	NOON
PM	19	2105	0	0	3212	PM
	0	5	0	0		

I-405 NB Ramps — EASTBOUND

AM	NOON	PM	
78	0	318	
0	0	0	0
0	0	0	0
0	0	0	0
33	0	190	2
AM	NOON	PM	

CONTROL

Signalized

TEV	4454	0	6353
	AM	NOON	PM
PHF	0.97		0.97

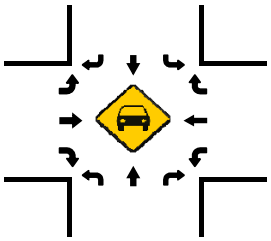
I-405 NB Ramps — WESTBOUND

PM	NOON	AM	
1160	0	651	2
299	0	71	1.5
349	0	118	1.5
0	0	0	0
179	0	187	
PM	NOON	AM	

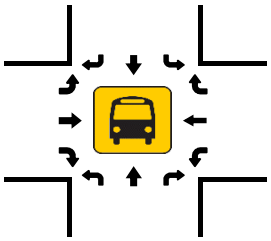
Bristol St — NORTHBOUND

PM	2644	0	0	2052	179	PM
NOON	0	0	0	0	0	NOON
AM	2079	0	0	1459	187	AM
	0	0	4	1		

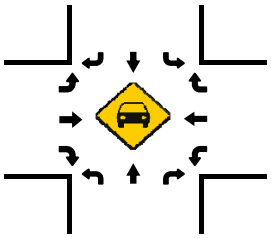
Total Vehicles (AM)



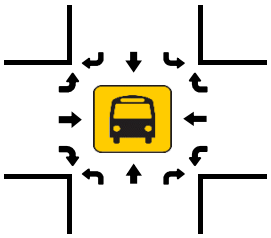
Total Vehicles (AM)



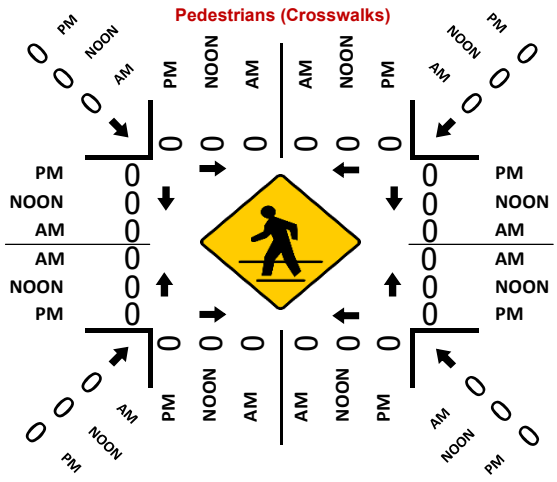
Total Vehicles (NOON)



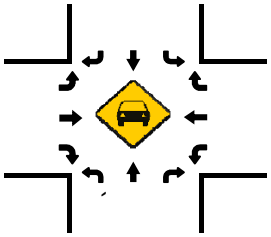
Total Vehicles (NOON)



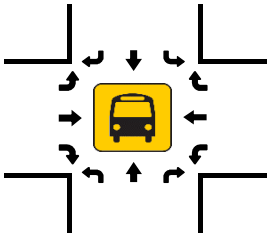
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



Prepared by National Data & Surveying Services

Bristol St & I-405 SB Ramps

Peak Hour Turning Movement Count

ID: Historical
City: Costa Mesa

Day: Thursday
Date: 10/11/2018

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Bristol St — SOUTHBOUND

AM	830	965	0	0	1647	AM
NOON	0	0	0	0	0	NOON
PM	862	1476	0	3	2252	PM
	2	3	0	0		

I-405 SB Ramps — EASTBOUND

AM	NOON	PM	
940	0	986	
0	0	0	0
561	0	725	3
0	0	0	0
513	0	324	1
AM	NOON	PM	

CONTROL

Signalized

TEV	4065	0	5038
	AM	NOON	PM
PHF	0.96		0.94

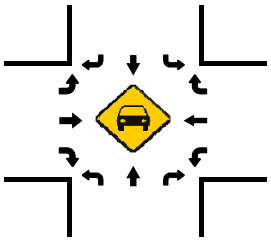
I-405 SB Ramps — WESTBOUND

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	
PM	NOON	AM	

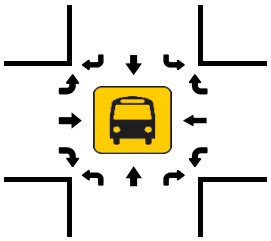
Bristol St — NORTHBOUND

	0	1	4	0		
PM	1800	0	124	1524	0	PM
NOON	0	0	0	0	0	NOON
AM	1478	0	110	1086	0	AM

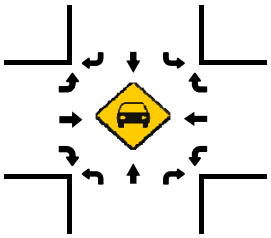
Total Vehicles (AM)



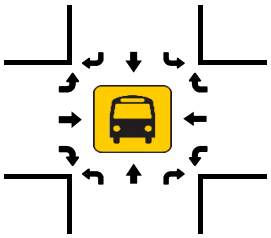
Total Vehicles (AM)



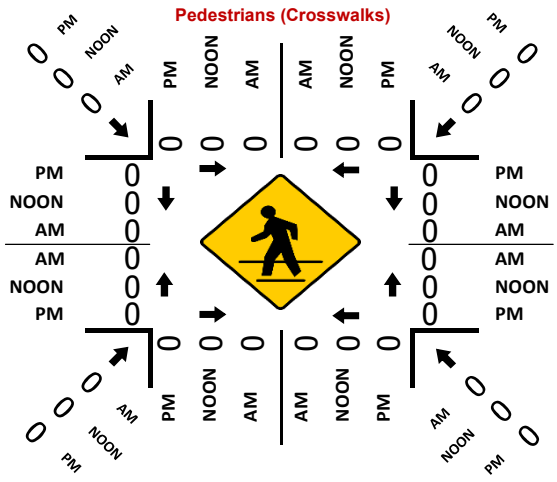
Total Vehicles (NOON)



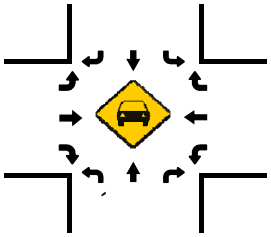
Total Vehicles (NOON)



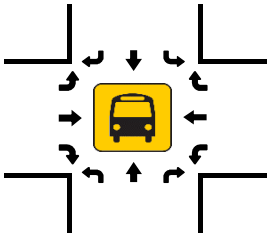
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Flower
EAST & WEST: Santa Ana

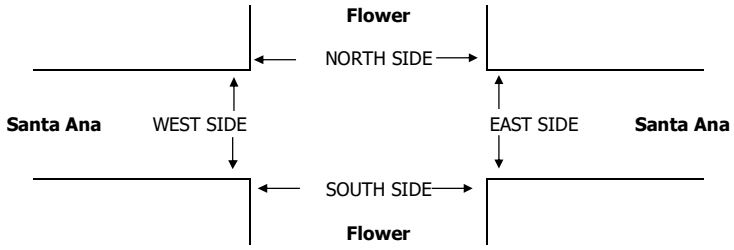
PROJECT #: SC0846
LOCATION #: 23
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Flower			SOUTHBOUND Flower			EASTBOUND Santa Ana			WESTBOUND Santa Ana				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 1	ST 2	SR 1	EL 1	ET 3	ER 1	WL 1	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	11	120	17	30	104	24	11	85	18	16	63	26	525	0	0	0	0	0
	7:15 AM	14	199	19	36	131	20	24	146	24	22	78	25	738	0	0	0	0	0
	7:30 AM	17	234	36	38	156	17	26	202	20	35	92	33	906	0	0	0	0	0
	7:45 AM	26	194	35	50	156	25	33	193	23	18	73	22	848	0	0	0	0	0
	8:00 AM	26	152	23	37	102	11	26	141	10	22	67	49	666	1	0	0	0	1
	8:15 AM	10	95	28	47	85	20	20	104	14	10	51	35	519	0	0	0	0	0
	8:30 AM	13	128	19	26	86	9	6	50	11	14	42	25	429	1	0	0	0	1
	8:45 AM	20	105	13	24	63	4	15	52	8	18	36	26	384	2	0	0	0	2
	VOLUMES	137	1,227	190	288	883	130	161	973	128	155	502	241	5,015	4	0	0	0	4
	APPROACH %	9%	79%	12%	22%	68%	10%	13%	77%	10%	17%	56%	27%						
	APP/DEPART	1,554	/	1,629	1,301	/	1,170	1,262	/	1,451	898	/	765	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	83	779	113	161	545	73	109	682	77	97	310	129	3,158					
	APPROACH %	9%	80%	12%	21%	70%	9%	13%	79%	9%	18%	58%	24%						
	PEAK HR FACTOR		0.849			0.843			0.871			0.838		0.871					
	APP/DEPART	975	/	1,017	779	/	720	868	/	956	536	/	465	0					
PM	4:00 PM	19	161	17	28	111	14	19	84	11	26	82	20	592	0	0	0	0	0
	4:15 PM	25	148	23	23	94	7	13	105	17	37	71	30	593	0	0	0	0	0
	4:30 PM	18	152	13	30	123	11	42	123	13	34	98	33	690	0	0	0	0	0
	4:45 PM	31	171	18	39	133	10	26	82	20	25	97	25	677	0	0	0	0	0
	5:00 PM	26	152	16	24	125	9	47	103	15	43	149	56	765	1	0	0	0	1
	5:15 PM	33	210	12	19	120	14	22	90	13	46	125	29	733	0	0	0	0	0
	5:30 PM	29	191	13	17	131	13	33	95	12	26	119	35	714	1	0	0	0	1
	5:45 PM	24	206	14	9	90	7	15	69	11	30	98	28	601	0	0	0	0	0
	VOLUMES	205	1,391	126	189	927	85	217	751	112	267	839	256	5,365	2	0	0	0	2
	APPROACH %	12%	81%	7%	16%	77%	7%	20%	70%	10%	20%	62%	19%						
	APP/DEPART	1,722	/	1,864	1,201	/	1,308	1,080	/	1,066	1,362	/	1,127	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	119	724	59	99	509	46	128	370	60	140	490	145	2,889					
	APPROACH %	13%	80%	7%	15%	78%	7%	23%	66%	11%	18%	63%	19%						
	PEAK HR FACTOR		0.884			0.898			0.845			0.781		0.944					
	APP/DEPART	902	/	997	654	/	711	558	/	528	775	/	653	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	7	10	13	18	48	1	1	9	14	25	6	9	4	4	23
	7:15 AM	7	9	27	23	66	3	0	26	16	45	4	9	1	7	21
	7:30 AM	6	8	23	20	57	1	1	16	17	35	5	7	7	3	22
	7:45 AM	2	4	55	25	86	0	0	53	22	75	2	4	2	3	11
	8:00 AM	3	8	17	12	40	2	0	17	9	28	1	8	0	3	12
	8:15 AM	5	9	17	6	37	0	4	16	3	23	5	5	1	3	14
	8:30 AM	10	15	15	9	49	0	0	11	9	20	10	15	4	0	29
	8:45 AM	11	24	9	26	70	4	1	8	26	39	7	23	1	0	31
	TOTAL	51	87	176	139	453	11	7	156	116	290	40	80	20	23	163
PM	4:00 PM	2	7	7	22	38	0	2	5	17	24	2	5	2	5	14
	4:15 PM	8	14	9	26	57	4	0	8	24	36	4	14	1	2	21
	4:30 PM	10	5	8	10	33	1	1	6	9	17	9	4	2	1	16
	4:45 PM	2	3	10	13	28	0	1	8	9	18	2	2	2	4	10
	5:00 PM	1	9	6	12	28	0	1	5	12	18	1	8	1	0	10
	5:15 PM	5	5	6	4	20	1	3	3	3	10	4	2	3	1	10
	5:30 PM	1	3	5	8	17	1	2	4	8	15	0	1	1	0	2
	5:45 PM	4	3	5	10	22	1	0	2	9	12	3	3	3	1	10
	TOTAL	33	49	56	105	243	8	10	41	91	150	25	39	15	14	93

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: FLOWER STREET
E-W Direction: 1ST STREET

File Name : H1702009
Site Code : 00000000
Start Date : 2/9/2017
Page No : 1

Groups Printed- Turning Movements

	FLOWER STREET Southbound			1ST STREET Westbound				FLOWER STREET Northbound				1ST STREET Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	Int. Total
07:00	13	106	37	21	158	32	2	37	110	22	1	18	324	25	906
07:15	12	113	35	35	201	42	10	44	143	39	0	15	383	39	1111
07:30	16	132	55	21	205	39	18	32	155	32	1	18	364	35	1123
07:45	13	162	46	40	235	45	12	41	175	40	0	16	363	39	1227
Total	54	513	173	117	799	158	42	154	583	133	2	67	1434	138	4367
08:00	15	130	33	23	194	29	7	37	111	22	0	9	359	47	1016
08:15	17	58	32	23	168	39	6	32	78	21	1	15	329	37	856
08:30	15	61	35	20	145	28	0	28	69	16	2	9	319	33	780
08:45	24	60	39	16	139	17	1	29	61	18	0	17	293	25	739
Total	71	309	139	82	646	113	14	126	319	77	3	50	1300	142	3391
*** BREAK ***															
16:00	30	82	49	28	305	52	3	28	97	34	0	21	288	35	1052
16:15	34	94	46	29	358	41	2	28	142	35	2	16	271	44	1142
16:30	22	140	37	20	336	40	8	29	122	35	0	16	264	31	1100
16:45	26	114	51	31	360	53	3	33	143	25	0	25	291	34	1189
Total	112	430	183	108	1359	186	16	118	504	129	2	78	1114	144	4483
17:00	37	115	47	36	327	53	3	39	159	34	3	18	312	35	1218
17:15	34	110	40	34	364	45	2	35	150	35	0	25	293	29	1196
17:30	34	113	27	41	322	39	5	37	154	29	2	30	285	36	1154
17:45	25	118	36	47	317	43	8	27	141	34	1	23	303	32	1155
Total	130	456	150	158	1330	180	18	138	604	132	6	96	1193	132	4723
Grand Total	367	1708	645	465	4134	637	90	536	2010	471	13	291	5041	556	16964
Apprch %	13.5	62.8	23.7	8.7	77.6	12	1.7	17.7	66.3	15.5	0.4	4.9	85.6	9.4	
Total %	2.2	10.1	3.8	2.7	24.4	3.8	0.5	3.2	11.8	2.8	0.1	1.7	29.7	3.3	

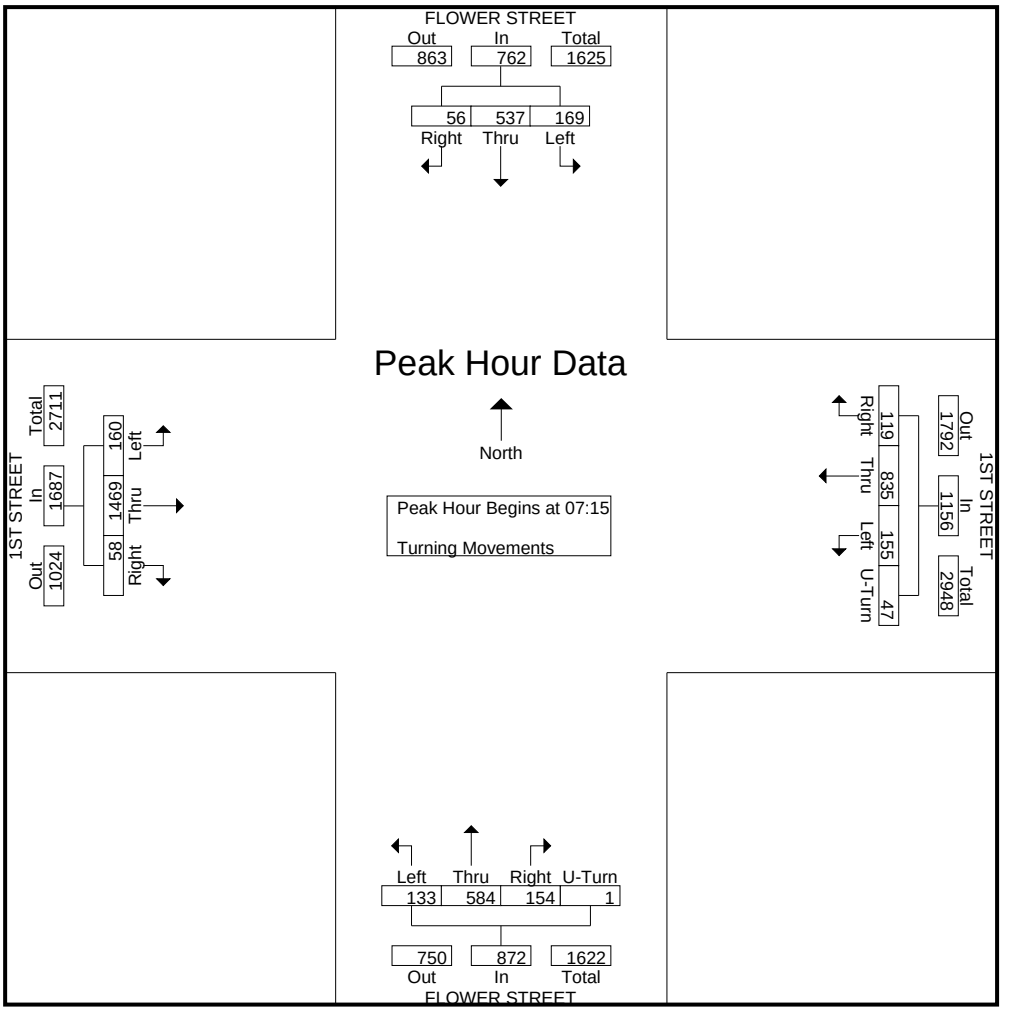
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: FLOWER STREET
E-W Direction: 1ST STREET

File Name : H1702009
Site Code : 00000000
Start Date : 2/9/2017
Page No : 2

	FLOWER STREET Southbound				1ST STREET Westbound					FLOWER STREET Northbound					1ST STREET Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15																			
07:15	12	113	35	160	35	201	42	10	288	44								383	437	1111
07:30	16	132	**55**	203	21	205	39	**18**					**1**	220	**18**	364	35	417	1123
07:45	13	**162**	46	**221**	**40**	**235**	**45**	12	**332**		**175**	**40**	0	**256**	16	363	39	418	**1227**
08:00	**15**	**130**	**33**	**178**	**23**	**194**	**29**	**7**	**253**	**37**	**111**	**22**	**0**	**170**	**9**	**359**	**47**	415	1016
Total Volume	56	537	169	762	119	835	155	47	1156	154	584	133	1	872	58	1469	160	1687	4477
% App. Total	7.3	70.5	22.2		10.3	72.2	13.4	4.1		17.7	67	15.3	0.1		3.4	87.1	9.5		
PHF	.875	.829	.768	.862	.744	.888	.861	.653	.870	.875	.834	.831	.250	.852	.806	.959	.851	.965	.912



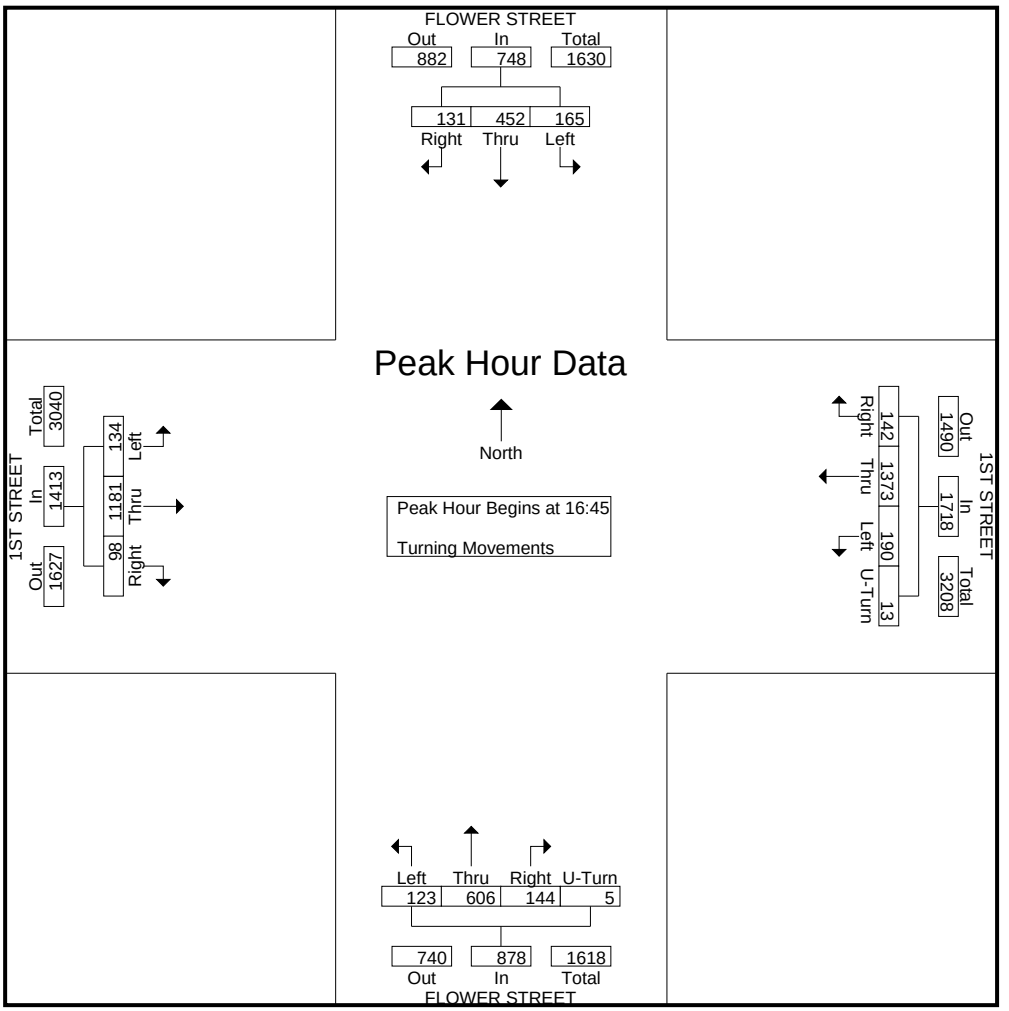
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: FLOWER STREET
E-W Direction: 1ST STREET

File Name : H1702009
Site Code : 00000000
Start Date : 2/9/2017
Page No : 3

	FLOWER STREET Southbound				1ST STREET Westbound					FLOWER STREET Northbound					1ST STREET Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:45																			
16:45	26	114	51				53		447	33	143	25	0	201	25	291	34	350	1189
17:00	37	**115**	47	**199**						**39**	**159**	34	**3**	**235**	18	**312**	35	**365**	**1218**
17:15	**34**	**110**	**40**	**184**	**34**	**364**	**45**	**2**	**445**	**35**	**150**	**35**	0	220	25	293	29	347	1196
17:30	34	113	27	174	**41**	322	39	**5**							**30**	285	**36**	351	1154
Total Volume	131	452	165	748	142	1373	190	13	1718	144	606	123	5	878	98	1181	134	1413	4757
% App. Total	17.5	60.4	22.1		8.3	79.9	11.1	0.8		16.4	69	14	0.6		6.9	83.6	9.5		
PHF	.885	.983	.809	.940	.866	.943	.896	.650	.961	.923	.953	.879	.417	.934	.817	.946	.931	.968	.976



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Flower
EAST & WEST: McFadden

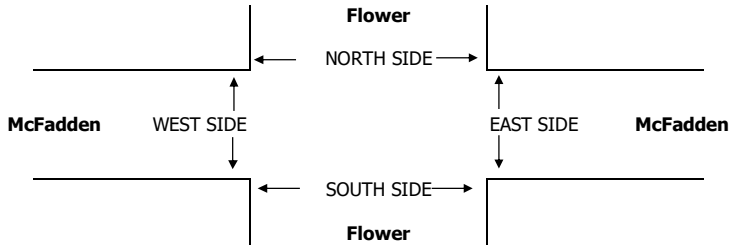
PROJECT #: SC0846
LOCATION #: 36
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Flower			SOUTHBOUND Flower			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 1	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	8	75	5	14	75	8	12	86	10	8	79	5	385	0	0	0	0	0
	7:15 AM	8	102	8	10	89	10	13	134	12	12	92	15	505	0	0	0	0	0
	7:30 AM	13	105	10	14	85	13	13	139	19	16	120	15	562	0	0	0	0	0
	7:45 AM	15	111	8	18	90	15	11	145	5	22	112	13	565	0	0	0	0	0
	8:00 AM	21	102	10	21	88	12	12	140	6	11	91	12	526	0	0	0	0	0
	8:15 AM	9	82	8	15	66	7	13	89	6	13	66	4	378	0	0	0	0	0
	8:30 AM	5	64	10	10	79	8	10	81	4	9	59	8	347	0	0	0	0	0
	8:45 AM	7	63	6	9	54	10	9	90	4	11	76	3	342	0	0	0	0	0
	VOLUMES	86	704	65	111	626	83	93	904	66	102	695	75	3,610	0	0	0	0	0
	APPROACH %	10%	82%	8%	14%	76%	10%	9%	85%	6%	12%	80%	9%						
	APP/DEPART	855	/	872	820	/	794	1,063	/	1,080	872	/	864	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	57	420	36	63	352	50	49	558	42	61	415	55	2,158					
	APPROACH %	11%	82%	7%	14%	76%	11%	8%	86%	6%	11%	78%	10%						
	PEAK HR FACTOR		0.957			0.945			0.949			0.879		0.955					
	APP/DEPART	513	/	524	465	/	455	649	/	657	531	/	522	0					
PM	4:00 PM	11	106	6	6	65	9	9	121	9	9	126	18	495	0	0	0	0	0
	4:15 PM	10	137	5	8	93	13	8	106	4	12	136	15	547	0	0	0	0	0
	4:30 PM	12	119	5	14	64	18	12	100	2	15	126	13	500	0	0	0	0	0
	4:45 PM	8	135	7	8	75	17	10	110	4	9	148	7	538	0	0	0	0	0
	5:00 PM	10	135	9	14	60	9	15	109	4	6	131	17	519	0	0	0	0	0
	5:15 PM	9	143	10	10	95	16	15	100	3	13	145	21	580	0	0	0	0	0
	5:30 PM	10	139	7	10	105	10	15	127	5	10	142	21	601	0	0	0	0	0
	5:45 PM	11	127	7	10	78	19	16	123	6	17	153	22	589	0	0	0	0	0
	VOLUMES	81	1,041	56	80	635	111	100	896	37	91	1,107	134	4,369	0	0	0	0	0
	APPROACH %	7%	88%	5%	10%	77%	13%	10%	87%	4%	7%	83%	10%						
	APP/DEPART	1,178	/	1,275	826	/	763	1,033	/	1,032	1,332	/	1,299	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	40	544	33	44	338	54	61	459	18	46	571	81	2,289					
	APPROACH %	6%	88%	5%	10%	78%	12%	11%	85%	3%	7%	82%	12%						
	PEAK HR FACTOR		0.952			0.872			0.915			0.909		0.952					
	APP/DEPART	617	/	686	436	/	402	538	/	536	698	/	665	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	8	9	9	5	31	2	1	7	5	15	6	8	2	0	16
	7:15 AM	7	2	3	4	16	1	0	2	4	7	6	2	1	0	9
	7:30 AM	15	9	7	14	45	1	0	7	12	20	14	9	0	2	25
	7:45 AM	8	19	9	15	51	3	0	8	15	26	5	19	1	0	25
	8:00 AM	4	5	3	9	21	2	0	3	9	14	2	5	0	0	7
	8:15 AM	3	7	5	11	26	3	2	4	9	18	0	5	1	2	8
	8:30 AM	2	2	2	6	12	1	1	1	4	7	1	1	1	2	5
	8:45 AM	2	2	0	4	8	0	0	0	4	4	2	2	0	0	4
	TOTAL	49	55	38	68	210	13	4	32	62	111	36	51	6	6	99
PM	4:00 PM	10	7	13	10	40	3	0	11	9	23	7	7	2	1	17
	4:15 PM	7	8	7	5	27	0	1	7	5	13	7	7	0	0	14
	4:30 PM	4	3	3	3	13	3	0	2	2	7	1	3	1	1	6
	4:45 PM	3	7	6	6	22	2	0	6	6	14	1	7	0	0	8
	5:00 PM	8	3	0	8	19	2	0	0	6	8	6	3	0	2	11
	5:15 PM	4	6	7	7	24	1	1	6	6	14	3	5	1	1	10
	5:30 PM	11	8	8	7	34	1	0	8	7	16	10	8	0	0	18
	5:45 PM	6	11	4	4	25	1	4	4	2	11	5	7	0	2	14
	TOTAL	53	53	48	50	204	13	6	44	43	106	40	47	4	7	98

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Flower
EAST & WEST: Segerstrom

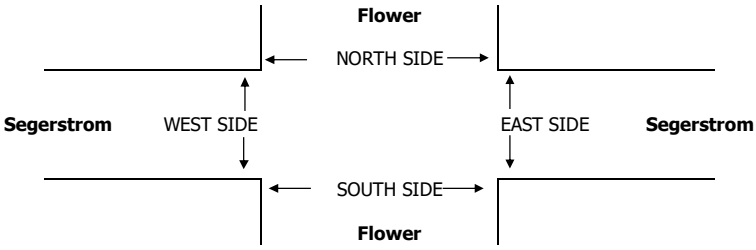
PROJECT #: SC0846
LOCATION #: 47
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Flower			SOUTHBOUND Flower			EASTBOUND Segerstrom			WESTBOUND Segerstrom				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	16	50	12	28	108	31	33	200	68	18	96	10	670	0	0	0	0	0
	7:15 AM	16	84	14	25	149	16	24	252	65	18	114	11	788	0	0	0	0	0
	7:30 AM	14	96	27	21	155	27	37	272	91	20	181	17	958	0	0	0	0	0
	7:45 AM	14	88	17	20	110	41	54	299	61	15	133	19	871	0	0	0	0	0
	8:00 AM	10	52	9	32	95	18	29	287	44	9	77	5	667	0	0	0	0	0
	8:15 AM	11	42	10	26	99	9	10	204	16	8	82	6	523	0	0	0	0	0
	8:30 AM	14	51	9	40	82	5	4	190	20	7	63	2	487	0	0	0	0	0
	8:45 AM	10	32	11	24	80	5	5	179	21	2	83	9	461	0	0	0	0	0
	VOLUMES	105	495	109	216	878	152	196	1,883	386	97	829	79	5,425	0	0	0	0	0
	APPROACH %	15%	70%	15%	17%	70%	12%	8%	76%	16%	10%	82%	8%						
	APP/DEPART	709	/	770	1,246	/	1,361	2,465	/	2,208	1,005	/	1,086	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	60	318	70	94	522	115	148	1,023	285	71	524	57	3,287					
	APPROACH %	13%	71%	16%	13%	71%	16%	10%	70%	20%	11%	80%	9%						
	PEAK HR FACTOR		0.818			0.900			0.879			0.748		0.858					
	APP/DEPART	448	/	523	731	/	878	1,456	/	1,187	652	/	699	0					
PM	4:00 PM	35	162	18	21	71	15	38	138	19	16	281	32	846	0	0	0	0	0
	4:15 PM	26	157	17	13	69	18	28	156	13	13	277	23	810	0	0	0	0	0
	4:30 PM	43	185	23	13	83	10	29	152	29	20	287	18	892	0	0	0	0	0
	4:45 PM	26	194	22	20	72	21	31	153	19	20	296	30	904	0	0	0	0	0
	5:00 PM	29	201	24	15	81	28	52	170	13	20	274	19	926	0	0	0	0	0
	5:15 PM	31	219	20	17	80	22	44	211	23	16	317	19	1,019	0	0	0	0	0
	5:30 PM	30	208	16	15	97	22	33	199	23	19	315	17	994	0	0	0	0	0
	5:45 PM	25	182	16	16	96	29	22	175	20	17	302	22	922	0	0	0	0	0
	VOLUMES	245	1,508	156	130	649	165	277	1,354	159	141	2,349	180	7,313	0	0	0	0	0
	APPROACH %	13%	79%	8%	14%	69%	17%	15%	76%	9%	5%	88%	7%						
	APP/DEPART	1,909	/	1,965	944	/	949	1,790	/	1,640	2,670	/	2,759	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	115	810	76	63	354	101	151	755	79	72	1,208	77	3,861					
	APPROACH %	11%	81%	8%	12%	68%	19%	15%	77%	8%	5%	89%	6%						
	PEAK HR FACTOR		0.927			0.918			0.886			0.964		0.947					
	APP/DEPART	1,001	/	1,038	518	/	505	985	/	894	1,357	/	1,424	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	5	5	1	8	19	3	4	1	8	16	2	1	0	0	3
	7:15 AM	8	17	6	28	59	5	14	5	26	50	3	3	1	2	9
	7:30 AM	27	34	9	54	124	26	32	9	53	120	1	2	0	1	4
	7:45 AM	27	56	20	132	235	27	55	19	132	233	0	1	1	0	2
	8:00 AM	1	2	0	11	14	1	2	0	11	14	0	0	0	0	0
	8:15 AM	2	2	2	8	14	2	2	0	6	10	0	0	2	2	4
	8:30 AM	1	1	2	2	6	0	1	1	1	3	1	0	1	1	3
	8:45 AM	1	1	0	1	3	0	0	0	1	1	1	1	0	0	2
	TOTAL	72	118	40	244	474	64	110	35	238	447	8	8	5	6	27
PM	4:00 PM	1	11	3	11	26	0	11	3	11	25	1	0	0	0	1
	4:15 PM	2	9	4	2	17	1	6	2	2	11	1	3	2	0	6
	4:30 PM	3	7	2	8	20	1	6	2	6	15	2	1	0	2	5
	4:45 PM	5	7	1	12	25	4	5	1	11	21	1	2	0	1	4
	5:00 PM	3	5	4	14	26	1	4	1	10	16	2	1	3	4	10
	5:15 PM	1	5	8	5	19	0	2	7	5	14	1	3	1	0	5
	5:30 PM	4	6	1	4	15	2	6	1	4	13	2	0	0	0	2
	5:45 PM	6	7	0	4	17	3	7	0	2	12	3	0	0	2	5
	TOTAL	25	57	23	60	165	12	47	17	51	127	13	10	6	9	38

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Flower
EAST & WEST: MacArthur

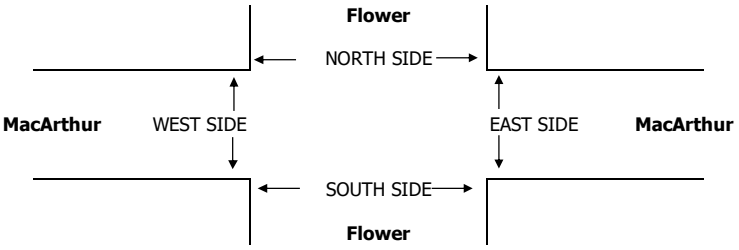
PROJECT #: SC0846
LOCATION #: 53
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Flower			SOUTHBOUND Flower			EASTBOUND MacArthur			WESTBOUND MacArthur				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	2	0	1	2	0	1	3	0	1	3	0		0	0	0	0	
AM	7:00 AM	9	26	20	36	60	51	28	315	14	6	142	9	716	0	0	0	0	0
	7:15 AM	5	32	17	40	70	54	54	424	15	11	218	17	957	0	0	0	1	1
	7:30 AM	6	44	25	35	88	100	45	478	16	16	297	16	1,166	0	0	1	0	1
	7:45 AM	4	35	13	45	104	67	30	460	27	12	197	15	1,009	0	0	1	1	2
	8:00 AM	6	25	15	36	76	32	29	443	18	12	161	7	860	0	0	1	0	1
	8:15 AM	9	32	15	47	82	21	24	438	33	10	171	13	895	0	0	0	1	1
	8:30 AM	10	27	16	36	47	20	23	368	21	17	148	17	750	0	0	0	0	0
	8:45 AM	10	21	12	30	65	24	13	329	16	8	128	11	667	0	0	0	0	0
	VOLUMES	59	242	133	305	592	369	246	3,255	160	92	1,462	105	7,020	0	0	3	3	6
	APPROACH %	14%	56%	31%	24%	47%	29%	7%	89%	4%	6%	88%	6%						
	APP/DEPART	434	/	590	1,266	/	841	3,661	/	3,696	1,659	/	1,893	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	21	136	70	156	338	253	158	1,805	76	51	873	55	3,992					
	APPROACH %	9%	60%	31%	21%	45%	34%	8%	89%	4%	5%	89%	6%						
	PEAK HR FACTOR		0.757			0.837			0.946			0.744		0.856					
	APP/DEPART	227	/	346	747	/	463	2,039	/	2,033	979	/	1,150	0					
PM	4:00 PM	17	121	16	25	44	36	46	240	14	10	454	35	1,058	0	0	0	0	0
	4:15 PM	22	134	7	18	39	31	45	217	10	15	476	38	1,052	0	0	1	1	2
	4:30 PM	23	124	15	15	51	49	45	249	11	15	477	33	1,107	0	0	0	3	3
	4:45 PM	22	144	17	15	39	39	56	244	10	8	451	38	1,083	0	0	1	0	1
	5:00 PM	35	167	13	19	44	45	49	242	15	12	504	44	1,189	0	0	0	0	0
	5:15 PM	33	190	17	17	52	41	49	221	21	16	464	45	1,166	0	0	1	0	1
	5:30 PM	38	140	28	24	49	54	47	245	10	15	463	35	1,148	0	0	0	0	0
	5:45 PM	21	112	13	21	52	49	55	247	14	16	480	46	1,126	0	0	0	0	0
	VOLUMES	211	1,132	126	154	370	344	392	1,905	105	107	3,769	314	8,929	0	0	3	4	7
	APPROACH %	14%	77%	9%	18%	43%	40%	16%	79%	4%	3%	90%	7%						
	APP/DEPART	1,469	/	1,835	868	/	578	2,402	/	2,189	4,190	/	4,327	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	127	609	71	81	197	189	200	955	60	59	1,911	170	4,629					
	APPROACH %	16%	75%	9%	17%	42%	40%	16%	79%	5%	3%	89%	8%						
	PEAK HR FACTOR		0.841			0.919			0.961			0.955		0.973					
	APP/DEPART	807	/	978	467	/	316	1,215	/	1,107	2,140	/	2,228	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	3	5	4	13	1	3	4	3	11	0	0	1	1	2
	7:15 AM	2	6	3	14	25	2	6	3	14	25	0	0	0	0	0
	7:30 AM	4	6	8	3	21	3	6	8	3	20	1	0	0	0	1
	7:45 AM	2	12	5	6	25	2	12	5	6	25	0	0	0	0	0
	8:00 AM	1	8	3	1	13	1	8	3	1	13	0	0	0	0	0
	8:15 AM	0	20	3	7	30	0	20	2	5	27	0	0	1	2	3
	8:30 AM	1	11	7	3	22	0	10	5	2	17	1	1	2	1	5
	8:45 AM	1	2	3	1	7	1	2	2	1	6	0	0	1	0	1
	TOTAL	12	68	37	39	156	10	67	32	35	144	2	1	5	4	12
PM	4:00 PM	3	10	2	4	19	2	9	1	4	16	1	1	1	0	3
	4:15 PM	5	3	1	2	11	5	3	1	1	10	0	0	0	1	1
	4:30 PM	4	4	0	0	8	1	3	0	0	4	3	1	0	0	4
	4:45 PM	2	2	2	2	8	1	1	0	2	4	1	1	2	0	4
	5:00 PM	1	4	5	7	17	1	4	2	7	14	0	0	3	0	3
	5:15 PM	4	2	5	0	11	3	2	5	0	10	1	0	0	0	1
	5:30 PM	0	2	3	3	8	0	1	3	1	5	0	1	0	2	3
	5:45 PM	5	4	10	2	21	3	4	9	2	18	2	0	1	0	3
	TOTAL	24	31	28	20	103	16	27	21	17	81	8	4	7	3	22

Prepared by National Data & Surveying Services

Main St & La Veta Ave

Peak Hour Turning Movement Count

ID: Historical
City: Orange

Day: Tuesday
Date: 08/28/2018

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Main St — SOUTHBOUND

AM	169	1013	194	0	1135	AM
NOON	0	0	0	0	0	NOON
PM	230	893	142	0	1410	PM
	0	3	2	0		

La Veta Ave — EASTBOUND

AM	NOON	PM		
521	0	1032		
0	0	0	0	
343	0	290	2	
485	0	413	3	
210	0	185	0	
AM	NOON	PM		

CONTROL

Signalized

TEV	4161	0	4756
	AM	NOON	PM
PHF	0.95		0.90

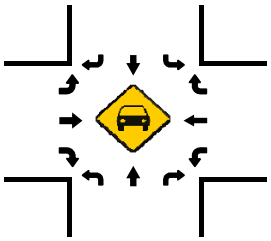
La Veta Ave — WESTBOUND

	PM	NOON	AM
1	201	0	225
2	502	0	270
2	251	0	309
0	0	0	0
	985	0	973
	PM	NOON	AM

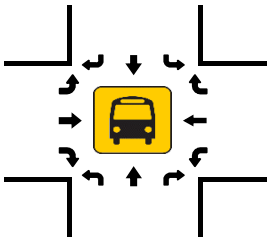
Main St — NORTHBOUND

PM	1329	0	300	919	430	PM
NOON	0	0	0	0	0	NOON
AM	1532	0	82	567	294	AM
		0	2	3	1	

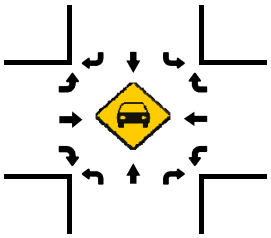
Total Vehicles (AM)



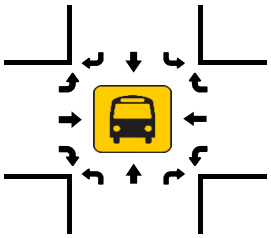
Total Vehicles (AM)



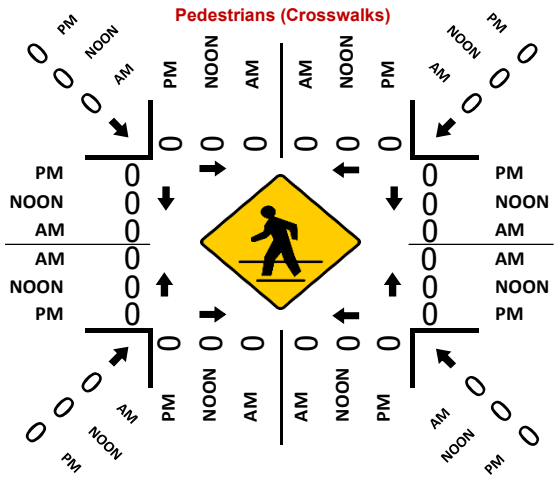
Total Vehicles (NOON)



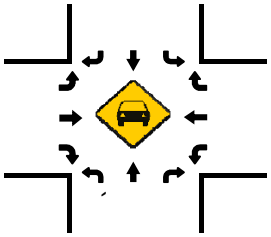
Total Vehicles (NOON)



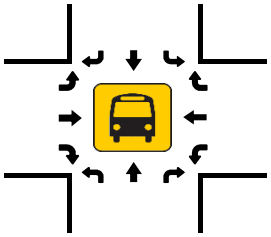
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: Mainplace

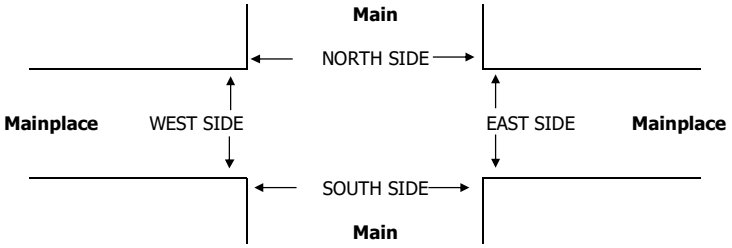
PROJECT #: SC2183
LOCATION #: 16
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Main			SOUTHBOUND Main			EASTBOUND Mainplace			WESTBOUND Mainplace				U-TURNS				
	LANES:	NL 2	NT 3	NR 0	SL 2	ST 3	SR 0	EL 2	ET 2.5	ER 0.5	WL 2	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	3	121	34	5	255	43	16	23	5	27	46	1	579	1	2	0	0	3
	7:15 AM	8	140	43	4	355	62	31	31	7	31	37	6	755	0	0	0	0	0
	7:30 AM	0	165	72	9	328	66	39	67	3	62	58	2	871	0	2	0	0	2
	7:45 AM	8	237	70	10	306	60	35	65	5	50	73	3	922	1	1	0	1	3
	8:00 AM	6	177	52	8	307	53	38	63	4	51	47	4	810	1	1	0	1	3
	8:15 AM	13	177	53	4	290	78	34	35	3	33	45	5	770	1	1	0	0	2
	8:30 AM	6	165	38	6	219	61	36	37	12	35	36	5	656	0	0	0	0	0
	8:45 AM	12	160	46	9	233	46	20	19	10	29	36	4	624	1	4	0	1	6
	VOLUMES	56	1,342	408	55	2,293	469	249	340	49	318	378	30	5,987	5	11	0	3	19
	APPROACH %	3%	74%	23%	2%	81%	17%	39%	53%	8%	44%	52%	4%						
	APP/DEPART	1,806	/	1,632	2,817	/	2,662	638	/	795	726	/	898	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	27	756	247	31	1,231	257	146	230	15	196	223	14	3,373					
	APPROACH %	3%	73%	24%	2%	81%	17%	37%	59%	4%	45%	52%	3%						
	PEAK HR FACTOR		0.817			0.942			0.897			0.859		0.915					
	APP/DEPART	1,030	/	921	1,519	/	1,443	391	/	505	433	/	504	0					
PM	4:00 PM	9	201	37	15	241	40	46	54	28	27	39	14	751	0	6	0	0	6
	4:15 PM	17	194	35	16	277	41	53	65	21	48	29	8	804	1	2	0	2	5
	4:30 PM	21	218	26	9	267	36	60	61	33	36	41	8	816	2	3	0	1	6
	4:45 PM	23	213	37	12	257	27	66	80	13	46	42	16	832	1	5	0	0	6
	5:00 PM	22	247	57	19	243	43	69	79	25	51	34	24	913	2	6	0	0	8
	5:15 PM	25	246	43	8	282	33	83	92	26	50	42	18	948	1	5	0	0	6
	5:30 PM	19	229	40	11	262	34	72	70	22	36	31	14	840	0	4	0	1	5
	5:45 PM	28	208	39	12	187	30	61	62	15	28	29	12	711	0	6	0	3	9
	VOLUMES	164	1,756	314	102	2,016	284	510	563	183	322	287	114	6,615	7	37	0	7	51
	APPROACH %	7%	79%	14%	4%	84%	12%	41%	45%	15%	45%	40%	16%						
	APP/DEPART	2,234	/	2,417	2,402	/	2,521	1,256	/	949	723	/	728	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	89	935	177	50	1,044	137	290	321	86	183	149	72	3,533					
	APPROACH %	7%	78%	15%	4%	85%	11%	42%	46%	12%	45%	37%	18%						
	PEAK HR FACTOR		0.921			0.953			0.867			0.918		0.932					
	APP/DEPART	1,201	/	1,317	1,231	/	1,316	697	/	529	404	/	371	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: 17th

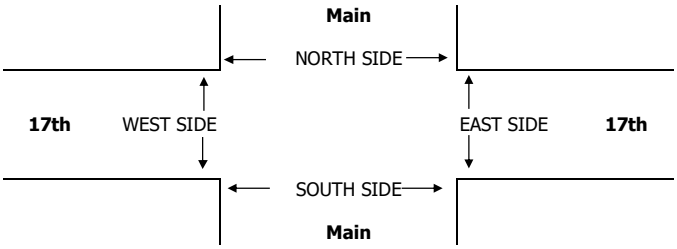
PROJECT #: SC2183
LOCATION #: 17
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND (Main)			SOUTHBOUND (Main)			EASTBOUND (17th)			WESTBOUND (17th)				U-TURNS				
	LANES:	NL 2	NT 2	NR 1	SL 2	ST 2	SR 0	EL 2	ET 3	ER 0	WL 2	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	19	107	16	23	233	12	27	300	16	64	222	6	1,045	0	0	1	3	4
	7:15 AM	27	164	20	37	287	13	26	301	22	64	294	5	1,260	0	0	0	1	1
	7:30 AM	33	190	37	48	288	14	20	302	14	88	337	4	1,375	0	0	0	2	2
	7:45 AM	36	218	62	61	268	23	29	304	14	100	347	4	1,466	0	0	1	1	2
	8:00 AM	30	180	42	47	232	19	39	305	10	69	309	5	1,287	0	0	1	3	4
	8:15 AM	29	130	15	43	220	13	30	287	23	48	255	15	1,108	0	0	2	2	4
	8:30 AM	16	125	35	34	201	17	26	265	24	39	220	11	1,013	0	0	1	3	4
	8:45 AM	22	138	14	30	195	15	29	218	17	32	192	18	920	0	0	1	2	3
	VOLUMES	212	1,252	241	323	1,924	126	226	2,282	140	504	2,176	68	9,474	0	0	7	17	24
	APPROACH %	12%	73%	14%	14%	81%	5%	9%	86%	5%	18%	79%	2%						
	APP/DEPART	1,705	/	1,539	2,373	/	2,551	2,648	/	2,863	2,748	/	2,521	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	126	752	161	193	1,075	69	114	1,212	60	321	1,287	18	5,388					
	APPROACH %	12%	72%	15%	14%	80%	5%	8%	87%	4%	20%	79%	1%						
	PEAK HR FACTOR		0.822			0.950			0.979			0.901		0.919					
	APP/DEPART	1,039	/	882	1,337	/	1,449	1,386	/	1,573	1,626	/	1,484	0					
PM	4:00 PM	39	236	54	33	164	28	43	273	20	47	263	17	1,217	0	1	2	3	6
	4:15 PM	56	253	49	40	188	30	48	300	26	37	259	20	1,306	0	0	2	1	3
	4:30 PM	47	243	49	44	196	26	47	283	15	50	279	24	1,303	0	1	2	2	5
	4:45 PM	45	255	63	42	193	22	56	313	18	55	291	16	1,369	0	0	1	2	3
	5:00 PM	47	257	58	45	172	37	67	328	13	34	249	11	1,318	0	0	8	0	8
	5:15 PM	52	254	36	46	175	41	49	325	22	32	228	16	1,276	0	0	2	1	3
	5:30 PM	46	242	41	51	176	31	46	291	18	37	299	13	1,291	0	0	2	0	2
	5:45 PM	38	263	40	50	158	19	59	276	22	41	280	7	1,253	0	0	3	2	5
	VOLUMES	370	2,003	390	351	1,422	234	415	2,389	154	333	2,148	124	10,333	0	2	22	11	35
	APPROACH %	13%	72%	14%	17%	71%	12%	14%	81%	5%	13%	82%	5%						
	APP/DEPART	2,763	/	2,522	2,007	/	1,898	2,958	/	3,139	2,605	/	2,774	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	195	1,008	219	171	749	115	218	1,224	72	176	1,078	71	5,296					
	APPROACH %	14%	71%	15%	17%	72%	11%	14%	81%	5%	13%	81%	5%						
	PEAK HR FACTOR		0.979			0.973			0.928			0.915		0.967					
	APP/DEPART	1,422	/	1,285	1,035	/	992	1,514	/	1,618	1,325	/	1,401	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:15 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: Civic Center

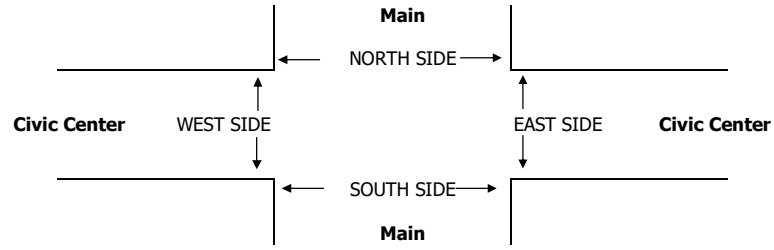
PROJECT #: SC0846
LOCATION #: 14
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Main			SOUTHBOUND Main			EASTBOUND Civic Center			WESTBOUND Civic Center				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	19	158	9	12	248	29	8	80	16	6	65	3	653	0	0	0	0	0
	7:15 AM	35	205	12	13	242	21	19	106	27	8	125	12	825	0	0	0	0	0
	7:30 AM	35	219	13	15	251	47	20	112	16	9	137	5	879	0	0	0	0	0
	7:45 AM	30	234	25	16	257	47	20	159	25	14	166	10	1,003	0	0	0	0	0
	8:00 AM	32	207	25	12	251	37	27	146	27	10	115	5	894	0	0	0	0	0
	8:15 AM	32	188	17	17	254	42	19	64	24	6	80	14	757	0	0	0	0	0
	8:30 AM	31	189	10	13	251	22	15	63	39	9	68	5	715	0	0	0	0	0
	8:45 AM	20	175	8	8	203	22	17	53	32	3	49	5	595	0	0	0	0	0
	VOLUMES	234	1,575	119	106	1,957	267	145	783	206	65	805	59	6,321	0	0	0	0	0
	APPROACH %	12%	82%	6%	5%	84%	11%	13%	69%	18%	7%	87%	6%						
	APP/DEPART	1,928	/	1,779	2,330	/	2,228	1,134	/	1,008	929	/	1,306	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	132	865	75	56	1,001	152	86	523	95	41	543	32	3,601					
	APPROACH %	12%	81%	7%	5%	83%	13%	12%	74%	13%	7%	88%	5%						
	PEAK HR FACTOR		0.927			0.945			0.863			0.811		0.898					
	APP/DEPART	1,072	/	983	1,209	/	1,137	704	/	654	616	/	827	0					
PM	4:00 PM	17	275	24	10	199	10	30	126	29	14	59	5	798	0	0	0	0	0
	4:15 PM	17	238	13	9	201	19	34	118	22	7	57	12	747	0	0	0	0	0
	4:30 PM	27	291	12	6	227	10	39	187	24	6	77	14	920	1	0	0	0	1
	4:45 PM	17	278	25	18	240	21	51	228	22	6	87	9	1,002	0	0	0	0	0
	5:00 PM	18	245	24	23	248	18	42	241	36	16	119	4	1,034	0	0	0	0	0
	5:15 PM	23	268	29	11	241	11	20	190	18	8	86	10	915	0	0	0	0	0
	5:30 PM	24	258	16	8	210	21	14	120	30	17	76	17	811	0	0	0	0	0
	5:45 PM	23	271	16	13	226	15	11	97	15	9	76	9	781	0	0	0	0	0
	VOLUMES	166	2,124	159	98	1,792	125	241	1,307	196	83	637	80	7,008	1	0	0	0	1
	APPROACH %	7%	87%	6%	5%	89%	6%	14%	75%	11%	10%	80%	10%						
	APP/DEPART	2,449	/	2,445	2,015	/	2,072	1,744	/	1,564	800	/	927	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	85	1,082	90	58	956	60	152	846	100	36	369	37	3,871					
	APPROACH %	7%	86%	7%	5%	89%	6%	14%	77%	9%	8%	83%	8%						
	PEAK HR FACTOR		0.952			0.929			0.861			0.795		0.936					
	APP/DEPART	1,257	/	1,271	1,074	/	1,093	1,098	/	994	442	/	513	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	9	1	2	3	15	9	0	2	3	14	0	1	0	0	1
	7:15 AM	1	1	15	3	20	1	1	14	3	19	0	0	1	0	1
	7:30 AM	1	7	6	2	16	0	6	4	2	12	1	1	2	0	4
	7:45 AM	0	6	6	6	18	0	4	6	4	14	0	2	0	2	4
	8:00 AM	8	5	8	1	22	8	2	8	1	19	0	3	0	0	3
	8:15 AM	18	1	8	8	35	17	1	6	7	31	1	0	2	1	4
	8:30 AM	13	6	7	7	33	13	6	5	7	31	0	0	2	0	2
	8:45 AM	12	0	10	5	27	12	0	7	4	23	0	0	3	1	4
	TOTAL	62	27	62	35	186	60	20	52	31	163	2	7	10	4	23
PM	4:00 PM	6	6	8	7	27	6	5	5	7	23	0	1	3	0	4
	4:15 PM	7	4	7	19	37	7	4	6	15	32	0	0	1	4	5
	4:30 PM	10	7	15	6	38	10	6	14	5	35	0	1	1	1	3
	4:45 PM	6	4	11	3	24	6	3	9	3	21	0	1	2	0	3
	5:00 PM	48	9	16	1	74	48	5	14	1	68	0	4	2	0	6
	5:15 PM	5	5	7	1	18	4	2	7	1	14	1	3	0	0	4
	5:30 PM	8	3	6	2	19	8	3	6	2	19	0	0	0	0	0
	5:45 PM	6	3	15	1	25	6	0	11	1	18	0	3	4	0	7
	TOTAL	96	41	85	40	262	95	28	72	35	230	1	13	13	5	32

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: Santa Ana

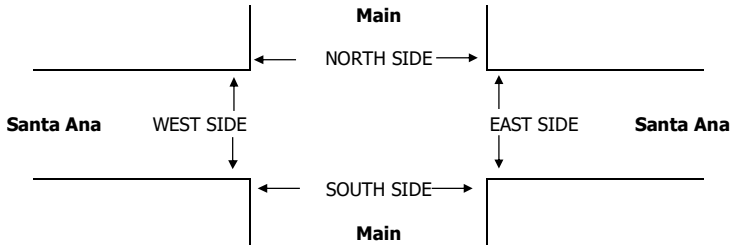
PROJECT #: SC0846
LOCATION #: 26
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Main			SOUTHBOUND Main			EASTBOUND Santa Ana			WESTBOUND Santa Ana				U-TURNS				
	LANES:	NL 1	NT 2	NR X	SL X	ST 2	SR 0	EL X	ET X	ER X	WL 0.5	WT 2	WR 0.5	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	10	149	0	0	240	25	0	0	0	14	152	6	596	0	0	0	0	0
	7:15 AM	16	220	0	0	273	22	0	0	0	19	153	14	717	0	0	0	0	0
	7:30 AM	16	241	0	0	270	26	0	0	0	15	233	15	816	0	0	0	0	0
	7:45 AM	15	334	0	0	258	17	0	0	0	8	203	15	850	0	0	0	0	0
	8:00 AM	18	245	0	0	262	29	0	0	0	16	225	18	813	0	0	0	0	0
	8:15 AM	11	207	0	0	235	42	0	0	0	17	148	15	675	0	0	0	0	0
	8:30 AM	15	217	0	0	288	28	0	0	0	15	144	9	716	0	0	0	0	0
	8:45 AM	15	167	0	0	203	26	0	0	0	13	116	14	554	0	0	0	0	0
	VOLUMES	116	1,780	0	0	2,029	215	0	0	0	117	1,374	106	5,737	0	0	0	0	0
	APPROACH %	6%	94%	0%	0%	90%	10%	0%	0%	0%	7%	86%	7%						
	APP/DEPART	1,896	/	1,886	2,244	/	2,146	0	/	0	1,597	/	1,705	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	65	1,040	0	0	1,063	94	0	0	0	58	814	62	3,196					
	APPROACH %	6%	94%	0%	0%	92%	8%	0%	0%	0%	6%	87%	7%						
	PEAK HR FACTOR		0.792			0.977			0.000			0.888		0.940					
	APP/DEPART	1,105	/	1,102	1,157	/	1,121	0	/	0	934	/	973	0					
PM	4:00 PM	12	261	0	0	219	9	0	0	0	17	146	18	682	0	0	0	0	0
	4:15 PM	10	251	0	0	218	12	0	0	0	2	113	13	619	0	0	0	0	0
	4:30 PM	12	302	0	0	217	7	0	0	0	15	122	17	692	0	0	0	0	0
	4:45 PM	10	330	0	0	247	12	0	0	0	15	157	19	790	0	0	0	0	0
	5:00 PM	16	250	0	0	300	15	0	0	0	18	127	25	751	0	0	0	0	0
	5:15 PM	14	319	0	0	263	12	0	0	0	15	177	20	820	0	0	0	0	0
	5:30 PM	11	282	0	0	230	11	0	0	0	14	169	17	734	0	0	0	0	0
	5:45 PM	6	254	0	0	252	10	0	0	0	15	147	20	704	0	0	0	0	0
	VOLUMES	91	2,249	0	0	1,946	88	0	0	0	111	1,158	149	5,792	0	0	0	0	0
	APPROACH %	4%	96%	0%	0%	96%	4%	0%	0%	0%	8%	82%	11%						
	APP/DEPART	2,340	/	2,398	2,034	/	2,057	0	/	0	1,418	/	1,337	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	51	1,181	0	0	1,040	50	0	0	0	62	630	81	3,095					
	APPROACH %	4%	96%	0%	0%	95%	5%	0%	0%	0%	8%	82%	10%						
	PEAK HR FACTOR		0.906			0.865			0.000			0.912		0.944					
	APP/DEPART	1,232	/	1,262	1,090	/	1,102	0	/	0	773	/	731	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	7	7	2	4	20	4	5	2	4	15	3	2	0	0	5
	7:15 AM	11	13	17	7	48	11	11	14	7	43	0	2	3	0	5
	7:30 AM	7	20	22	6	55	6	18	21	6	51	1	2	1	0	4
	7:45 AM	6	5	6	6	23	6	5	6	5	22	0	0	0	1	1
	8:00 AM	8	5	8	4	25	6	4	7	3	20	2	1	1	1	5
	8:15 AM	4	3	5	6	18	3	2	5	4	14	1	1	0	2	4
	8:30 AM	4	2	7	8	21	2	2	6	7	17	2	0	1	1	4
	8:45 AM	1	0	6	2	9	1	0	3	2	6	0	0	3	0	3
	TOTAL	48	55	73	43	219	39	47	64	38	188	9	8	9	5	31
PM	4:00 PM	7	5	6	8	26	5	4	5	6	20	2	1	1	2	6
	4:15 PM	4	4	7	14	29	4	4	7	14	29	0	0	0	0	0
	4:30 PM	11	8	10	15	44	8	7	9	13	37	3	1	1	2	7
	4:45 PM	12	2	11	9	34	11	2	10	6	29	1	0	1	3	5
	5:00 PM	9	8	6	21	44	8	6	5	20	39	1	2	1	1	5
	5:15 PM	8	18	6	21	53	8	18	6	21	53	0	0	0	0	0
	5:30 PM	12	2	10	9	33	10	1	9	7	27	2	1	1	2	6
	5:45 PM	3	3	10	11	27	3	2	8	9	22	0	1	2	2	5
	TOTAL	66	50	66	108	290	57	44	59	96	256	9	6	7	12	34

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: 4th

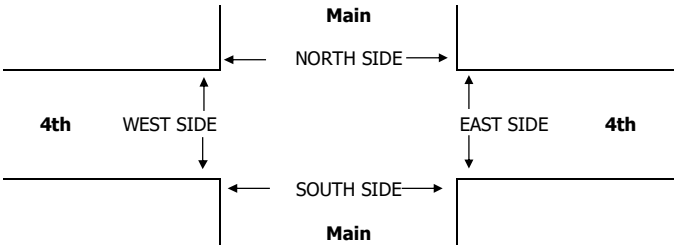
PROJECT #: SC0846
LOCATION #: 25
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Main			SOUTHBOUND Main			EASTBOUND 4th			WESTBOUND 4th				U-TURNS				
	LANES:	NL 0	NT 2	NR 0	SL 0	ST 2	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	169	4	0	244	8	0	12	5	0	10	6	458	0	0	0	0	0
	7:15 AM	0	202	5	0	276	4	0	21	2	0	18	6	534	0	0	0	0	0
	7:30 AM	0	251	4	0	258	7	0	25	2	0	27	9	583	0	0	0	0	0
	7:45 AM	0	271	9	0	261	3	0	25	3	0	35	5	612	0	0	0	0	0
	8:00 AM	0	214	4	0	260	11	0	18	6	0	29	6	548	0	0	0	0	0
	8:15 AM	0	184	8	2	239	11	0	16	7	0	48	7	522	0	0	0	0	0
	8:30 AM	0	208	7	0	272	8	1	14	3	1	43	11	568	0	0	0	0	0
	8:45 AM	0	168	5	0	216	5	0	13	5	1	29	13	455	0	0	0	0	0
	VOLUMES	0	1,667	46	2	2,026	57	1	144	33	2	239	63	4,280	0	0	0	0	0
	APPROACH %	0%	97%	3%	0%	97%	3%	1%	81%	19%	1%	79%	21%						
	APP/DEPART	1,713	/	1,731	2,085	/	2,061	178	/	192	304	/	296	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	0	938	22	0	1,055	25	0	89	13	0	109	26	2,277					
	APPROACH %	0%	98%	2%	0%	98%	2%	0%	87%	13%	0%	81%	19%						
	PEAK HR FACTOR		0.857			0.964			0.911			0.844		0.930					
	APP/DEPART	960	/	964	1,080	/	1,068	102	/	111	135	/	134	0					
PM	4:00 PM	0	254	12	0	206	7	0	32	12	0	37	19	579	0	0	0	0	0
	4:15 PM	2	239	9	0	195	7	1	27	6	1	41	8	536	0	0	0	0	0
	4:30 PM	0	261	20	0	224	8	1	24	10	2	40	10	600	0	0	0	0	0
	4:45 PM	0	270	16	0	220	13	0	27	8	1	43	14	612	0	0	0	0	0
	5:00 PM	0	235	8	0	274	12	2	17	17	3	38	14	620	0	0	0	0	0
	5:15 PM	0	259	7	0	257	10	1	27	14	0	45	8	628	0	0	0	0	0
	5:30 PM	0	249	17	0	245	10	1	23	13	0	47	8	613	0	0	0	0	0
	5:45 PM	0	247	10	0	220	14	0	17	22	2	38	22	592	0	0	0	0	0
	VOLUMES	2	2,014	99	0	1,841	81	6	194	102	9	329	103	4,780	0	0	0	0	0
	APPROACH %	0%	95%	5%	0%	96%	4%	2%	64%	34%	2%	75%	23%						
	APP/DEPART	2,115	/	2,123	1,922	/	1,952	302	/	293	441	/	412	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	0	1,013	48	0	996	45	4	94	52	4	173	44	2,473					
	APPROACH %	0%	95%	5%	0%	96%	4%	3%	63%	35%	2%	78%	20%						
	PEAK HR FACTOR		0.927			0.910			0.893			0.953		0.984					
	APP/DEPART	1,061	/	1,061	1,041	/	1,052	150	/	142	221	/	218	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	4	6	1	3	14	3	5	1	3	12	1	1	0	0	2
	7:15 AM	8	0	9	3	20	7	0	9	3	19	1	0	0	0	1
	7:30 AM	4	6	5	4	19	4	5	1	4	14	0	1	4	0	5
	7:45 AM	3	12	9	5	29	3	11	8	4	26	0	1	1	1	3
	8:00 AM	6	14	3	4	27	6	14	3	4	27	0	0	0	0	0
	8:15 AM	10	17	2	7	36	10	13	1	7	31	0	4	1	0	5
	8:30 AM	15	12	13	12	52	13	11	12	12	48	2	1	1	0	4
	8:45 AM	10	12	7	8	37	8	9	4	8	29	2	3	3	0	8
	TOTAL	60	79	49	46	234	54	68	39	45	206	6	11	10	1	28
PM	4:00 PM	32	44	24	26	126	32	44	23	24	123	0	0	1	2	3
	4:15 PM	48	61	28	31	168	46	60	27	31	164	2	1	1	0	4
	4:30 PM	39	76	31	39	185	37	71	27	34	169	2	5	4	5	16
	4:45 PM	32	66	18	23	139	31	66	16	23	136	1	0	2	0	3
	5:00 PM	51	42	13	28	134	51	40	12	26	129	0	2	1	2	5
	5:15 PM	29	45	16	24	114	28	45	16	22	111	1	0	0	2	3
	5:30 PM	39	71	22	33	165	35	71	21	29	156	4	0	1	4	9
	5:45 PM	34	41	20	21	116	34	40	17	20	111	0	1	3	1	5
	TOTAL	304	446	172	225	1,147	294	437	159	209	1,099	10	9	13	16	48

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: 1st

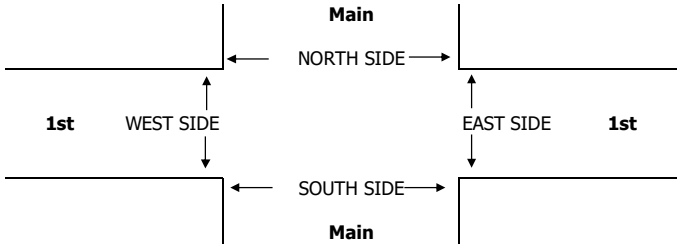
PROJECT #: SC2183
LOCATION #: 18
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Main			SOUTHBOUND Main			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	21	110	8	17	205	15	24	398	30	14	167	9	1,018	0	0	0	0	0
	7:15 AM	23	143	14	23	226	13	26	298	29	25	251	9	1,080	0	0	0	2	2
	7:30 AM	37	166	8	23	213	23	28	362	44	21	285	13	1,223	0	0	0	0	0
	7:45 AM	27	168	13	23	232	17	30	362	42	21	311	22	1,268	0	0	0	0	0
	8:00 AM	27	113	24	18	202	11	33	357	30	20	239	16	1,090	0	0	0	0	0
	8:15 AM	35	119	15	24	198	12	21	326	40	15	240	19	1,064	0	0	0	0	0
	8:30 AM	34	132	20	18	225	12	31	318	36	26	214	14	1,080	0	0	0	0	0
	8:45 AM	14	128	16	22	193	16	35	276	45	23	197	19	984	0	0	0	0	0
	VOLUMES	218	1,079	118	168	1,694	119	228	2,697	296	165	1,904	121	8,807	0	0	0	2	2
	APPROACH %	15%	76%	8%	8%	86%	6%	7%	84%	9%	8%	87%	6%						
	APP/DEPART	1,415	/	1,428	1,981	/	2,153	3,221	/	2,985	2,190	/	2,241	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	114	590	59	87	873	64	117	1,379	145	87	1,086	60	4,661					
	APPROACH %	15%	77%	8%	8%	85%	6%	7%	84%	9%	7%	88%	5%						
	PEAK HR FACTOR		0.904			0.941			0.945			0.871		0.919					
	APP/DEPART	763	/	767	1,024	/	1,103	1,641	/	1,527	1,233	/	1,264	0					
PM	4:00 PM	34	204	15	34	135	30	34	233	26	32	287	17	1,081	0	0	1	1	2
	4:15 PM	38	219	24	35	171	34	37	272	19	26	306	10	1,191	0	0	0	2	2
	4:30 PM	33	214	20	35	160	32	35	285	25	26	294	19	1,178	0	0	0	1	1
	4:45 PM	43	191	20	48	150	32	39	312	18	18	306	24	1,201	0	0	0	0	0
	5:00 PM	40	206	15	40	173	30	21	272	26	31	316	20	1,190	0	0	0	0	0
	5:15 PM	43	197	21	43	169	38	30	315	18	32	316	23	1,245	0	0	1	0	1
	5:30 PM	41	223	15	42	172	41	28	302	27	31	324	21	1,267	0	0	0	0	0
	5:45 PM	39	194	17	43	160	41	22	291	25	26	302	30	1,190	0	0	0	0	0
	VOLUMES	311	1,648	147	320	1,290	278	246	2,282	184	222	2,451	164	9,543	0	0	2	4	6
	APPROACH %	15%	78%	7%	17%	68%	15%	9%	84%	7%	8%	86%	6%						
	APP/DEPART	2,106	/	2,056	1,888	/	1,692	2,712	/	2,753	2,837	/	3,042	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	167	817	71	173	664	141	118	1,201	89	112	1,262	88	4,903					
	APPROACH %	16%	77%	7%	18%	68%	14%	8%	85%	6%	8%	86%	6%						
	PEAK HR FACTOR		0.945			0.959			0.954			0.972		0.967					
	APP/DEPART	1,055	/	1,022	978	/	865	1,408	/	1,445	1,462	/	1,571	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: McFadden

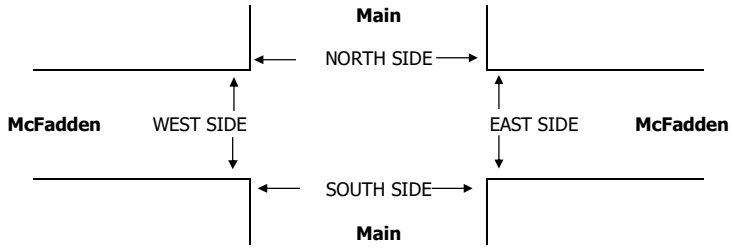
PROJECT #: SC0846
LOCATION #: 37
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Main			SOUTHBOUND Main			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	14	149	6	40	242	6	5	93	5	18	70	21	669	0	0	0	0	0
	7:15 AM	15	179	10	47	309	3	8	97	12	30	99	31	840	0	0	0	0	0
	7:30 AM	26	234	5	36	337	8	12	93	11	40	96	22	920	0	0	0	0	0
	7:45 AM	27	216	15	46	343	5	12	98	6	32	87	24	911	0	0	0	0	0
	8:00 AM	17	176	10	39	321	9	8	92	12	32	76	25	817	0	0	0	0	0
	8:15 AM	17	153	14	42	318	4	8	84	10	8	51	11	720	0	0	0	0	0
	8:30 AM	22	173	11	25	247	14	14	68	11	11	49	28	673	0	0	0	0	0
	8:45 AM	19	148	7	30	302	8	9	68	15	14	79	8	707	0	0	0	0	0
	VOLUMES	157	1,428	78	305	2,419	57	76	693	82	185	607	170	6,257	0	0	0	0	0
	APPROACH %	9%	86%	5%	11%	87%	2%	9%	81%	10%	19%	63%	18%						
	APP/DEPART	1,663	/	1,674	2,781	/	2,686	851	/	1,076	962	/	821	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	85	805	40	168	1,310	25	40	380	41	134	358	102	3,488					
	APPROACH %	9%	87%	4%	11%	87%	2%	9%	82%	9%	23%	60%	17%						
	PEAK HR FACTOR		0.877			0.954			0.985			0.928		0.948					
	APP/DEPART	930	/	947	1,503	/	1,485	461	/	588	594	/	468	0					
PM	4:00 PM	35	268	13	30	175	13	18	80	13	17	112	31	805	0	0	0	0	0
	4:15 PM	37	291	8	38	174	14	12	77	15	22	123	57	868	0	0	0	0	0
	4:30 PM	31	283	17	33	195	19	18	77	7	20	121	49	870	0	0	0	0	0
	4:45 PM	34	283	11	27	189	10	21	83	10	21	121	40	850	0	0	0	0	0
	5:00 PM	39	286	12	33	198	7	17	82	9	10	117	60	870	0	0	0	0	0
	5:15 PM	32	256	17	29	229	21	18	84	11	23	115	41	876	0	0	0	1	1
	5:30 PM	35	292	28	36	276	23	20	68	10	27	96	49	960	0	0	0	0	0
	5:45 PM	34	268	11	30	169	12	19	97	10	21	133	57	861	0	0	0	0	0
	VOLUMES	277	2,227	117	256	1,605	119	143	648	85	161	938	384	6,960	0	0	0	1	1
	APPROACH %	11%	85%	4%	13%	81%	6%	16%	74%	10%	11%	63%	26%						
	APP/DEPART	2,621	/	2,754	1,980	/	1,850	876	/	1,022	1,483	/	1,334	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	140	1,102	68	128	872	63	74	331	40	81	461	207	3,567					
	APPROACH %	11%	84%	5%	12%	82%	6%	17%	74%	9%	11%	62%	28%						
	PEAK HR FACTOR		0.923			0.793			0.883			0.887		0.929					
	APP/DEPART	1,310	/	1,383	1,063	/	992	445	/	528	749	/	664	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	6	2	5	4	17	4	2	4	4	14	2	0	1	0	3
	7:15 AM	4	5	11	5	25	4	5	11	5	25	0	0	0	0	0
	7:30 AM	9	16	20	20	65	8	16	18	18	60	1	0	2	2	5
	7:45 AM	9	9	30	32	80	8	9	29	29	75	1	0	1	3	5
	8:00 AM	7	14	12	25	58	6	13	12	25	56	1	1	0	0	2
	8:15 AM	6	5	8	13	32	5	5	8	11	29	1	0	0	2	3
	8:30 AM	7	6	9	4	26	4	3	8	3	18	3	3	1	1	8
	8:45 AM	4	2	13	19	38	2	2	12	14	30	2	0	1	5	8
	TOTAL	52	59	108	122	341	41	55	102	109	307	11	4	6	13	34
PM	4:00 PM	10	11	20	22	63	8	10	18	17	53	2	1	2	5	10
	4:15 PM	5	8	13	17	43	4	6	9	17	36	1	2	4	0	7
	4:30 PM	14	13	26	22	75	12	8	22	20	62	2	5	4	2	13
	4:45 PM	21	30	29	15	95	18	25	29	13	85	3	5	0	2	10
	5:00 PM	11	3	12	9	35	10	2	8	4	24	1	1	4	5	11
	5:15 PM	13	13	19	18	63	12	12	18	16	58	1	1	1	2	5
	5:30 PM	9	10	15	12	46	8	9	14	12	43	1	1	1	0	3
	5:45 PM	12	13	8	27	60	10	10	8	25	53	2	3	0	2	7
	TOTAL	95	101	142	142	480	82	82	126	124	414	13	19	16	18	66

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: Edinger

PROJECT #: SC2183
LOCATION #: 19
CONTROL: SIGNAL

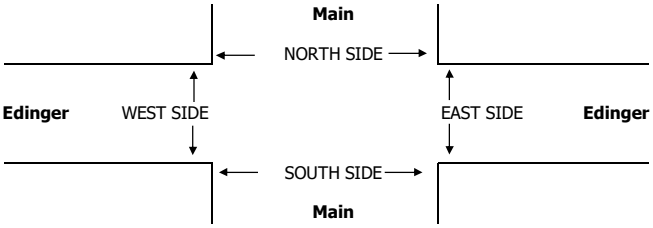
NOTES:

AM / PM / MD / OTHER / OTHER

▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Main			SOUTHBOUND Main			EASTBOUND Edinger			WESTBOUND Edinger				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 1	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	18	115	19	34	247	18	14	241	38	20	149	15	928	0	0	0	0	0
	7:15 AM	21	158	17	47	248	14	15	243	35	28	184	26	1,036	0	0	2	3	5
	7:30 AM	27	171	18	61	265	17	9	246	38	31	159	21	1,063	0	0	0	2	2
	7:45 AM	28	128	13	59	244	12	23	250	28	38	165	24	1,012	0	0	1	2	3
	8:00 AM	31	153	18	58	284	11	27	222	28	23	193	15	1,063	0	0	0	1	1
	8:15 AM	23	126	19	47	265	9	19	212	21	17	194	22	974	0	0	0	1	1
	8:30 AM	21	102	21	34	233	13	32	220	37	24	141	16	894	0	0	0	3	3
	8:45 AM	10	104	21	22	272	18	18	183	25	27	100	20	820	0	0	1	2	3
	VOLUMES	179	1,057	146	362	2,058	112	157	1,817	250	208	1,285	159	7,790	0	0	4	14	18
	APPROACH %	13%	76%	11%	14%	81%	4%	7%	82%	11%	13%	78%	10%						
	APP/DEPART	1,382	/	1,369	2,532	/	2,502	2,224	/	2,339	1,652	/	1,580	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	107	610	66	225	1,041	54	74	961	129	120	701	86	4,174					
	APPROACH %	14%	78%	8%	17%	79%	4%	6%	83%	11%	13%	77%	9%						
	PEAK HR FACTOR		0.906			0.935			0.967			0.953		0.982					
	APP/DEPART	783	/	767	1,320	/	1,282	1,164	/	1,260	907	/	865	0					
PM	4:00 PM	21	237	17	32	121	22	41	171	26	20	297	39	1,044	0	0	0	0	0
	4:15 PM	27	226	11	34	133	34	38	180	26	28	316	31	1,084	0	0	1	1	2
	4:30 PM	23	253	14	21	139	9	21	195	17	18	328	27	1,065	0	0	1	2	3
	4:45 PM	14	272	13	20	146	30	29	160	15	13	297	30	1,039	0	0	0	0	0
	5:00 PM	29	250	12	39	137	13	34	164	23	23	330	29	1,083	0	0	2	2	4
	5:15 PM	33	243	15	33	148	20	36	203	23	27	325	32	1,138	0	0	0	2	2
	5:30 PM	18	259	9	28	180	26	22	194	24	23	320	33	1,136	0	0	1	1	2
	5:45 PM	18	287	11	20	137	23	33	183	13	23	308	38	1,094	0	0	0	2	2
	VOLUMES	183	2,027	102	227	1,141	177	254	1,450	167	175	2,521	259	8,683	0	0	5	10	15
	APPROACH %	8%	88%	4%	15%	74%	11%	14%	77%	9%	6%	85%	9%						
	APP/DEPART	2,312	/	2,535	1,545	/	1,473	1,871	/	1,789	2,955	/	2,886	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	98	1,039	47	120	602	82	125	744	83	96	1,283	132	4,451					
	APPROACH %	8%	88%	4%	15%	75%	10%	13%	78%	9%	6%	85%	9%						
	PEAK HR FACTOR		0.937			0.859			0.908			0.984		0.978					
	APP/DEPART	1,184	/	1,293	804	/	774	952	/	918	1,511	/	1,466	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	5:00 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Main
EAST & WEST: MacArthur

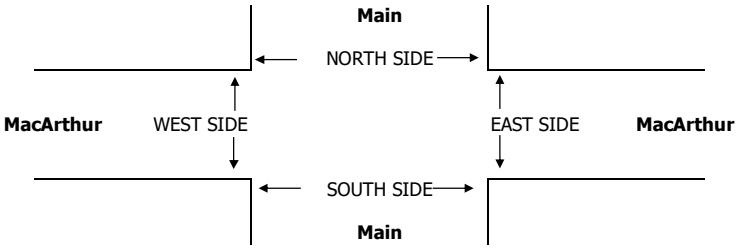
PROJECT #: SC2183
LOCATION #: 20
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Main			SOUTHBOUND Main			EASTBOUND MacArthur			WESTBOUND MacArthur				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 2	ST 3	SR 1	EL 2	ET 3	ER 1	WL 2	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	11	59	34	159	178	36	35	308	35	43	109	54	1,061	3	8	7	0	18
	7:15 AM	15	53	64	156	193	54	32	358	58	31	106	66	1,186	3	5	1	0	9
	7:30 AM	12	84	67	188	221	66	60	372	61	42	123	40	1,336	2	16	2	1	21
	7:45 AM	13	88	72	157	233	40	84	349	72	36	109	46	1,299	4	8	2	1	15
	8:00 AM	13	82	58	137	192	30	61	300	58	35	92	63	1,121	3	7	1	1	12
	8:15 AM	12	63	43	146	217	43	50	304	73	41	95	47	1,134	1	6	4	1	12
	8:30 AM	13	53	63	131	216	31	53	339	72	36	92	42	1,141	4	3	2	4	13
	8:45 AM	13	49	65	129	198	37	44	301	75	40	88	40	1,079	4	6	2	3	15
	VOLUMES	102	531	466	1,203	1,648	337	419	2,631	504	304	814	398	9,357	24	59	21	11	115
	APPROACH %	9%	48%	42%	38%	52%	11%	12%	74%	14%	20%	54%	26%						
	APP/DEPART	1,099	/	1,386	3,188	/	2,469	3,554	/	4,252	1,516	/	1,250	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	53	307	261	638	839	190	237	1,379	249	144	430	215	4,942					
	APPROACH %	9%	49%	42%	38%	50%	11%	13%	74%	13%	18%	54%	27%						
	PEAK HR FACTOR		0.897			0.877			0.923			0.962		0.925					
	APP/DEPART	621	/	789	1,667	/	1,241	1,865	/	2,245	789	/	667	0					
PM	4:00 PM	97	244	95	68	71	61	51	132	18	34	362	125	1,358	5	2	0	3	10
	4:15 PM	88	277	79	69	85	55	49	145	17	36	405	118	1,423	3	6	3	2	14
	4:30 PM	113	256	78	67	85	67	65	131	14	43	373	107	1,399	7	2	3	2	14
	4:45 PM	109	215	85	75	87	52	72	150	16	43	384	133	1,421	6	8	11	2	27
	5:00 PM	118	285	75	58	81	65	66	153	10	43	408	97	1,459	8	4	3	2	17
	5:15 PM	123	333	89	76	82	80	70	180	15	51	397	107	1,603	3	8	4	1	16
	5:30 PM	125	272	77	72	98	63	79	143	16	49	381	123	1,498	6	10	4	3	23
	5:45 PM	117	267	76	74	103	67	80	130	17	53	368	124	1,476	4	6	5	2	17
	VOLUMES	890	2,149	654	559	692	510	532	1,164	123	352	3,078	934	11,637	42	46	33	17	138
	APPROACH %	24%	58%	18%	32%	39%	29%	29%	64%	7%	8%	71%	21%						
	APP/DEPART	3,693	/	3,628	1,761	/	1,192	1,819	/	2,348	4,364	/	4,469	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	483	1,157	317	280	364	275	295	606	58	196	1,554	451	6,036					
	APPROACH %	25%	59%	16%	30%	40%	30%	31%	63%	6%	9%	71%	20%						
	PEAK HR FACTOR		0.898			0.942			0.905			0.991		0.941					
	APP/DEPART	1,957	/	1,915	919	/	631	959	/	1,183	2,201	/	2,307	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	5:00 PM					0	0	0	0	0					

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: PENN WAY
E-W Direction: 17TH STREET

File Name : H1702011
Site Code : 00000000
Start Date : 2/9/2017
Page No : 1

Groups Printed- Turning Movements

	DEAD END Southbound			17TH STREET Westbound				PENN WAY Northbound				17TH STREET Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Int. Total
07:00	0	0	0	0	298	46	0	44	0	7	0	164	280	0	839
07:15	0	0	0	0	394	55	0	70	0	10	0	163	260	0	952
07:30	0	0	0	0	471	47	0	53	0	6	0	165	321	0	1063
07:45	0	0	0	0	461	68	1	50	0	14	0	162	288	0	1044
Total	0	0	0	0	1624	216	1	217	0	37	0	654	1149	0	3898
08:00	0	0	0	0	345	37	0	37	0	11	0	122	332	0	884
08:15	0	0	0	0	280	37	0	38	0	7	0	137	280	0	779
08:30	0	0	0	0	299	32	0	41	0	7	1	116	255	0	751
08:45	0	0	0	0	307	25	0	52	0	14	0	99	231	0	728
Total	0	0	0	0	1231	131	0	168	0	39	1	474	1098	0	3142
*** BREAK ***															
16:00	0	0	0	0	327	28	1	98	0	23	1	102	326	0	906
16:15	0	0	0	0	405	26	0	78	0	21	0	106	304	0	940
16:30	0	0	0	0	350	40	1	89	0	18	0	111	335	0	944
16:45	0	0	0	0	360	30	0	98	0	19	1	113	329	0	950
Total	0	0	0	0	1442	124	2	363	0	81	2	432	1294	0	3740
17:00	0	0	0	0	335	30	1	108	0	24	0	149	413	0	1060
17:15	0	0	0	0	394	27	0	99	0	27	0	118	388	0	1053
17:30	0	0	0	0	337	35	1	110	0	15	1	122	339	0	960
17:45	0	0	0	0	331	27	0	84	0	17	1	108	403	0	971
Total	0	0	0	0	1397	119	2	401	0	83	2	497	1543	0	4044
Grand Total	0	0	0	0	5694	590	5	1149	0	240	5	2057	5084	0	14824
Apprch %	0	0	0	0	90.5	9.4	0.1	82.4	0	17.2	0.4	28.8	71.2	0	
Total %	0	0	0	0	38.4	4	0	7.8	0	1.6	0	13.9	34.3	0	

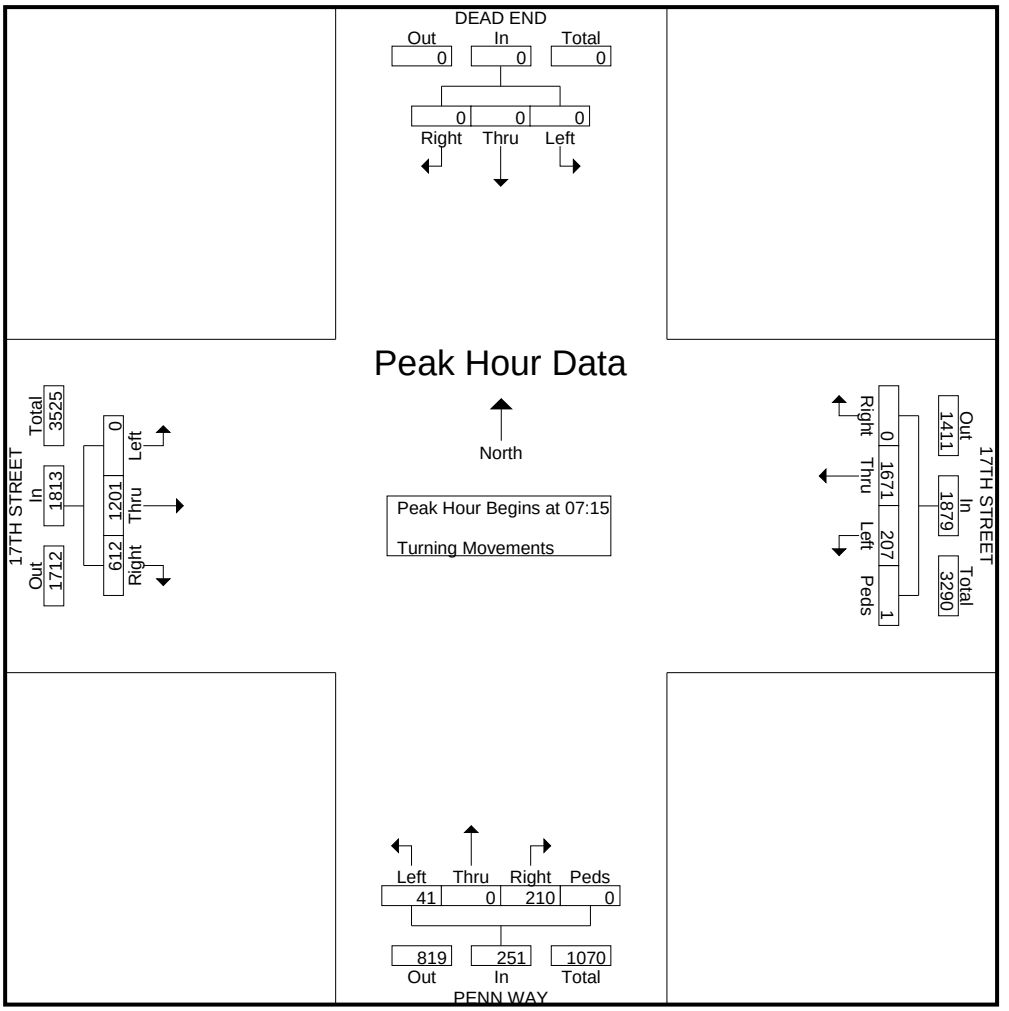
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: PENN WAY
E-W Direction: 17TH STREET

File Name : H1702011
Site Code : 00000000
Start Date : 2/9/2017
Page No : 2

	DEAD END Southbound				17TH STREET Westbound					PENN WAY Northbound					17TH STREET Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15																			
07:15	0	0	0	0	0	394	55	0	449	70				80					
07:30	0	0	0	0	0	471	47	0	518	53	0	6	0	59	165	321	0	**486**	**1063**
07:45	**0**	**0**	**0**	**0**	**0**	**461**	**68**	**1**	**530**	**50**	**0**	**14**	0	64	162	288	0	450	1044
08:00	0	0	0	0	0	345	37	0	382	37	0	11	0	48	122	**332**	0	454	884
Total Volume	0	0	0	0	0	1671	207	1	1879	210	0	41	0	251	612	1201	0	1813	3943
% App. Total	0	0	0		0	88.9	11	0.1		83.7	0	16.3	0		33.8	66.2	0		
PHF	.000	.000	.000	.000	.000	.887	.761	.250	.886	.750	.000	.732	.000	.784	.927	.904	.000	.933	.927



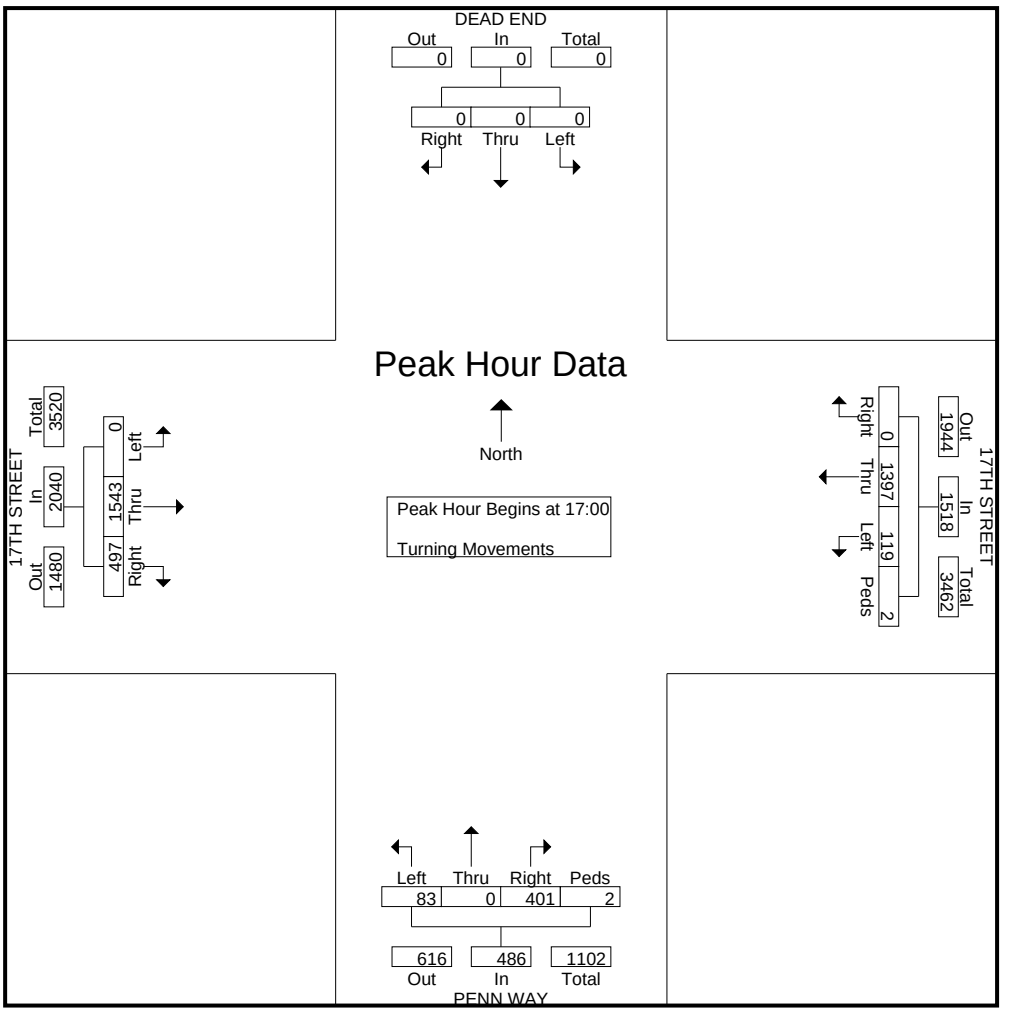
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: PENN WAY
E-W Direction: 17TH STREET

File Name : H1702011
Site Code : 00000000
Start Date : 2/9/2017
Page No : 3

	DEAD END Southbound				17TH STREET Westbound					PENN WAY Northbound					17TH STREET Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 17:00																			
17:00	0	0	0	0	0	335	30	1	366	108	0	24	0	132	149	413	0	**562**	**1060**
17:15	**0**	**0**	**0**	**0**	**0**	**394**	**27**	**0**	**421**	**99**	**0**	**27**	0	126	118	388	0	506	1053
17:30	0	0	0	0	0	337	**35**	1	373	**110**	0	15	**1**	126	122	339	0	461	960
17:45	0	0	0	0	0	331	27	0	358	84	0	17	1	102	108	403	0	511	971
Total Volume	0	0	0	0	0	1397	119	2	1518	401	0	83	2	486	497	1543	0	2040	4044
% App. Total	0	0	0		0	92	7.8	0.1		82.5	0	17.1	0.4		24.4	75.6	0		
PHF	.000	.000	.000	.000	.000	.886	.850	.500	.901	.911	.000	.769	.500	.920	.834	.934	.000	.907	.954



INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: I-5 NB Ramps
EAST & WEST: 17th

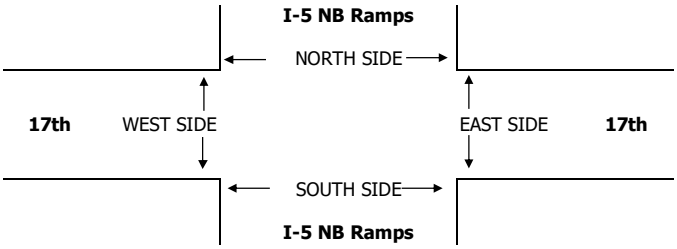
PROJECT #: SC2183
LOCATION #: 30
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — N / W / E / S

Add U-Turns to Left Turns

		NORTHBOUND I-5 NB Ramps			SOUTHBOUND I-5 NB Ramps			EASTBOUND 17th			WESTBOUND 17th				U-TURNS				
	LANES:	NL 1.5	NT 0.5	NR 1	SL 1	ST X	SR 1	EL 1	ET 3	ER 1	WL X	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	129	11	9	7	0	51	21	188	65	0	200	1	682	0	0	3	0	3
	7:15 AM	180	16	1	15	0	54	15	255	65	0	259	4	864	0	0	5	0	5
	7:30 AM	220	5	10	14	0	69	21	266	91	0	304	7	1,007	0	0	4	0	4
	7:45 AM	201	8	6	15	0	100	29	276	108	0	365	4	1,112	0	0	7	0	7
	8:00 AM	159	5	4	12	0	69	33	232	108	0	304	4	930	0	0	11	0	11
	8:15 AM	151	5	11	9	0	48	20	227	52	0	206	6	735	0	0	2	0	2
	8:30 AM	130	12	11	5	0	45	23	223	60	0	201	8	718	0	0	4	0	4
	8:45 AM	110	8	3	12	0	35	16	192	67	0	202	9	654	0	0	5	0	5
	VOLUMES	1,280	70	55	89	0	471	178	1,859	616	0	2,041	43	6,702	0	0	41	0	41
	APPROACH %	91%	5%	4%	16%	0%	84%	7%	70%	23%	0%	98%	2%						
	APP/DEPART	1,405	/	250	560	/	616	2,653	/	2,003	2,084	/	3,833	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	760	34	21	56	0	292	98	1,029	372	0	1,232	19	3,913					
	APPROACH %	93%	4%	3%	16%	0%	84%	7%	69%	25%	0%	98%	2%						
	PEAK HR FACTOR		0.867			0.757			0.907			0.848		0.880					
	APP/DEPART	815	/	124	348	/	372	1,499	/	1,106	1,251	/	2,311	0					
PM	4:00 PM	81	9	5	5	0	24	26	240	157	0	353	10	910	0	0	8	0	8
	4:15 PM	88	14	4	15	0	33	28	251	128	0	374	9	944	0	0	5	0	5
	4:30 PM	86	8	3	6	0	33	27	228	202	0	367	13	973	0	0	3	0	3
	4:45 PM	83	12	6	9	0	32	29	286	176	0	377	7	1,017	0	0	8	0	8
	5:00 PM	84	11	4	20	0	33	34	323	208	0	391	11	1,119	0	0	6	0	6
	5:15 PM	80	23	4	9	0	42	29	262	141	0	303	9	902	0	0	4	0	4
	5:30 PM	71	14	6	11	0	39	31	241	113	0	361	14	901	0	0	4	0	4
	5:45 PM	94	12	7	17	0	34	29	273	93	0	341	5	905	0	0	10	0	10
	VOLUMES	667	103	39	92	0	270	233	2,104	1,218	0	2,867	78	7,671	0	0	48	0	48
	APPROACH %	82%	13%	5%	25%	0%	75%	7%	59%	34%	0%	97%	3%						
	APP/DEPART	809	/	366	362	/	1,218	3,555	/	2,235	2,945	/	3,852	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	341	45	17	50	0	131	118	1,088	714	0	1,509	40	4,053					
	APPROACH %	85%	11%	4%	28%	0%	72%	6%	57%	37%	0%	97%	3%						
	PEAK HR FACTOR		0.950			0.854			0.850			0.963		0.905					
	APP/DEPART	403	/	181	181	/	714	1,920	/	1,155	1,549	/	2,003	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:15 PM					0	0	0	0	0					

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: PENN WAY
E-W Direction: I-5 SB RAMPS

File Name : H1702012
Site Code : 00000000
Start Date : 2/9/2017
Page No : 1

Groups Printed- Turning Movements

	PENN WAY Southbound			I-5 SB RAMPS Westbound			PENN WAY Northbound			DEAD END Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	0	31	198	22	0	44	18	29	0	0	0	0	342
07:15	0	32	196	36	0	39	32	41	0	0	0	0	376
07:30	0	37	191	19	0	38	35	40	0	0	0	0	360
07:45	0	60	190	20	0	52	50	43	0	0	0	0	415
Total	0	160	775	97	0	173	135	153	0	0	0	0	1493
08:00	0	30	144	21	0	48	37	27	0	0	0	0	307
08:15	0	28	153	20	0	17	32	28	0	0	0	0	278
08:30	0	20	139	34	0	21	19	17	0	0	0	0	250
08:45	0	18	113	31	0	23	18	33	0	0	0	0	236
Total	0	96	549	106	0	109	106	105	0	0	0	0	1071
*** BREAK ***													
16:00	0	25	111	57	0	40	44	64	0	0	0	0	341
16:15	0	22	114	45	0	51	37	59	0	0	0	0	328
16:30	0	33	105	31	0	46	69	74	0	0	0	0	358
16:45	0	30	130	43	0	52	51	70	0	0	0	0	376
Total	0	110	460	176	0	189	201	267	0	0	0	0	1403
17:00	0	32	152	40	0	41	77	94	0	0	0	0	436
17:15	0	30	119	34	0	37	63	92	0	0	0	0	375
17:30	0	31	132	28	0	39	40	96	0	0	0	0	366
17:45	0	39	112	27	0	29	22	74	0	0	0	0	303
Total	0	132	515	129	0	146	202	356	0	0	0	0	1480
Grand Total	0	498	2299	508	0	617	644	881	0	0	0	0	5447
Apprch %	0	17.8	82.2	45.2	0	54.8	42.2	57.8	0	0	0	0	
Total %	0	9.1	42.2	9.3	0	11.3	11.8	16.2	0	0	0	0	

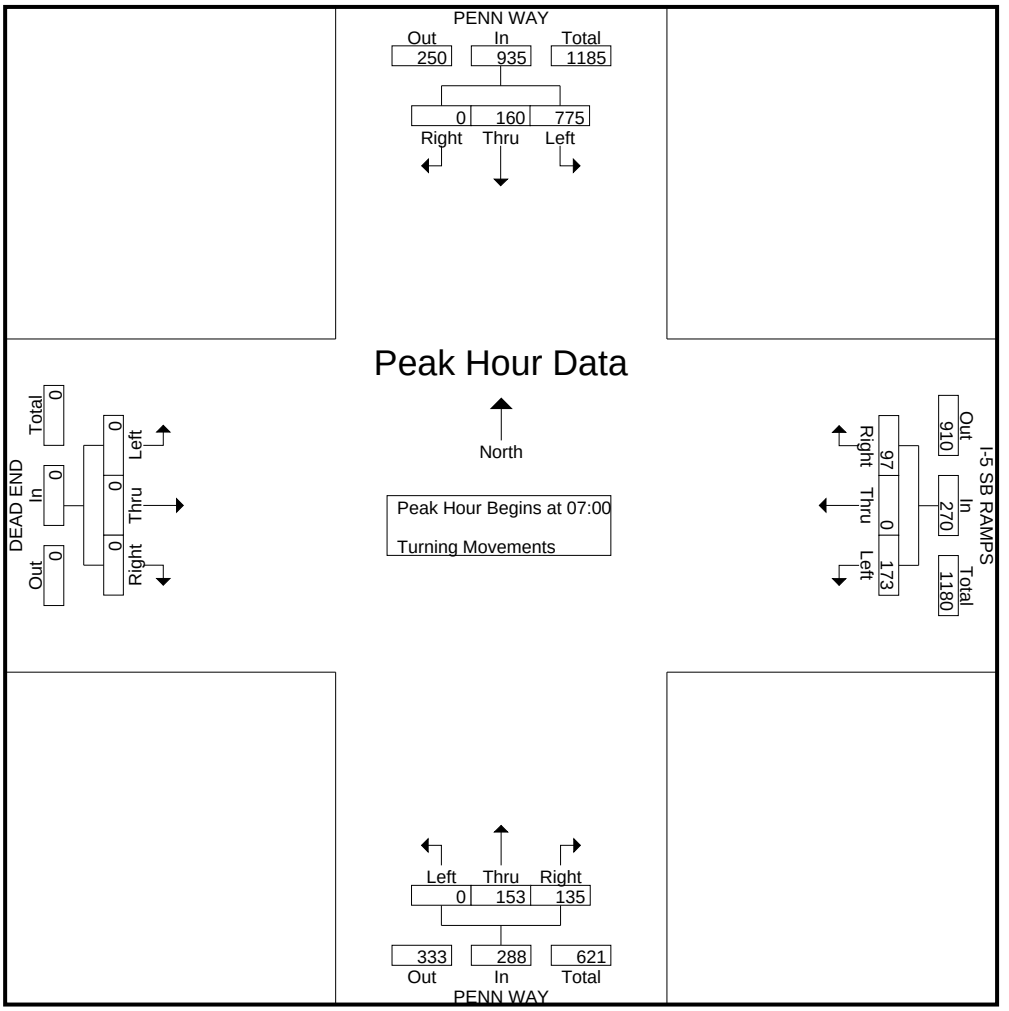
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: PENN WAY
E-W Direction: I-5 SB RAMPS

File Name : H1702012
Site Code : 00000000
Start Date : 2/9/2017

	PENN WAY Southbound				I-5 SB RAMPS Westbound				PENN WAY Northbound				DEAD END Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00																	
07:00	0	31	**198**	229	22	0	44	66	18	29	0	47	0	0	0	0	342
07:15	0	32	196	228	**36**	0	39	**75**	32	41	0	73	0	0	0	0	376
07:30	0	37	191	228	19	0	38	57	35	40	0	75	0	0	0	0	360
07:45	0	**60**	190	**250**	20	0	**52**	72	**50**	**43**	0	**93**	0	0	0	0	**415**
Total Volume	0	160	775	935	97	0	173	270	135	153	0	288	0	0	0	0	1493
% App. Total	0	17.1	82.9		35.9	0	64.1		46.9	53.1	0		0	0	0		
PHF	.000	.667	.979	.935	.674	.000	.832	.900	.675	.890	.000	.774	.000	.000	.000	.000	.899



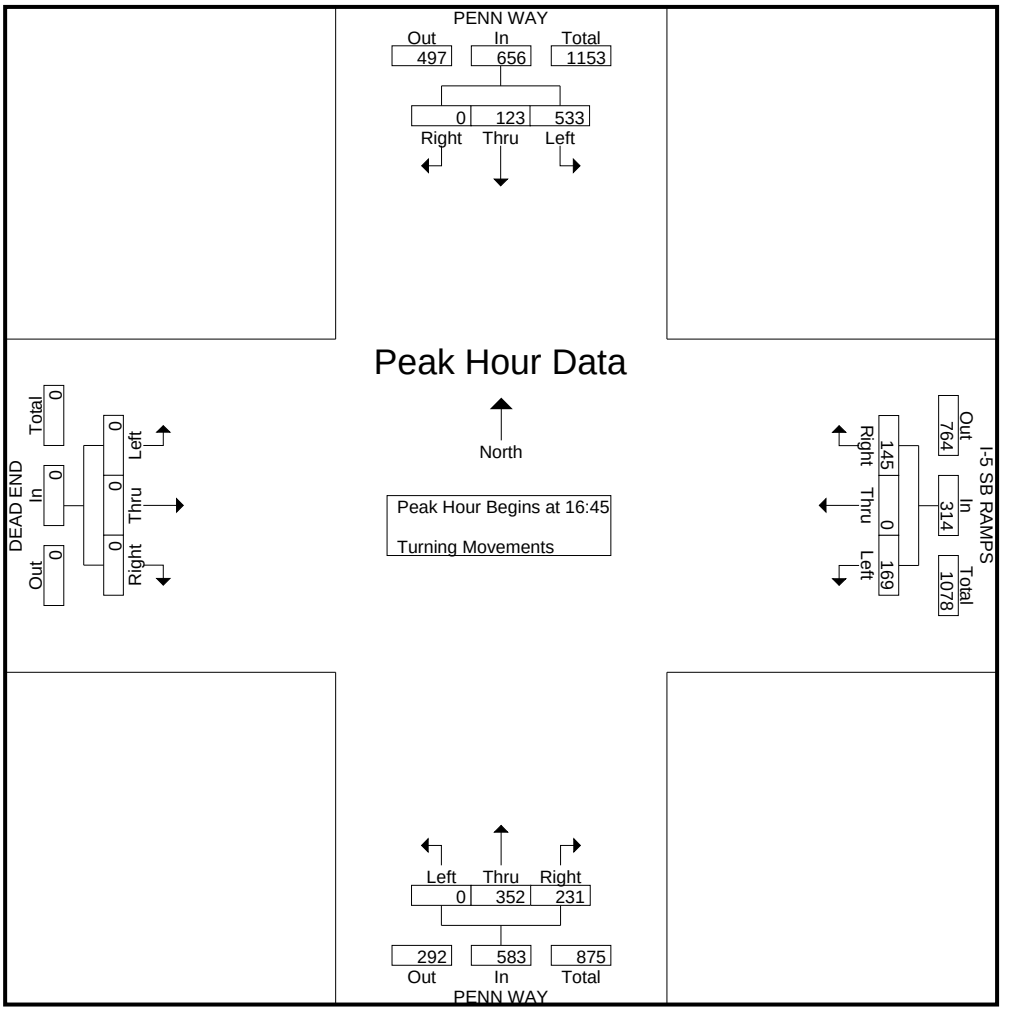
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: PENN WAY
E-W Direction: I-5 SB RAMPS

File Name : H1702012
Site Code : 00000000
Start Date : 2/9/2017
Page No : 3

	PENN WAY Southbound				I-5 SB RAMPS Westbound				PENN WAY Northbound				DEAD END Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	0	30	130	160	**43**	0	**52**	**95**	51	70	0	121	0	0	0	0	376
17:00	0	**32**	**152**	**184**	40	0	41	81	**77**	94	0	**171**	0	0	0	0	**436**
17:15	0	30	119	149	34	0	37	71	63	92	0	155	0	0	0	0	375
17:30	0	31	132	163	28	0	39	67	40	**96**	0	136	0	0	0	0	366
Total Volume	0	123	533	656	145	0	169	314	231	352	0	583	0	0	0	0	1553
% App. Total	0	18.8	81.2		46.2	0	53.8		39.6	60.4	0		0	0	0		
PHF	.000	.961	.877	.891	.843	.000	.813	.826	.750	.917	.000	.852	.000	.000	.000	.000	.890



Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: SANTIAGO STREET
E-W Direction: CIVIC CENTER DRIVE

File Name : H1702013
Site Code : 00000000
Start Date : 2/9/2017
Page No : 1

Groups Printed- Turning Movements

	SANTIAGO STREET Southbound			CIVIC CENTER DRIVE Westbound			SANTIAGO STREET Northbound			CIVIC CENTER DRIVE Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	12	60	0	1	6	8	1	22	15	33	4	16	178
07:15	15	73	0	3	12	14	1	20	37	47	9	30	261
07:30	22	82	0	4	14	14	6	41	55	67	11	31	347
07:45	16	70	3	2	23	25	6	44	69	63	13	29	363
Total	65	285	3	10	55	61	14	127	176	210	37	106	1149
08:00	18	69	1	3	15	16	6	33	38	61	11	27	298
08:15	9	35	1	1	1	7	5	19	29	27	8	12	154
08:30	5	44	1	3	1	6	3	8	18	26	9	9	133
08:45	5	43	0	0	1	4	3	18	25	20	6	15	140
Total	37	191	3	7	18	33	17	78	110	134	34	63	725
*** BREAK ***													
16:00	5	52	0	1	4	3	3	46	18	45	6	37	220
16:15	10	41	2	2	3	4	4	59	15	32	8	33	213
16:30	7	48	1	2	3	1	2	48	26	44	12	64	258
16:45	14	47	2	5	3	3	12	59	27	68	20	67	327
Total	36	188	5	10	13	11	21	212	86	189	46	201	1018
17:00	16	38	3	6	8	2	8	70	25	90	20	77	363
17:15	6	47	3	4	4	2	5	76	24	54	16	66	307
17:30	10	49	4	2	3	6	4	85	18	49	17	48	295
17:45	10	51	1	1	6	3	6	65	22	37	11	50	263
Total	42	185	11	13	21	13	23	296	89	230	64	241	1228
Grand Total	180	849	22	40	107	118	75	713	461	763	181	611	4120
Apprch %	17.1	80.8	2.1	15.1	40.4	44.5	6	57.1	36.9	49.1	11.6	39.3	
Total %	4.4	20.6	0.5	1	2.6	2.9	1.8	17.3	11.2	18.5	4.4	14.8	

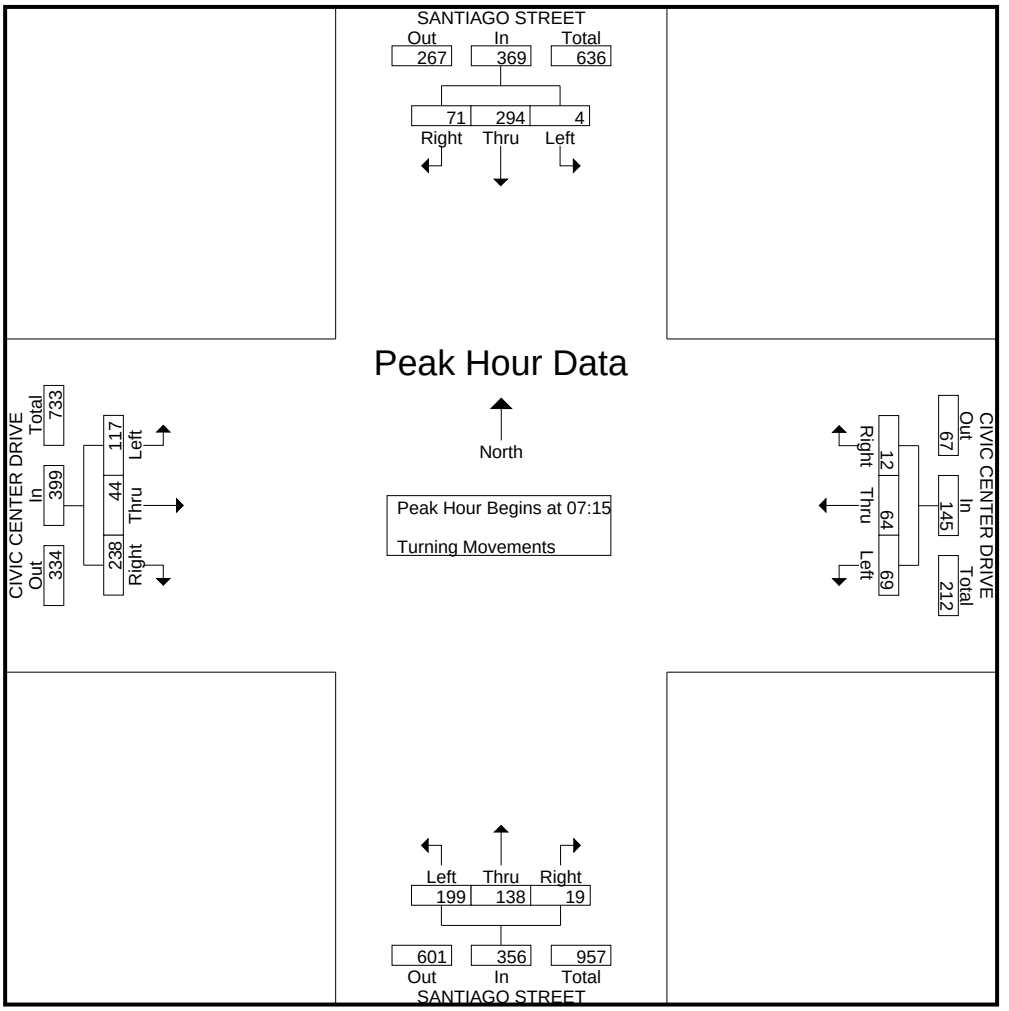
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: SANTIAGO STREET
E-W Direction: CIVIC CENTER DRIVE

File Name : H1702013
Site Code : 00000000
Start Date : 2/9/2017
Page No : 2

	SANTIAGO STREET Southbound				CIVIC CENTER DRIVE Westbound				SANTIAGO STREET Northbound				CIVIC CENTER DRIVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	15	73	0	88	3	12	14	29	1	20	37	58	47	9	30	86	261
07:30	**22**	**82**	0	**104**	**4**	14	14	32	**6**	41	55	102	**67**	11	**31**	**109**	347
07:45	16	70	**3**	89	2	**23**	**25**	**50**	6	**44**	**69**	**119**	63	**13**	29	105	**363**
08:00	18	69	1	88	3	15	16	34	6	33	38	77	61	11	27	99	298
Total Volume	71	294	4	369	12	64	69	145	19	138	199	356	238	44	117	399	1269
% App. Total	19.2	79.7	1.1		8.3	44.1	47.6		5.3	38.8	55.9		59.6	11	29.3		
PHF	.807	.896	.333	.887	.750	.696	.690	.725	.792	.784	.721	.748	.888	.846	.944	.915	.874



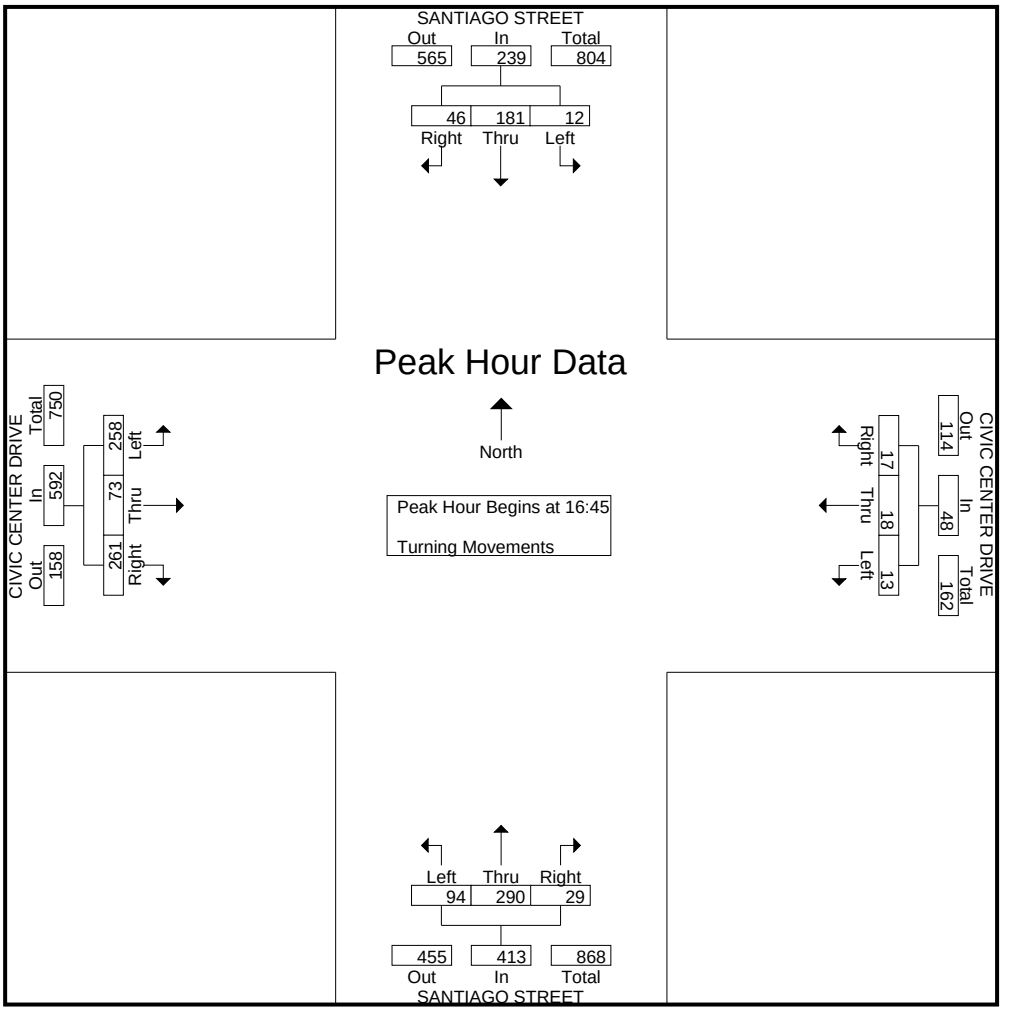
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: SANTIAGO STREET
E-W Direction: CIVIC CENTER DRIVE

File Name : H1702013
Site Code : 00000000
Start Date : 2/9/2017

	SANTIAGO STREET Southbound				CIVIC CENTER DRIVE Westbound				SANTIAGO STREET Northbound				CIVIC CENTER DRIVE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	14	47	2	**63**	5	3	3	11	**12**	59	**27**	98	68	**20**	67	155	327
17:00	**16**	38	3	57	**6**	**8**	2	**16**	8	70	25	103	**90**	20	**77**	**187**	**363**
17:15	6	47	3	56	4	4	2	10	5	76	24	105	54	16	66	136	307
17:30	10	**49**	**4**	63	2	3	**6**	11	4	**85**	18	**107**	49	17	48	114	295
Total Volume	46	181	12	239	17	18	13	48	29	290	94	413	261	73	258	592	1292
% App. Total	19.2	75.7	5		35.4	37.5	27.1		7	70.2	22.8		44.1	12.3	43.6		
PHF	.719	.923	.750	.948	.708	.563	.542	.750	.604	.853	.870	.965	.725	.913	.838	.791	.890



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Santiago
EAST & WEST: Santa Ana

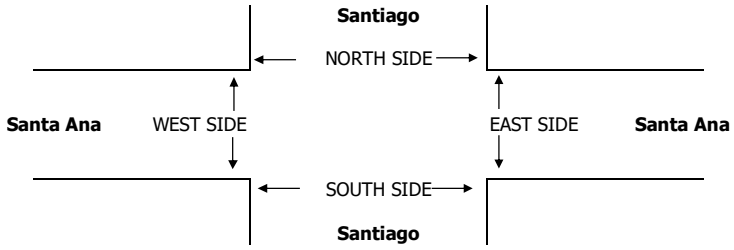
PROJECT #: SC0846
LOCATION #: 15
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Santiago			SOUTHBOUND Santiago			EASTBOUND Santa Ana			WESTBOUND Santa Ana				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	1	1	1	1	1	1	2	0	1	2	1		0	0	0	0	
AM	7:00 AM	6	12	16	52	27	20	6	77	5	32	137	34	424	0	0	0	9	9
	7:15 AM	7	11	18	69	31	24	3	128	1	17	162	41	512	0	0	0	6	6
	7:30 AM	5	17	9	85	31	36	11	139	4	31	212	67	647	0	0	0	12	12
	7:45 AM	2	16	11	62	62	32	24	104	1	33	250	102	699	0	0	0	5	5
	8:00 AM	9	24	15	82	30	35	8	84	7	22	151	50	517	0	0	0	6	6
	8:15 AM	4	14	19	46	21	16	9	68	4	16	148	35	400	0	0	0	1	1
	8:30 AM	2	12	17	39	15	18	1	69	2	20	139	27	361	0	0	0	2	2
	8:45 AM	2	7	19	40	22	15	1	48	9	17	123	25	328	0	0	0	2	2
	VOLUMES	37	113	124	475	239	196	63	717	33	188	1,322	381	3,888	0	0	0	43	43
	APPROACH %	14%	41%	45%	52%	26%	22%	8%	88%	4%	10%	70%	20%						
	APP/DEPART	274	/	557	910	/	417	813	/	1,359	1,891	/	1,555	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	23	68	53	298	154	127	46	455	13	103	775	260	2,375					
	APPROACH %	16%	47%	37%	51%	27%	22%	9%	89%	3%	9%	68%	23%						
	PEAK HR FACTOR		0.750			0.928			0.834			0.739		0.849					
	APP/DEPART	144	/	374	579	/	241	514	/	835	1,138	/	925	0					
PM	4:00 PM	3	28	16	60	21	15	7	109	12	22	90	32	415	0	0	0	6	6
	4:15 PM	3	21	14	45	24	25	6	127	1	17	77	29	389	0	0	0	4	4
	4:30 PM	8	20	16	61	23	15	21	147	2	21	123	55	512	0	0	0	3	3
	4:45 PM	5	30	14	77	29	14	17	159	8	16	132	46	547	0	0	0	5	5
	5:00 PM	8	38	24	70	28	10	16	175	4	17	102	34	526	0	0	0	8	8
	5:15 PM	13	39	26	77	35	19	14	142	5	16	115	44	545	0	0	0	2	2
	5:30 PM	6	22	19	55	31	22	13	93	6	18	111	26	422	0	0	0	8	8
	5:45 PM	11	42	17	62	29	24	9	90	3	23	101	51	462	0	0	0	10	10
	VOLUMES	57	240	146	507	220	144	103	1,042	41	150	851	317	3,818	0	0	0	46	46
	APPROACH %	13%	54%	33%	58%	25%	17%	9%	88%	3%	11%	65%	24%						
	APP/DEPART	443	/	660	871	/	365	1,186	/	1,741	1,318	/	1,052	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	34	127	80	285	115	58	68	623	19	70	472	179	2,130					
	APPROACH %	14%	53%	33%	62%	25%	13%	10%	88%	3%	10%	65%	25%						
	PEAK HR FACTOR		0.772			0.874			0.910			0.906		0.973					
	APP/DEPART	241	/	374	458	/	186	710	/	1,006	721	/	564	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	9	18	12	8	47	9	16	9	8	42	0	2	3	0	5
	7:15 AM	14	6	8	6	34	11	4	7	6	28	3	2	1	0	6
	7:30 AM	9	4	8	7	28	9	4	6	7	26	0	0	2	0	2
	7:45 AM	1	4	5	2	12	1	4	5	2	12	0	0	0	0	0
	8:00 AM	1	1	6	1	9	1	0	5	1	7	0	1	1	0	2
	8:15 AM	0	1	2	1	4	0	0	0	1	1	0	1	2	0	3
	8:30 AM	2	1	2	2	7	1	1	2	2	6	1	0	0	0	1
	8:45 AM	0	6	3	3	12	0	5	1	3	9	0	1	2	0	3
	TOTAL	36	41	46	30	153	32	34	35	30	131	4	7	11	0	22
PM	4:00 PM	4	6	5	5	20	0	5	4	3	12	4	1	1	2	8
	4:15 PM	0	4	4	1	9	0	4	3	1	8	0	0	1	0	1
	4:30 PM	4	2	5	1	12	4	2	5	1	12	0	0	0	0	0
	4:45 PM	2	2	5	0	9	0	2	3	0	5	2	0	2	0	4
	5:00 PM	3	15	8	4	30	2	13	8	2	25	1	2	0	2	5
	5:15 PM	3	10	7	10	30	3	9	7	9	28	0	1	0	1	2
	5:30 PM	2	8	9	7	26	1	7	7	6	21	1	1	2	1	5
	5:45 PM	1	0	1	6	8	1	0	1	5	7	0	0	0	1	1
	TOTAL	19	47	44	34	144	11	42	38	27	118	8	5	6	7	26

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: STANDARD AVENUE
E-W Direction: 1ST STREET

File Name : H1702014
Site Code : 00000000
Start Date : 2/9/2017
Page No : 1

Groups Printed- Turning Movements

	STANDARD AVENUE Southbound			1ST STREET Westbound			STANDARD AVENUE Northbound			1ST STREET Eastbound				
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	U-Turn	Int. Total
07:00	0	41	6	1	179	10	28	43	17	50	282	10	2	669
07:15	3	49	7	1	228	10	19	42	23	39	376	21	2	820
07:30	4	61	3	5	255	14	43	55	28	60	324	20	2	874
07:45	3	65	8	2	282	19	27	47	36	70	291	19	3	872
Total	10	216	24	9	944	53	117	187	104	219	1273	70	9	3235
08:00	1	49	6	3	217	19	26	41	17	38	287	15	1	720
08:15	4	47	3	4	204	13	19	41	20	52	333	8	4	752
08:30	7	19	4	2	177	5	14	32	21	37	284	8	1	611
08:45	2	29	2	5	171	19	22	31	17	22	304	9	3	636
Total	14	144	15	14	769	56	81	145	75	149	1208	40	9	2719
*** BREAK ***														
16:00	5	41	5	3	251	17	19	78	53	31	272	22	2	799
16:15	4	39	2	4	251	23	34	98	43	36	294	19	2	849
16:30	2	37	5	4	243	17	30	79	44	28	311	20	2	822
16:45	2	33	1	6	265	29	23	79	45	26	297	26	4	836
Total	13	150	13	17	1010	86	106	334	185	121	1174	87	10	3306
17:00	8	45	9	6	246	24	51	93	35	30	311	24	6	888
17:15	2	48	2	4	297	21	23	81	39	34	300	37	2	890
17:30	5	50	3	7	281	24	13	98	49	37	290	42	15	914
17:45	7	40	4	3	290	19	28	84	56	24	281	33	12	881
Total	22	183	18	20	1114	88	115	356	179	125	1182	136	35	3573
Grand Total	59	693	70	60	3837	283	419	1022	543	614	4837	333	63	12833
Apprch %	7.2	84.3	8.5	1.4	91.8	6.8	21.1	51.5	27.4	10.5	82.7	5.7	1.1	
Total %	0.5	5.4	0.5	0.5	29.9	2.2	3.3	8	4.2	4.8	37.7	2.6	0.5	

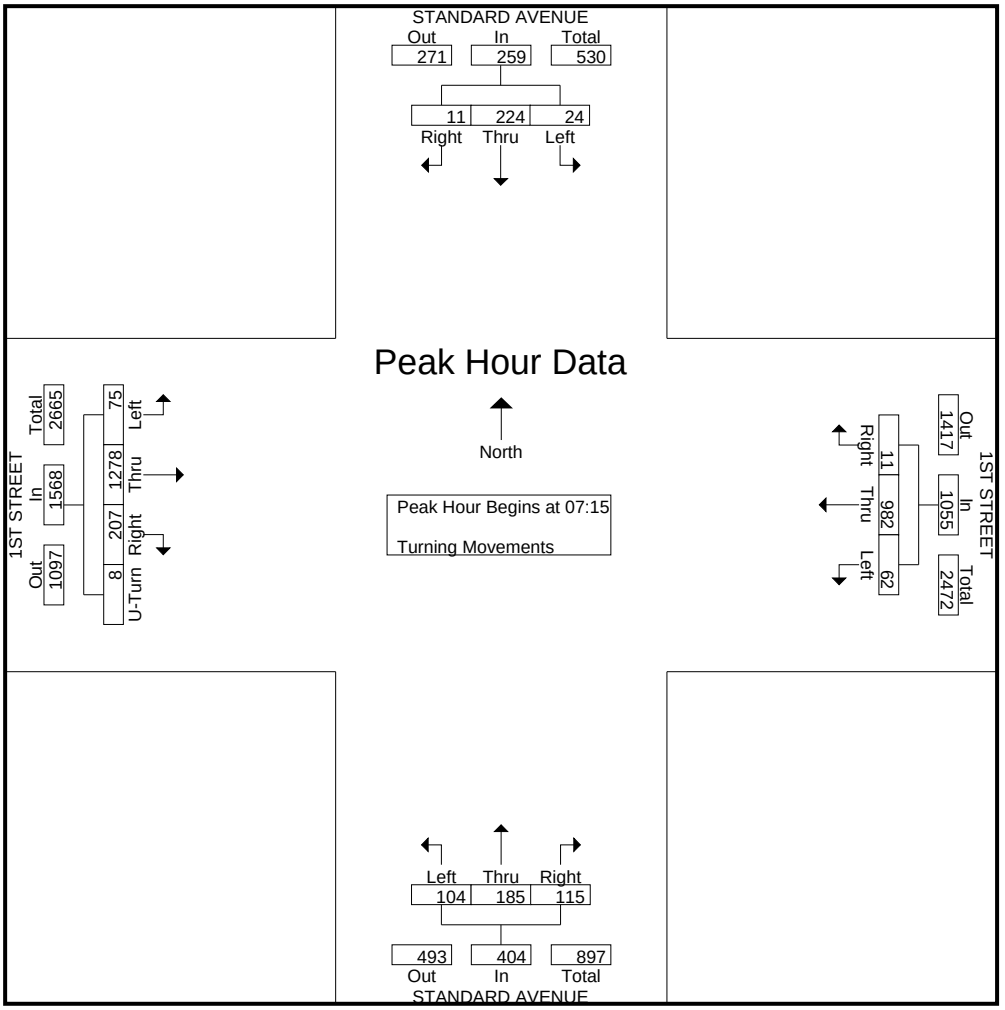
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: STANDARD AVENUE
E-W Direction: 1ST STREET

File Name : H1702014
Site Code : 00000000
Start Date : 2/9/2017
Page No : 2

	STANDARD AVENUE Southbound				1ST STREET Westbound				STANDARD AVENUE Northbound				1ST STREET Eastbound					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:15																		
07:15	3	49	7	59	1	228	10	239	19	42	23	84	39	376	21	2	438	820
07:30	4	61	3	68	**5**	255	14	274	**43**	**55**	28	**126**	60	324	20	2	406	**874**
07:45	**3**	**65**	**8**	**76**	**2**	**282**	**19**	**303**	**27**	**47**	**36**	110	**70**	291	19	**3**	383	872
08:00	1	49	6	56	3	217	19	239	26	41	17	84	38	287	15	1	341	720
Total Volume	11	224	24	259	11	982	62	1055	115	185	104	404	207	1278	75	8	1568	3286
% App. Total	4.2	86.5	9.3		1	93.1	5.9		28.5	45.8	25.7		13.2	81.5	4.8	0.5		
PHF	.688	.862	.750	.852	.550	.871	.816	.870	.669	.841	.722	.802	.739	.850	.893	.667	.895	.940



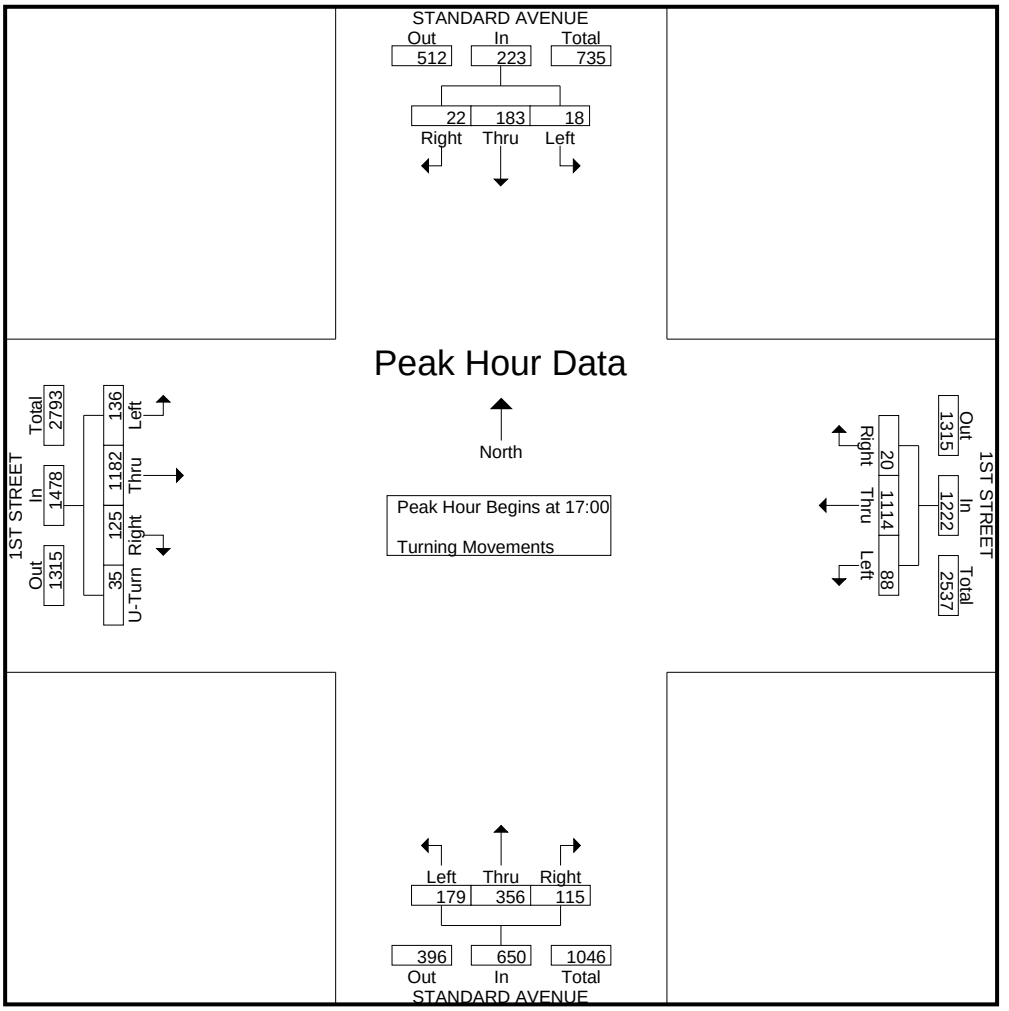
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: STANDARD AVENUE
E-W Direction: 1ST STREET

File Name : H1702014
Site Code : 00000000
Start Date : 2/9/2017
Page No : 3

	STANDARD AVENUE Southbound				1ST STREET Westbound				STANDARD AVENUE Northbound				1ST STREET Eastbound					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 17:00																		
17:00	8	45	9	62	6	246	24	276	**51**	93	35	**179**	30	**311**	24	6	371	888
17:15	2	48	2	52	4	**297**	21	**322**										
17:30	**5**	**50**	3	58	**7**	281	24	312	13	**98**	49	160	**37**	290	**42**	**15**	**384**	**914**
17:45	**7**	**40**	**4**	**51**	**3**	**290**	**19**	**312**	**28**	**84**	**56**	168	24	281	33	12	350	881
Total Volume	22	183	18	223	20	1114	88	1222	115	356	179	650	125	1182	136	35	1478	3573
% App. Total	9.9	82.1	8.1		1.6	91.2	7.2		17.7	54.8	27.5		8.5	80	9.2	2.4		
PHF	.688	.915	.500	.899	.714	.938	.917	.949	.564	.908	.799	.908	.845	.950	.810	.583	.962	.977



INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 15, 18

LOCATION: Santa Ana Zed
NORTH & SOUTH: Standard
EAST & WEST: McFadden

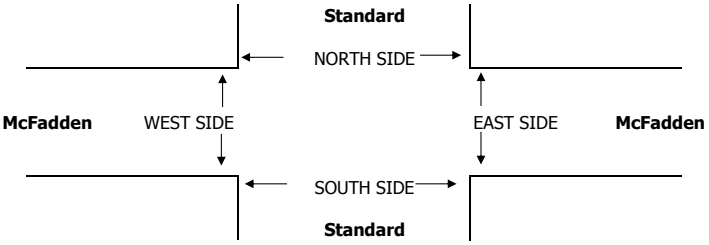
PROJECT #: SC1791
LOCATION #: 63
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

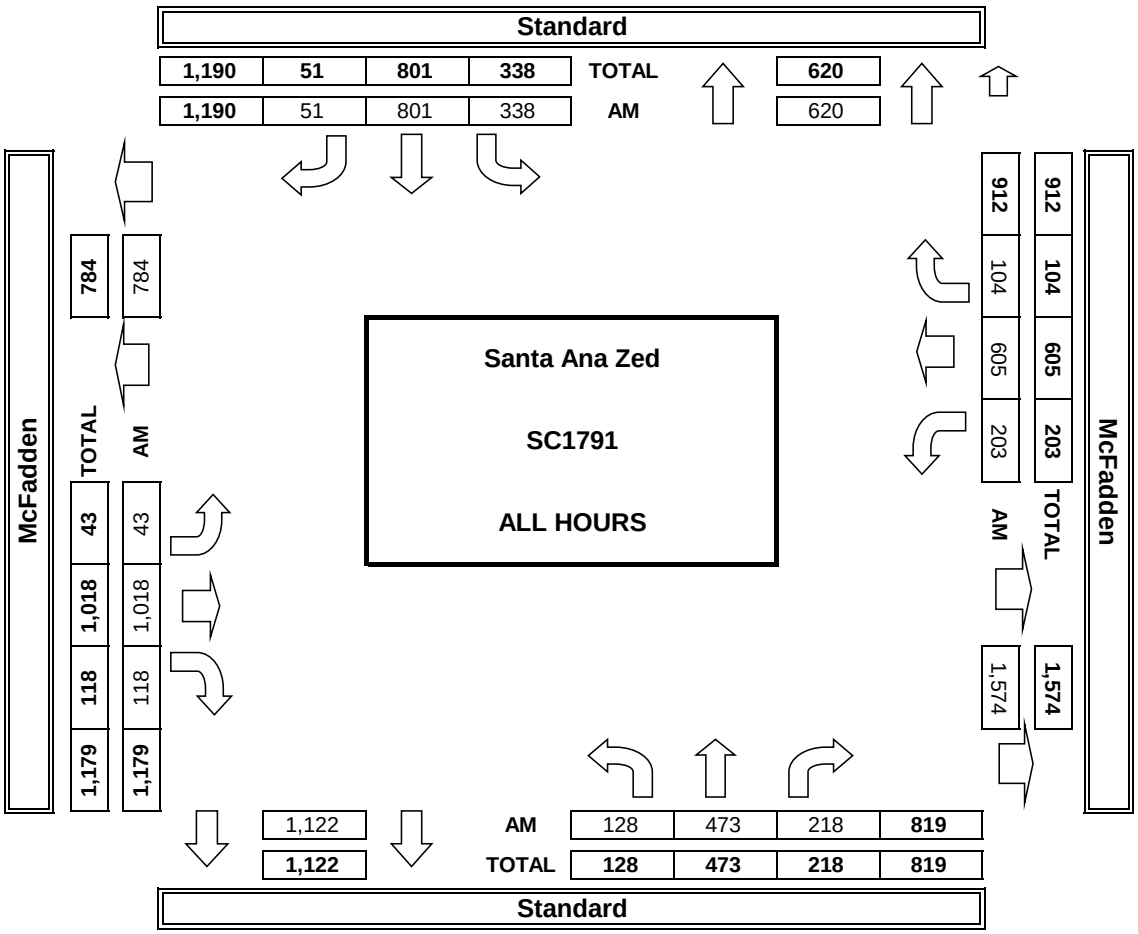
		NORTHBOUND Standard			SOUTHBOUND Standard			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	9	50	30	49	91	6	5	131	15	18	62	9	475	0	0	0	0	0
	7:15 AM	16	62	34	45	84	13	5	146	17	27	76	12	537	0	0	0	0	0
	7:30 AM	18	88	35	58	153	10	3	162	21	25	80	19	672	0	0	0	0	0
	7:45 AM	16	68	27	67	161	7	5	140	15	47	102	23	678	0	0	0	0	0
	8:00 AM	22	60	29	45	122	6	3	129	16	36	100	26	594	0	0	0	0	0
	8:15 AM	17	53	25	26	75	5	11	135	10	23	75	7	462	0	0	0	0	0
	8:30 AM	16	48	18	23	57	3	7	84	12	16	51	2	337	0	0	0	0	0
	8:45 AM	14	44	20	25	58	1	4	91	12	11	59	6	345	0	0	0	0	0
	VOLUMES	128	473	218	338	801	51	43	1,018	118	203	605	104	4,100	0	0	0	0	0
	APPROACH %	16%	58%	27%	28%	67%	4%	4%	86%	10%	22%	66%	11%						
	APP/DEPART	819	/	620	1,190	/	1,122	1,179	/	1,574	912	/	784	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	72	278	125	215	520	36	16	577	69	135	358	80	2,481					
	APPROACH %	15%	59%	26%	28%	67%	5%	2%	87%	10%	24%	62%	14%						
	PEAK HR FACTOR		0.842			0.820			0.890			0.833		0.915					
	APP/DEPART	475	/	374	771	/	724	662	/	917	573	/	466	0					

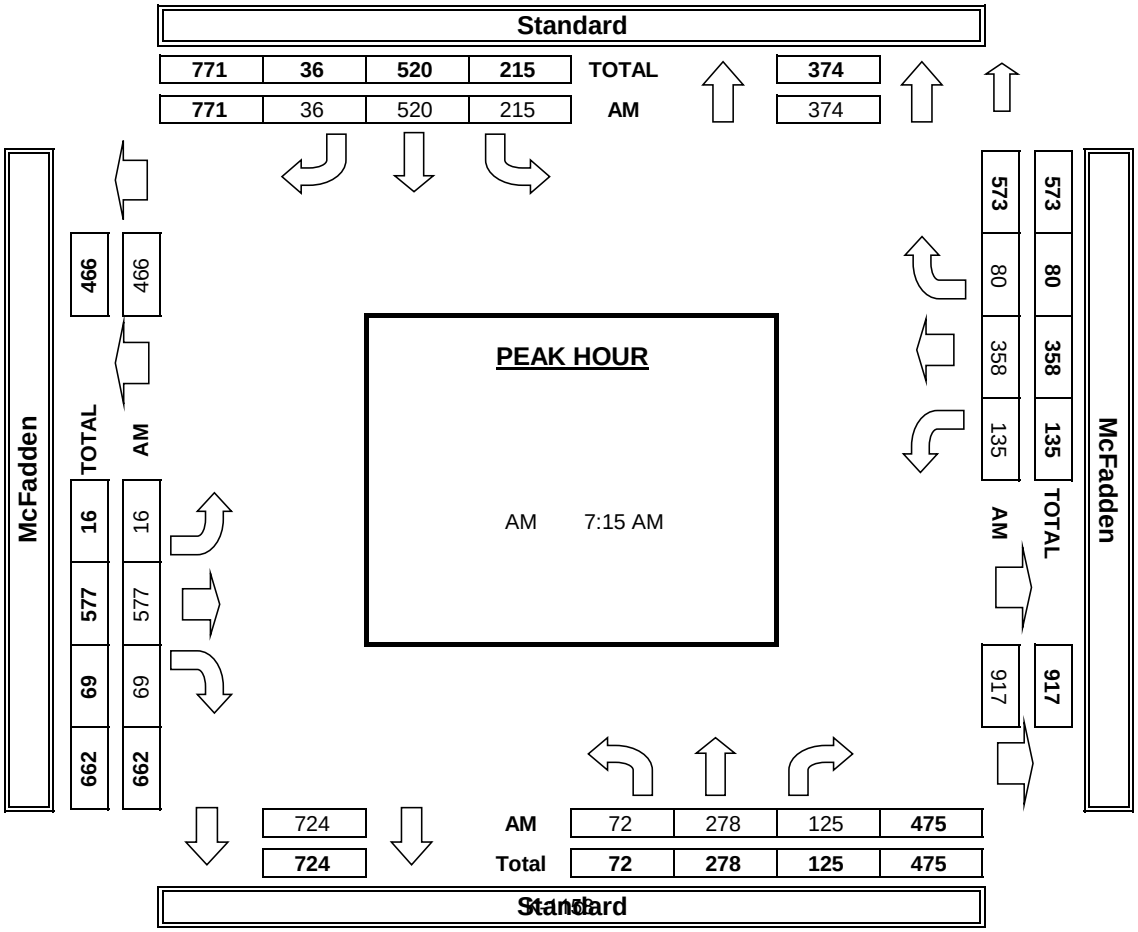


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	9	22	18	13	62	9	19	17	9	54	0	3	1	4	8
	7:15 AM	20	26	39	10	95	19	24	37	8	88	1	2	2	2	7
	7:30 AM	19	32	25	27	103	16	31	21	23	91	3	1	4	4	12
	7:45 AM	12	43	55	29	139	10	42	51	28	131	2	1	4	1	8
	8:00 AM	8	27	24	19	78	7	26	21	19	73	1	1	3	0	5
	8:15 AM	17	19	16	13	65	16	19	15	10	60	1	0	1	3	5
	8:30 AM	7	20	13	13	53	6	19	12	11	48	1	1	1	2	5
	8:45 AM	6	13	4	8	31	5	12	3	8	28	1	1	1	0	3
	TOTAL	98	202	194	132	626	88	192	177	116	573	10	10	17	16	53
	AM BEGIN PEAK HR			7:15 AM			52	123	130	78	383					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 15, 18

LOCATION: Santa Ana Zed
NORTH & SOUTH: Standard
EAST & WEST: McFadden

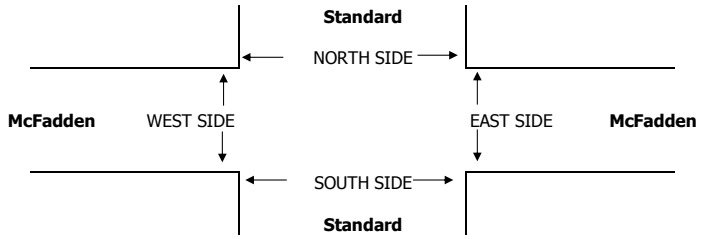
PROJECT #: SC1791
LOCATION #: 63
CONTROL: SIGNAL

NOTES:

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

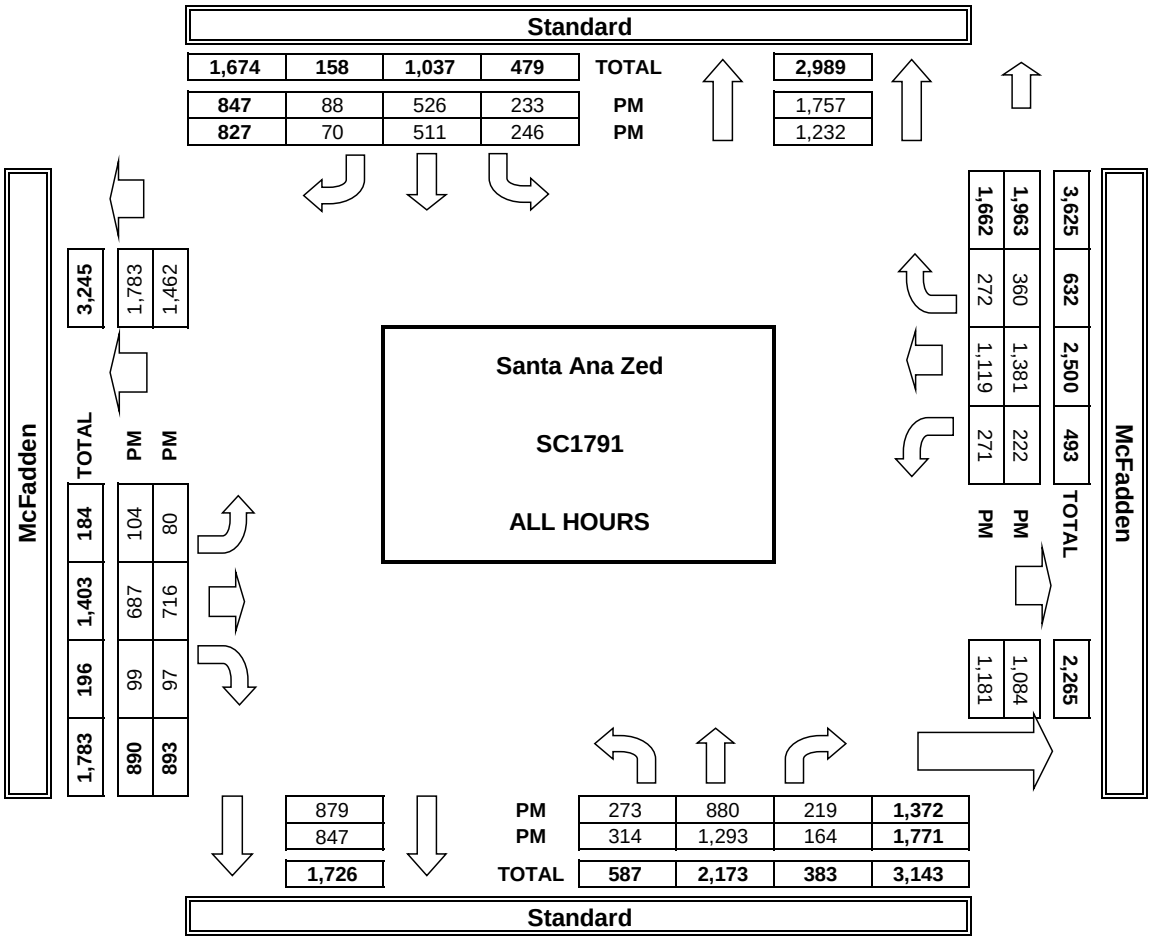
☑ Add U-Turns to Left Turns

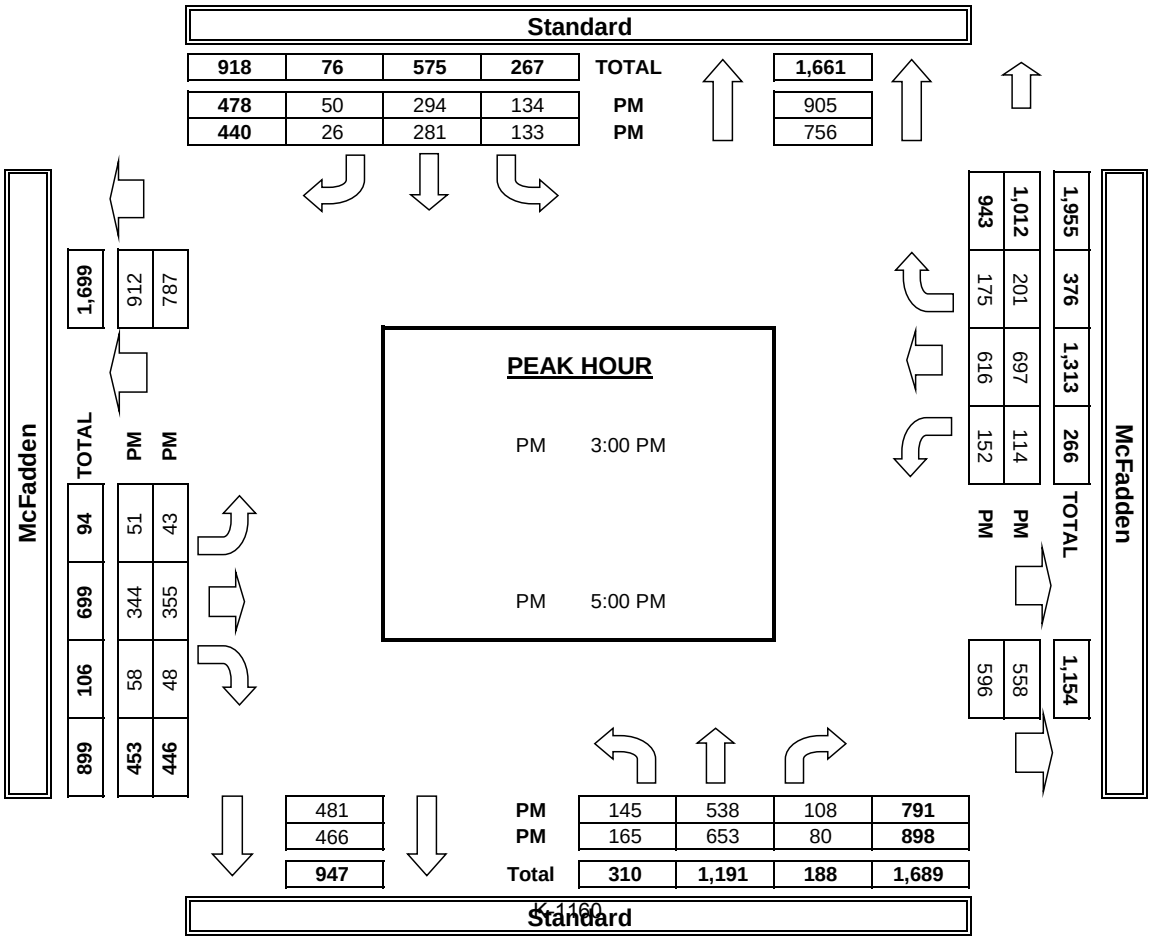
		NORTHBOUND Standard			SOUTHBOUND Standard			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
PM	2:00 PM	28	66	29	29	42	11	6	71	13	17	110	21	443	0	0	0	0	0
	2:15 PM	19	79	21	28	57	12	9	102	16	26	100	19	488	0	0	0	0	0
	2:30 PM	39	86	34	23	66	9	12	89	10	33	147	26	574	0	0	0	0	0
	2:45 PM	42	111	27	33	65	12	10	99	10	43	146	31	629	0	0	0	0	0
	3:00 PM	35	131	33	31	63	7	16	94	15	46	149	55	675	0	0	0	0	0
	3:15 PM	38	125	28	28	53	7	5	96	14	34	124	34	586	0	0	0	0	0
	3:30 PM	29	136	23	36	89	6	11	82	13	36	167	40	668	0	0	0	0	0
	3:45 PM	43	146	24	38	76	6	11	83	6	36	176	46	691	0	0	0	0	0
	VOLUMES	273	880	219	246	511	70	80	716	97	271	1,119	272	4,754	0	0	0	0	0
	APPROACH %	20%	64%	16%	30%	62%	8%	9%	80%	11%	16%	67%	16%						
	APP/DEPART	1,372	/	1,232	827	/	879	893	/	1,181	1,662	/	1,462	0					
	BEGIN PEAK HR		3:00 PM																
	VOLUMES	145	538	108	133	281	26	43	355	48	152	616	175	2,620					
	APPROACH %	18%	68%	14%	30%	64%	6%	10%	80%	11%	16%	65%	19%						
	PEAK HR FACTOR		0.928			0.840			0.892			0.914		0.948					
	APP/DEPART	791	/	756	440	/	481	446	/	596	943	/	787	0					
PM	4:00 PM	45	158	25	24	71	8	16	90	10	27	167	45	686	0	0	0	0	0
	4:15 PM	37	137	22	26	59	6	9	82	11	28	173	23	613	0	0	0	0	0
	4:30 PM	40	171	21	28	51	10	10	87	7	27	183	44	679	0	0	0	0	0
	4:45 PM	27	174	16	21	51	14	18	84	13	26	161	47	652	0	0	0	0	0
	5:00 PM	41	159	25	28	60	7	17	81	13	28	170	46	675	0	0	0	0	0
	5:15 PM	51	182	21	36	70	12	7	92	15	29	196	57	768	0	0	0	0	0
	5:30 PM	37	167	19	33	82	19	17	81	17	29	176	47	724	0	0	0	0	0
	5:45 PM	36	145	15	37	82	12	10	90	13	28	155	51	674	0	0	0	0	0
	VOLUMES	314	1,293	164	233	526	88	104	687	99	222	1,381	360	5,471	0	0	0	0	0
	APPROACH %	18%	73%	9%	28%	62%	10%	12%	77%	11%	11%	70%	18%						
	APP/DEPART	1,771	/	1,757	847	/	847	890	/	1,084	1,963	/	1,783	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	165	653	80	134	294	50	51	344	58	114	697	201	2,841					
	APPROACH %	18%	73%	9%	28%	62%	10%	11%	76%	13%	11%	69%	20%						
	PEAK HR FACTOR		0.884			0.892			0.985			0.897		0.925					
	APP/DEPART	898	/	905	478	/	466	453	/	558	1,012	/	912	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
PM	2:00 PM	17	16	28	14	75	12	15	27	14	68	5	1	1	0	7
	2:15 PM	26	20	29	16	91	26	20	29	16	91	0	0	0	0	0
	2:30 PM	29	25	34	28	116	25	24	31	25	105	4	1	3	3	11
	2:45 PM	31	47	45	21	144	27	45	42	19	133	4	2	3	2	11
	3:00 PM	62	47	47	39	195	54	45	44	38	181	8	2	3	1	14
	3:15 PM	43	46	49	28	166	40	46	49	28	163	3	0	0	0	3
	3:30 PM	23	29	41	23	116	17	29	38	22	106	6	0	3	1	10
	3:45 PM	19	17	28	8	72	15	15	27	7	64	4	2	1	1	8
	TOTAL	250	247	301	177	975	216	239	287	169	911	34	8	14	8	64
	AM BEGIN PEAK HR			3:00 PM			126	135	158	95	514					
PM	4:00 PM	10	27	24	21	82	10	26	24	19	79	0	1	0	2	3
	4:15 PM	20	30	18	22	90	15	29	17	18	79	5	1	1	4	11
	4:30 PM	12	30	15	21	78	10	29	15	18	72	2	1	0	3	6
	4:45 PM	21	14	18	23	76	16	14	13	20	63	5	0	5	3	13
	5:00 PM	15	19	22	18	74	12	18	22	17	69	3	1	0	1	5
	5:15 PM	33	23	33	26	115	29	22	30	23	104	4	1	3	3	11
	5:30 PM	17	21	16	28	82	15	16	15	21	67	2	5	1	7	15
	5:45 PM	17	24	21	32	94	15	16	20	29	80	2	8	1	3	14
	TOTAL	145	188	167	191	691	122	170	156	165	613	23	18	11	26	78
	PM BEGIN PEAK HR			5:00 PM			71	72	87	90	320					

AimTD LLC
TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Halladay
EAST & WEST: Warner

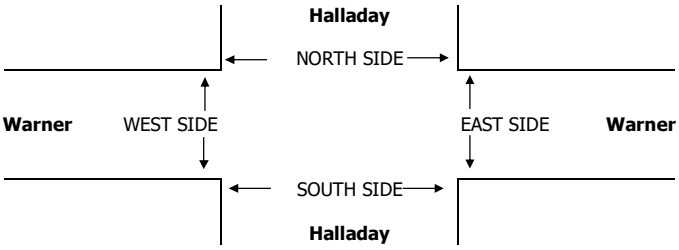
PROJECT #: SC0846
LOCATION #: 44
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Halladay			SOUTHBOUND Halladay			EASTBOUND Warner			WESTBOUND Warner				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	X	1	X	X	X	X	2	0	0	2	X		0	0	0	0	
AM	7:00 AM	13	0	6	0	0	0	0	247	29	18	151	0	464	0	0	0	0	0
	7:15 AM	10	0	24	0	0	0	0	293	28	36	139	0	530	0	0	0	0	0
	7:30 AM	14	0	24	0	0	0	0	308	46	39	181	0	612	0	0	0	0	0
	7:45 AM	10	0	22	0	0	0	0	323	42	45	146	0	588	0	0	0	0	0
	8:00 AM	7	0	26	0	0	0	0	308	23	33	117	0	514	0	0	0	0	0
	8:15 AM	7	0	21	0	0	0	0	298	17	24	114	0	481	0	0	0	0	0
	8:30 AM	12	0	24	0	0	0	0	245	22	16	134	0	453	0	0	0	0	0
	8:45 AM	14	0	26	0	0	0	0	188	14	24	132	0	398	0	0	0	0	0
	VOLUMES	87	0	173	0	0	0	0	2,210	221	235	1,114	0	4,040	0	0	0	0	0
	APPROACH %	33%	0%	67%	0%	0%	0%	0%	91%	9%	17%	83%	0%						
	APP/DEPART	260	/	0	0	/	456	2,431	/	2,383	1,349	/	1,201	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	41	0	96	0	0	0	0	1,232	139	153	583	0	2,244					
	APPROACH %	30%	0%	70%	0%	0%	0%	0%	90%	10%	21%	79%	0%						
	PEAK HR FACTOR		0.901			0.000			0.939			0.836		0.917					
	APP/DEPART	137	/	0	0	/	292	1,371	/	1,328	736	/	624	0					
PM	4:00 PM	39	0	75	0	0	0	0	197	12	26	236	0	585	0	0	0	0	0
	4:15 PM	29	0	80	0	0	0	0	204	17	22	211	0	563	0	0	0	0	0
	4:30 PM	35	0	81	0	0	0	0	219	22	26	270	0	653	0	0	0	0	0
	4:45 PM	32	0	70	0	0	0	1	205	11	32	244	0	595	0	0	1	0	1
	5:00 PM	44	0	84	0	0	0	0	210	20	30	295	0	683	0	0	0	0	0
	5:15 PM	51	0	103	0	0	0	0	255	36	47	268	0	760	0	0	0	0	0
	5:30 PM	38	0	83	0	0	0	0	204	25	41	231	0	622	0	0	0	0	0
	5:45 PM	30	0	85	0	0	0	0	202	24	37	217	0	595	0	0	0	0	0
	VOLUMES	298	0	661	0	0	0	1	1,696	167	261	1,972	0	5,056	0	0	1	0	1
	APPROACH %	31%	0%	69%	0%	0%	0%	0%	91%	9%	12%	88%	0%						
	APP/DEPART	959	/	0	0	/	428	1,864	/	2,357	2,233	/	2,271	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	162	0	338	0	0	0	1	889	89	135	1,077	0	2,691					
	APPROACH %	32%	0%	68%	0%	0%	0%	0%	91%	9%	11%	89%	0%						
	PEAK HR FACTOR		0.812			0.000			0.841			0.932		0.885					
	APP/DEPART	500	/	0	0	/	224	979	/	1,227	1,212	/	1,240	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	8	8	0	0	0	8	8	0	0	0	0	0
	7:15 AM	0	1	0	2	3	0	1	0	2	3	0	0	0	0	0
	7:30 AM	1	1	0	1	3	0	1	0	1	2	1	0	0	0	1
	7:45 AM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	8:00 AM	0	3	0	2	5	0	2	0	2	4	0	1	0	0	1
	8:15 AM	0	0	0	5	5	0	0	0	4	4	0	0	0	1	1
	8:30 AM	0	1	0	1	2	0	0	0	1	1	0	1	0	0	1
	8:45 AM	0	0	0	7	7	0	0	0	7	7	0	0	0	0	0
	TOTAL	1	6	0	28	35	0	4	0	27	31	1	2	0	1	4
PM	4:00 PM	0	1	0	5	6	0	0	0	5	5	0	1	0	0	1
	4:15 PM	0	1	0	4	5	0	1	0	3	4	0	0	0	1	1
	4:30 PM	0	0	0	7	7	0	0	0	6	6	0	0	0	1	1
	4:45 PM	1	0	0	6	7	0	0	0	2	2	1	0	0	4	5
	5:00 PM	0	2	0	9	11	0	2	0	8	10	0	0	0	1	1
	5:15 PM	0	1	0	16	17	0	0	0	15	15	0	1	0	1	2
	5:30 PM	0	0	0	5	5	0	0	0	4	4	0	0	0	1	1
	5:45 PM	0	2	0	2	4	0	1	0	2	3	0	1	0	0	1
	TOTAL	1	7	0	54	62	0	4	0	45	49	1	3	0	9	13

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Halladay
EAST & WEST: Dyer

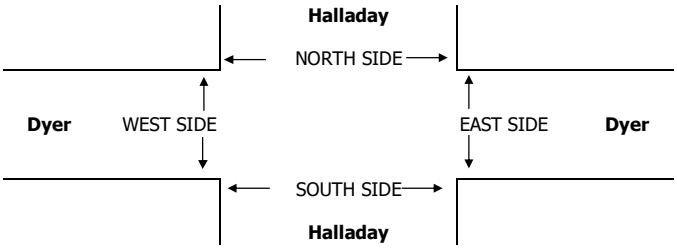
PROJECT #: SC2183
LOCATION #: 21
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — N / W / E / S

Add U-Turns to Left Turns

		NORTHBOUND Halladay			SOUTHBOUND Halladay			EASTBOUND Dyer			WESTBOUND Dyer				U-TURNS				
	LANES:	NL 1	NT 1	NR 0	SL 1	ST 0	SR 1	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	1	4	14	37	8	9	2	266	1	25	152	33	552	0	0	0	0	0
	7:15 AM	1	3	14	44	5	8	9	334	5	33	147	33	636	0	0	0	0	0
	7:30 AM	1	4	8	51	8	13	11	363	0	20	175	26	680	0	0	0	0	0
	7:45 AM	4	5	10	43	9	7	9	358	2	20	161	21	649	0	0	0	0	0
	8:00 AM	4	5	16	43	14	10	11	306	2	40	136	20	607	0	0	0	0	0
	8:15 AM	2	6	12	52	14	8	5	290	3	41	149	19	601	0	0	0	1	1
	8:30 AM	3	5	8	46	8	6	4	288	7	34	140	18	567	0	0	0	1	1
	8:45 AM	0	3	12	35	14	9	6	235	6	27	148	18	513	0	0	0	0	0
	VOLUMES	16	35	94	351	80	70	57	2,440	26	240	1,208	188	4,805	0	0	0	2	2
	APPROACH %	11%	24%	65%	70%	16%	14%	2%	97%	1%	15%	74%	11%						
	APP/DEPART	145	/	280	501	/	344	2,523	/	2,887	1,636	/	1,294	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	10	17	48	181	36	38	40	1,361	9	113	619	100	2,572					
	APPROACH %	13%	23%	64%	71%	14%	15%	3%	97%	1%	14%	74%	12%						
	PEAK HR FACTOR		0.750			0.885			0.943			0.941		0.946					
	APP/DEPART	75	/	157	255	/	158	1,410	/	1,590	832	/	667	0					
PM	4:00 PM	5	43	50	37	3	12	21	287	0	14	280	21	773	0	0	0	1	1
	4:15 PM	7	37	56	33	6	10	31	281	4	19	312	25	821	0	0	0	1	1
	4:30 PM	15	36	56	35	3	10	43	335	1	12	362	26	934	0	0	0	0	0
	4:45 PM	8	32	51	26	3	4	30	308	1	11	331	34	839	0	0	0	0	0
	5:00 PM	15	61	56	28	5	11	34	338	4	14	333	30	929	0	0	0	1	1
	5:15 PM	2	49	42	23	3	6	41	304	2	7	410	24	913	0	0	0	0	0
	5:30 PM	7	44	46	27	8	3	37	337	2	15	345	40	911	0	0	0	0	0
	5:45 PM	3	48	45	20	9	10	35	320	1	15	298	32	836	0	0	0	1	1
	VOLUMES	62	350	402	229	40	66	272	2,510	15	107	2,671	232	6,956	0	0	0	4	4
	APPROACH %	8%	43%	49%	68%	12%	20%	10%	90%	1%	4%	89%	8%						
	APP/DEPART	814	/	854	335	/	158	2,797	/	3,145	3,010	/	2,799	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	40	178	205	112	14	31	148	1,285	8	44	1,436	114	3,615					
	APPROACH %	9%	42%	48%	71%	9%	20%	10%	89%	1%	3%	90%	7%						
	PEAK HR FACTOR		0.801			0.818			0.951			0.904		0.968					
	APP/DEPART	423	/	440	157	/	65	1,441	/	1,603	1,594	/	1,507	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:30 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: SR-55 SB Ramps
EAST & WEST: MacArthur

PROJECT #: SC2183
LOCATION #: 23
CONTROL: SIGNAL

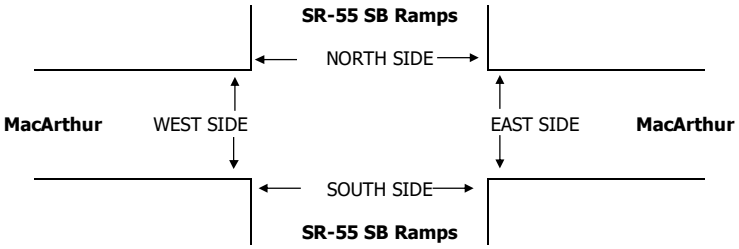
NOTES: PM WB queue

AM / PM / MD / OTHER / OTHER

N ▲ S ▼ W ◄ E ►

☑ Add U-Turns to Left Turns

		NORTHBOUND SR-55 SB Ramps			SOUTHBOUND SR-55 SB Ramps			EASTBOUND MacArthur			WESTBOUND MacArthur				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 2	ST X	SR 2	EL X	ET 3	ER 2	WL X	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	236	0	222	0	299	232	0	239	22	1,250	0	0	0	0	0
	7:15 AM	0	0	0	233	0	229	0	324	267	0	246	33	1,332	0	0	0	0	0
	7:30 AM	0	0	0	208	0	215	0	397	280	0	305	31	1,436	0	0	0	0	0
	7:45 AM	0	0	0	256	0	229	0	378	246	0	318	38	1,465	0	0	0	0	0
	8:00 AM	0	0	0	242	0	209	0	342	238	0	314	39	1,384	0	0	0	0	0
	8:15 AM	0	0	0	245	0	208	0	309	252	0	325	35	1,374	0	0	0	0	0
	8:30 AM	0	0	0	204	0	144	0	339	250	0	277	55	1,269	0	0	0	0	0
	8:45 AM	0	0	0	237	0	165	0	287	197	0	248	64	1,198	0	0	0	0	0
	VOLUMES	0	0	0	1,861	0	1,621	0	2,675	1,962	0	2,272	317	10,708	0	0	0	0	0
	APPROACH %	0%	0%	0%	53%	0%	47%	0%	58%	42%	0%	88%	12%						
	APP/DEPART	0	/	317	3,482	/	1,962	4,637	/	4,536	2,589	/	3,893	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	0	0	0	951	0	861	0	1,426	1,016	0	1,262	143	5,659					
	APPROACH %	0%	0%	0%	52%	0%	48%	0%	58%	42%	0%	90%	10%						
	PEAK HR FACTOR		0.000			0.934			0.902			0.976		0.966					
	APP/DEPART	0	/	143	1,812	/	1,016	2,442	/	2,377	1,405	/	2,123	0					
PM	4:00 PM	0	0	0	62	0	132	0	326	263	0	389	160	1,332	0	0	0	0	0
	4:15 PM	0	0	0	71	0	187	0	275	234	0	357	148	1,272	0	0	0	0	0
	4:30 PM	0	0	0	74	0	170	0	277	269	0	415	153	1,358	0	0	0	0	0
	4:45 PM	0	0	0	69	0	176	0	274	239	0	366	133	1,257	0	0	0	0	0
	5:00 PM	0	0	0	63	0	166	0	319	282	0	370	178	1,378	0	0	0	0	0
	5:15 PM	0	0	0	79	0	178	0	285	239	0	365	132	1,278	0	0	0	0	0
	5:30 PM	0	0	0	61	0	180	0	291	206	0	370	125	1,233	0	0	0	0	0
	5:45 PM	0	0	0	93	0	171	0	245	187	0	350	105	1,151	0	0	0	0	0
	VOLUMES	0	0	0	572	0	1,360	0	2,292	1,919	0	2,982	1,134	10,259	0	0	0	0	0
	APPROACH %	0%	0%	0%	30%	0%	70%	0%	54%	46%	0%	72%	28%						
	APP/DEPART	0	/	1,134	1,932	/	1,919	4,211	/	2,864	4,116	/	4,342	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	0	0	0	285	0	690	0	1,155	1,029	0	1,516	596	5,271					
	APPROACH %	0%	0%	0%	29%	0%	71%	0%	53%	47%	0%	72%	28%						
	PEAK HR FACTOR		0.000			0.948			0.908			0.930		0.956					
	APP/DEPART	0	/	596	975	/	1,029	2,184	/	1,440	2,112	/	2,206	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:30 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: SR-55 NB Ramps
EAST & WEST: MacArthur

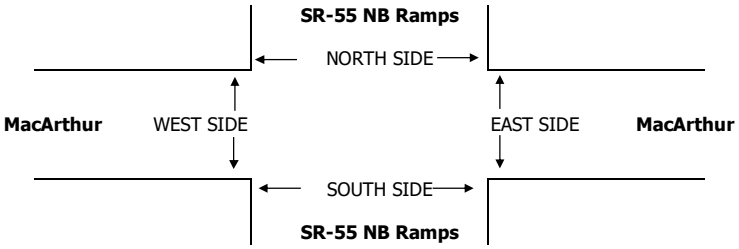
PROJECT #: SC2183
LOCATION #: 22
CONTROL: SIGNAL

NOTES: PM WB queue

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☐ Add U-Turns to Left Turns

		NORTHBOUND SR-55 NB Ramps			SOUTHBOUND SR-55 NB Ramps			EASTBOUND MacArthur			WESTBOUND MacArthur				U-TURNS				
	LANES:	NL 2	NT X	NR 1	SL X	ST X	SR X	EL X	ET 2	ER 2	WL X	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	183	0	210	0	0	0	0	388	146	0	75	55	1,057	0	0	0	0	0
	7:15 AM	188	0	207	0	0	0	0	365	193	0	88	48	1,089	0	0	0	0	0
	7:30 AM	232	0	201	0	0	0	0	374	237	0	106	48	1,198	0	0	0	0	0
	7:45 AM	215	0	264	0	0	0	0	423	219	0	142	62	1,325	0	0	0	0	0
	8:00 AM	233	0	239	0	0	0	0	399	183	0	118	68	1,240	0	0	0	0	0
	8:15 AM	219	0	262	0	0	0	0	397	149	0	145	63	1,235	0	0	0	0	0
	8:30 AM	209	0	203	0	0	0	0	366	182	0	130	66	1,156	0	0	0	0	0
	8:45 AM	176	0	247	0	0	0	0	374	146	0	134	74	1,151	0	0	0	0	0
	VOLUMES	1,655	0	1,833	0	0	0	0	3,086	1,455	0	938	484	9,451	0	0	0	0	0
	APPROACH %	47%	0%	53%	0%	0%	0%	0%	68%	32%	0%	66%	34%						
	APP/DEPART	3,488	/	484	0	/	1,455	4,541	/	4,919	1,422	/	2,593	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	899	0	966	0	0	0	0	1,593	788	0	511	241	4,998					
	APPROACH %	48%	0%	52%	0%	0%	0%	0%	67%	33%	0%	68%	32%						
	PEAK HR FACTOR		0.969			0.000			0.927			0.904		0.943					
	APP/DEPART	1,865	/	241	0	/	788	2,381	/	2,559	752	/	1,410	0					
PM	4:00 PM	164	0	132	0	0	0	0	178	215	0	391	248	1,328	0	0	0	0	0
	4:15 PM	144	0	122	0	0	0	0	183	160	0	355	271	1,235	0	0	1	0	1
	4:30 PM	167	0	77	0	0	0	0	178	171	0	404	267	1,264	0	0	0	0	0
	4:45 PM	159	0	90	0	0	0	0	164	177	0	336	284	1,210	0	0	0	0	0
	5:00 PM	131	0	67	0	0	0	0	211	175	0	419	273	1,276	0	0	0	0	0
	5:15 PM	160	0	70	0	0	0	0	206	160	0	336	227	1,159	0	0	0	0	0
	5:30 PM	158	0	110	0	0	0	0	235	121	0	338	214	1,176	0	0	0	0	0
	5:45 PM	152	0	93	0	0	0	0	181	151	0	297	218	1,092	0	0	0	0	0
	VOLUMES	1,235	0	761	0	0	0	0	1,536	1,330	0	2,876	2,002	9,741	0	0	1	0	1
	APPROACH %	62%	0%	38%	0%	0%	0%	0%	54%	46%	0%	59%	41%						
	APP/DEPART	1,996	/	2,002	0	/	1,330	2,867	/	2,297	4,878	/	4,112	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	634	0	421	0	0	0	0	703	723	0	1,486	1,070	5,038					
	APPROACH %	60%	0%	40%	0%	0%	0%	0%	49%	51%	0%	58%	42%						
	PEAK HR FACTOR		0.891			0.000			0.908			0.952		0.948					
	APP/DEPART	1,055	/	1,070	0	/	723	1,427	/	1,124	2,556	/	2,121	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:00 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: SR-55 SB Ramps
EAST & WEST: Dyer

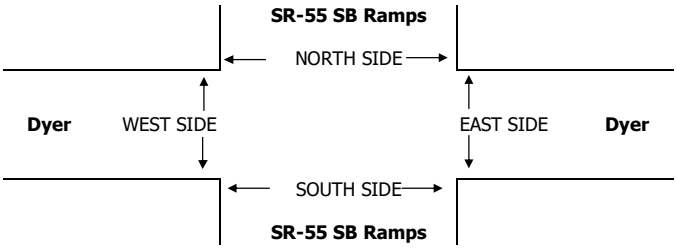
PROJECT #: SC2183
LOCATION #: 28
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND SR-55 SB Ramps			SOUTHBOUND SR-55 SB Ramps			EASTBOUND Dyer			WESTBOUND Dyer				U-TURNS				
	LANES:	NL 1.5	NT 0.5	NR 2	SL 0.5	ST 1.5	SR 1	EL 1	ET 3	ER 1	WL 2	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	73	5	119	7	46	12	3	254	66	76	129	23	813	0	0	0	0	0
	7:15 AM	56	2	140	5	53	16	7	320	68	79	161	18	925	0	0	0	1	1
	7:30 AM	64	7	127	12	72	16	2	344	81	95	153	21	994	0	0	0	0	0
	7:45 AM	51	6	125	5	68	16	14	331	64	101	166	38	985	0	0	0	0	0
	8:00 AM	65	6	120	14	47	11	6	314	76	90	167	27	943	0	0	0	1	1
	8:15 AM	38	6	128	18	52	16	12	335	61	117	154	20	957	0	0	0	0	0
	8:30 AM	45	3	88	18	41	18	7	243	70	131	137	18	819	0	0	0	0	0
	8:45 AM	46	0	73	18	37	12	12	235	61	92	170	19	775	0	0	0	0	0
	VOLUMES	438	35	920	97	416	117	63	2,376	547	781	1,237	184	7,211	0	0	0	2	2
	APPROACH %	31%	3%	66%	15%	66%	19%	2%	80%	18%	35%	56%	8%						
	APP/DEPART	1,393	/	282	630	/	1,742	2,986	/	3,395	2,202	/	1,792	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	218	25	500	49	239	59	34	1,324	282	403	640	106	3,879					
	APPROACH %	29%	3%	67%	14%	69%	17%	2%	81%	17%	35%	56%	9%						
	PEAK HR FACTOR		0.938			0.868			0.960			0.942		0.976					
	APP/DEPART	743	/	165	347	/	923	1,640	/	1,874	1,149	/	917	0					
PM	4:00 PM	74	1	43	30	57	19	18	308	62	113	219	14	958	0	0	0	0	0
	4:15 PM	74	0	56	21	34	14	16	336	42	107	258	11	969	0	0	0	0	0
	4:30 PM	64	2	55	26	55	24	11	383	51	138	238	9	1,056	0	1	0	1	2
	4:45 PM	84	2	63	15	39	22	15	370	48	127	233	23	1,041	0	0	1	0	1
	5:00 PM	74	4	49	40	61	36	19	372	57	138	257	15	1,122	0	0	0	0	0
	5:15 PM	93	1	70	20	68	26	19	382	48	147	253	16	1,143	0	0	0	1	1
	5:30 PM	59	1	56	23	40	16	23	341	32	97	243	18	949	0	0	1	0	1
	5:45 PM	83	2	68	17	47	22	31	346	40	95	196	15	962	0	0	0	0	0
	VOLUMES	605	13	460	192	401	179	152	2,838	380	962	1,897	121	8,200	0	1	2	2	5
	APPROACH %	56%	1%	43%	25%	52%	23%	5%	84%	11%	32%	64%	4%						
	APP/DEPART	1,078	/	285	772	/	1,741	3,370	/	3,491	2,980	/	2,683	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	315	9	237	101	223	108	64	1,507	204	550	981	63	4,362					
	APPROACH %	56%	2%	42%	23%	52%	25%	4%	85%	11%	35%	62%	4%						
	PEAK HR FACTOR		0.855			0.788			0.988			0.958		0.954					
	APP/DEPART	561	/	136	432	/	975	1,775	/	1,846	1,594	/	1,405	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:30 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Mar 1, 16

LOCATION: Santa Ana
NORTH & SOUTH: Glassell
EAST & WEST: La Veta

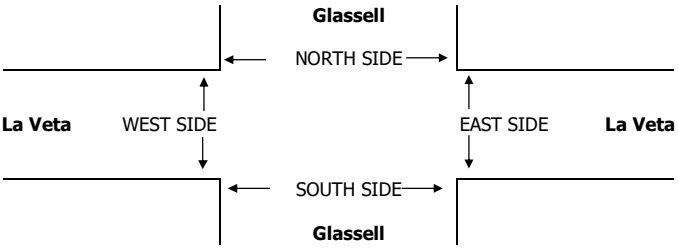
PROJECT #: SC0846
LOCATION #: 5
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Glassell			SOUTHBOUND Glassell			EASTBOUND La Veta			WESTBOUND La Veta				U-TURNS				
	LANES:	NL 2	NT 1	NR 1	SL 1	ST 2	SR 0	EL 1	ET 1	ER 1	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	23	68	11	1	70	14	8	28	80	44	33	1	381	0	0	0	0	0
	7:15 AM	61	73	17	3	94	16	8	37	85	57	39	1	491	0	0	0	0	0
	7:30 AM	58	85	22	1	104	17	6	54	100	65	58	0	570	0	0	0	0	0
	7:45 AM	70	93	27	3	72	17	15	61	107	53	65	1	584	0	0	0	0	0
	8:00 AM	76	121	43	9	74	19	10	45	82	52	61	1	593	0	0	0	0	0
	8:15 AM	48	96	28	3	94	22	5	27	71	56	55	3	508	0	0	0	0	0
	8:30 AM	47	94	16	1	47	9	6	36	82	35	30	0	403	0	0	0	0	0
	8:45 AM	44	112	29	0	30	12	14	34	67	32	43	0	417	0	0	0	0	0
	VOLUMES	427	742	193	21	585	126	72	322	674	394	384	7	3,947	0	0	0	0	0
	APPROACH %	31%	54%	14%	3%	80%	17%	7%	30%	63%	50%	49%	1%						
	APP/DEPART	1,362	/	821	732	/	1,653	1,068	/	536	785	/	937	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	252	395	120	16	344	75	36	187	360	226	239	5	2,255					
	APPROACH %	33%	51%	16%	4%	79%	17%	6%	32%	62%	48%	51%	1%						
	PEAK HR FACTOR		0.799			0.891			0.796			0.955		0.951					
	APP/DEPART	767	/	436	435	/	930	583	/	323	470	/	566	0					
PM	4:00 PM	62	122	38	2	107	5	19	69	92	35	54	3	608	0	0	0	0	0
	4:15 PM	72	111	60	5	103	11	16	53	100	31	33	2	597	0	0	0	0	0
	4:30 PM	89	104	42	3	114	9	16	34	79	29	36	1	556	0	0	0	0	0
	4:45 PM	91	114	40	1	118	14	12	45	79	23	38	2	577	0	0	0	0	0
	5:00 PM	106	131	45	3	105	7	20	58	128	33	49	2	687	0	0	0	0	0
	5:15 PM	109	132	38	5	125	11	24	82	112	33	61	3	735	0	0	0	0	0
	5:30 PM	122	117	36	3	120	8	13	61	95	40	58	2	675	0	0	0	0	0
	5:45 PM	116	90	34	3	129	9	21	56	108	42	101	3	712	0	0	0	0	0
	VOLUMES	767	921	333	25	921	74	141	458	793	266	430	18	5,147	0	0	0	0	0
	APPROACH %	38%	46%	16%	2%	90%	7%	10%	33%	57%	37%	60%	3%						
	APP/DEPART	2,021	/	1,080	1,020	/	1,980	1,392	/	816	714	/	1,271	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	453	470	153	14	479	35	78	257	443	148	269	10	2,809					
	APPROACH %	42%	44%	14%	3%	91%	7%	10%	33%	57%	35%	63%	2%						
	PEAK HR FACTOR		0.954			0.936			0.892			0.731		0.955					
	APP/DEPART	1,076	/	558	528	/	1,070	778	/	424	427	/	757	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	3	0	1	5	0	2	0	1	3	1	1	0	0	2
	7:15 AM	2	0	2	2	6	2	0	1	2	5	0	0	1	0	1
	7:30 AM	3	1	1	1	6	3	1	1	0	5	0	0	0	1	1
	7:45 AM	2	3	3	0	8	1	3	2	0	6	1	0	1	0	2
	8:00 AM	0	2	2	2	6	0	2	1	2	5	0	0	1	0	1
	8:15 AM	2	2	2	1	7	1	2	1	0	4	1	0	1	1	3
	8:30 AM	6	1	0	3	10	6	1	0	2	9	0	0	0	1	1
	8:45 AM	4	0	3	3	10	4	0	2	2	8	0	0	1	1	2
	TOTAL	20	12	13	13	58	17	11	8	9	45	3	1	5	4	13
PM	4:00 PM	1	5	2	2	10	1	5	2	0	8	0	0	0	2	2
	4:15 PM	2	3	1	5	11	2	3	1	2	8	0	0	0	3	3
	4:30 PM	2	1	0	5	8	2	1	0	3	6	0	0	0	2	2
	4:45 PM	5	2	0	5	12	4	1	0	3	8	1	1	0	2	4
	5:00 PM	8	0	6	2	16	7	0	6	1	14	1	0	0	1	2
	5:15 PM	5	1	3	2	11	4	1	3	2	10	1	0	0	0	1
	5:30 PM	5	3	3	0	11	4	3	3	0	10	1	0	0	0	1
	5:45 PM	4	0	3	5	12	4	0	1	5	10	0	0	2	0	2
	TOTAL	32	15	18	26	91	28	14	16	16	74	4	1	2	10	17

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Mar 1, 16

LOCATION: Santa Ana
NORTH & SOUTH: Glassell
EAST & WEST: SR-22 WB Off-Ramps

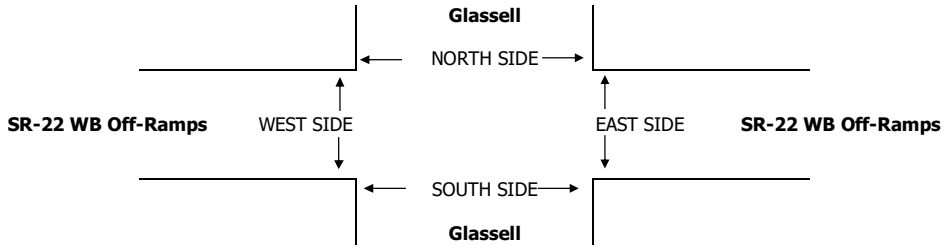
PROJECT #: SC0846
LOCATION #: 1
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Glassell			SOUTHBOUND Glassell			EASTBOUND SR-22 WB Off-Ramps			WESTBOUND SR-22 WB Off-Ramps				U-TURNS				
	LANES:	NL 1	NT 2	NR X	SL X	ST 2	SR 1	EL X	ET X	ER X	WL 1.5	WT 0	WR 1.5	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	62	71	0	0	133	56	0	0	0	61	0	44	427	0	0	0	0	0
	7:15 AM	107	93	0	0	177	63	0	0	0	79	4	89	612	0	0	0	0	0
	7:30 AM	109	124	0	0	174	76	0	0	0	67	0	101	651	0	0	0	0	0
	7:45 AM	139	164	0	0	207	102	0	0	0	60	0	113	785	0	0	0	0	0
	8:00 AM	125	158	0	0	156	91	0	0	0	67	0	106	703	0	0	0	0	0
	8:15 AM	103	127	0	0	166	67	0	0	0	67	0	70	600	0	0	0	0	0
	8:30 AM	99	98	0	0	142	44	0	0	0	92	0	70	545	0	0	0	0	0
	8:45 AM	94	129	0	0	103	50	0	0	0	69	0	76	521	0	0	0	0	0
	VOLUMES	838	964	0	0	1,258	549	0	0	0	562	4	669	4,844	0	0	0	0	0
	APPROACH %	47%	53%	0%	0%	70%	30%	0%	0%	0%	46%	0%	54%						
	APP/DEPART	1,802	/	1,633	1,807	/	1,820	0	/	0	1,235	/	1,391	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	480	539	0	0	714	332	0	0	0	273	4	409	2,751					
	APPROACH %	47%	53%	0%	0%	68%	32%	0%	0%	0%	40%	1%	60%						
	PEAK HR FACTOR		0.841			0.846			0.000			0.991		0.876					
	APP/DEPART	1,019	/	948	1,046	/	987	0	/	0	686	/	816	0					
PM	4:00 PM	99	134	0	0	171	45	0	0	0	31	1	52	533	0	0	0	0	0
	4:15 PM	126	219	0	0	221	53	0	0	0	54	0	58	731	0	0	0	0	0
	4:30 PM	123	188	0	0	182	55	0	0	0	53	0	62	663	0	0	0	0	0
	4:45 PM	129	207	0	0	198	40	0	0	0	51	0	72	697	0	0	0	0	0
	5:00 PM	138	239	0	0	198	68	0	0	0	39	1	88	771	0	0	0	0	0
	5:15 PM	113	210	0	0	230	69	0	0	0	43	1	86	752	0	0	0	0	0
	5:30 PM	144	225	0	0	200	47	0	0	0	55	2	66	739	0	0	0	0	0
	5:45 PM	140	200	0	0	215	61	0	0	0	56	2	103	777	1	0	0	0	1
	VOLUMES	1,012	1,622	0	0	1,615	438	0	0	0	382	7	587	5,663	1	0	0	0	1
	APPROACH %	38%	62%	0%	0%	79%	21%	0%	0%	0%	39%	1%	60%						
	APP/DEPART	2,634	/	2,209	2,053	/	1,998	0	/	0	976	/	1,456	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	535	874	0	0	843	245	0	0	0	193	6	343	3,039					
	APPROACH %	38%	62%	0%	0%	77%	23%	0%	0%	0%	36%	1%	63%						
	PEAK HR FACTOR		0.934			0.910			0.000			0.842		0.978					
	APP/DEPART	1,409	/	1,217	1,088	/	1,037	0	/	0	542	/	785	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	3	1	4	0	0	1	0	1	0	0	2	1	3
	7:15 AM	0	0	3	1	4	0	0	2	0	2	0	0	1	1	2
	7:30 AM	0	0	3	1	4	0	0	2	0	2	0	0	1	1	2
	7:45 AM	0	0	1	1	2	0	0	1	0	1	0	0	0	1	1
	8:00 AM	0	0	4	3	7	0	0	2	3	5	0	0	2	0	2
	8:15 AM	0	0	3	1	4	0	0	1	0	1	0	0	2	1	3
	8:30 AM	0	0	2	3	5	0	0	1	2	3	0	0	1	1	2
	8:45 AM	0	0	2	1	3	0	0	1	0	1	0	0	1	1	2
	TOTAL	0	0	21	12	33	0	0	11	5	16	0	0	10	7	17
PM	4:00 PM	0	0	4	5	9	0	0	2	4	6	0	0	2	1	3
	4:15 PM	0	0	8	1	9	0	0	4	1	5	0	0	4	0	4
	4:30 PM	0	0	3	2	5	0	0	2	0	2	0	0	1	2	3
	4:45 PM	0	0	5	6	11	0	0	2	3	5	0	0	3	3	6
	5:00 PM	0	0	6	2	8	0	0	4	0	4	0	0	2	2	4
	5:15 PM	0	0	5	0	5	0	0	2	0	2	0	0	3	0	3
	5:30 PM	0	0	6	0	6	0	0	3	0	3	0	0	3	0	3
	5:45 PM	0	0	6	2	8	0	0	4	0	4	0	0	2	2	4
	TOTAL	0	0	43	18	61	0	0	23	8	31	0	0	20	10	30

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Mar 1, 16

LOCATION: Santa Ana
NORTH & SOUTH: Glassell
EAST & WEST: SR-22 EB On-Ramps

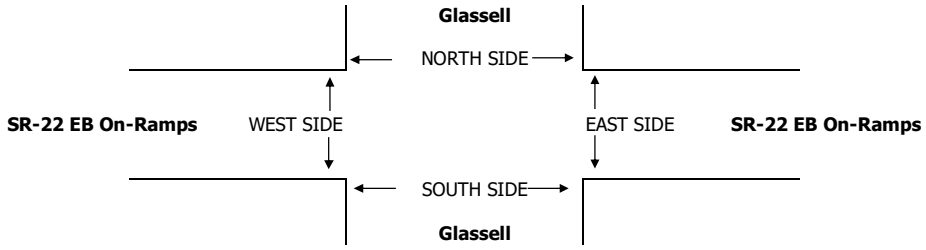
PROJECT #: SC0846
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Glassell			SOUTHBOUND Glassell			EASTBOUND SR-22 EB On-Ramps			WESTBOUND SR-22 EB On-Ramps				U-TURNS				
	LANES:	NL X	NT 2	NR 1	SL 1	ST 2	SR X	EL 1.3	ET 0.3	ER 1.3	WL X	WT X	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	113	51	79	158	0	35	0	209	0	0	0	645	0	0	0	0	0
	7:15 AM	0	167	51	58	192	0	46	0	239	0	0	0	753	0	0	0	0	0
	7:30 AM	0	185	66	81	159	0	57	0	236	0	0	0	784	0	0	0	0	0
	7:45 AM	0	222	50	71	182	0	84	0	241	0	0	0	850	0	0	0	0	0
	8:00 AM	0	212	42	59	171	0	60	0	256	0	0	0	800	0	0	0	0	0
	8:15 AM	0	147	40	70	162	0	53	1	271	0	0	0	744	0	0	0	0	0
	8:30 AM	0	157	41	43	159	0	60	1	233	0	0	0	694	0	0	0	0	0
	8:45 AM	0	145	36	53	128	0	71	0	208	0	0	0	641	0	0	0	0	0
	VOLUMES	0	1,348	377	514	1,311	0	466	2	1,893	0	0	0	5,911	0	0	0	0	0
	APPROACH %	0%	78%	22%	28%	72%	0%	20%	0%	80%	0%	0%	0%						
	APP/DEPART	1,725	/	1,814	1,825	/	3,204	2,361	/	893	0	/	0	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	0	786	209	269	704	0	247	0	972	0	0	0	3,187					
	APPROACH %	0%	79%	21%	28%	72%	0%	20%	0%	80%	0%	0%	0%						
	PEAK HR FACTOR		0.915			0.961			0.938			0.000		0.937					
	APP/DEPART	995	/	1,033	973	/	1,676	1,219	/	478	0	/	0	0					
PM	4:00 PM	0	237	78	85	155	0	64	0	116	0	0	0	735	0	0	0	0	0
	4:15 PM	0	226	64	92	164	0	86	0	126	0	0	0	758	0	1	0	0	1
	4:30 PM	0	253	63	77	146	0	59	0	121	0	0	0	719	0	0	0	0	0
	4:45 PM	0	265	58	91	138	0	77	0	129	0	0	0	758	0	0	0	0	0
	5:00 PM	0	276	69	100	160	0	67	0	147	0	0	0	819	0	0	0	0	0
	5:15 PM	0	277	85	87	157	0	53	2	119	0	0	0	780	0	0	0	0	0
	5:30 PM	0	310	71	87	165	0	44	0	111	0	0	0	788	0	0	0	0	0
	5:45 PM	0	292	70	92	172	0	56	1	106	0	0	0	789	0	0	0	0	0
	VOLUMES	0	2,136	558	711	1,257	0	506	3	975	0	0	0	6,146	0	1	0	0	1
	APPROACH %	0%	79%	21%	36%	64%	0%	34%	0%	66%	0%	0%	0%						
	APP/DEPART	2,694	/	2,643	1,968	/	2,232	1,484	/	1,271	0	/	0	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	1,155	295	366	654	0	220	3	483	0	0	0	3,176					
	APPROACH %	0%	80%	20%	36%	64%	0%	31%	0%	68%	0%	0%	0%						
	PEAK HR FACTOR		0.951			0.966			0.825			0.000		0.969					
	APP/DEPART	1,450	/	1,375	1,020	/	1,137	706	/	664	0	/	0	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	3	1	4	0	0	1	0	1	0	0	2	1	3
	7:15 AM	0	0	4	1	5	0	0	2	0	2	0	0	2	1	3
	7:30 AM	0	0	1	1	2	0	0	1	0	1	0	0	0	1	1
	7:45 AM	0	0	3	1	4	0	0	2	1	3	0	0	1	0	1
	8:00 AM	0	0	4	2	6	0	0	2	2	4	0	0	2	0	2
	8:15 AM	0	0	2	1	3	0	0	1	0	1	0	0	1	1	2
	8:30 AM	0	0	2	4	6	0	0	1	2	3	0	0	1	2	3
	8:45 AM	0	1	2	0	3	0	1	1	0	2	0	0	1	0	1
	TOTAL	0	1	21	11	33	0	1	11	5	17	0	0	10	6	16
PM	4:00 PM	0	0	6	5	11	0	0	2	4	6	0	0	4	1	5
	4:15 PM	0	0	7	2	9	0	0	5	1	6	0	0	2	1	3
	4:30 PM	0	0	4	3	7	0	0	2	1	3	0	0	2	2	4
	4:45 PM	0	0	5	5	10	0	0	2	2	4	0	0	3	3	6
	5:00 PM	0	0	7	1	8	0	0	4	0	4	0	0	3	1	4
	5:15 PM	0	2	5	0	7	0	2	3	0	5	0	0	2	0	2
	5:30 PM	0	0	6	0	6	0	0	3	0	3	0	0	3	0	3
	5:45 PM	0	0	11	3	14	0	0	8	0	8	0	0	3	3	6
	TOTAL	0	2	51	19	72	0	2	29	8	39	0	0	22	11	33

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: Fairhaven

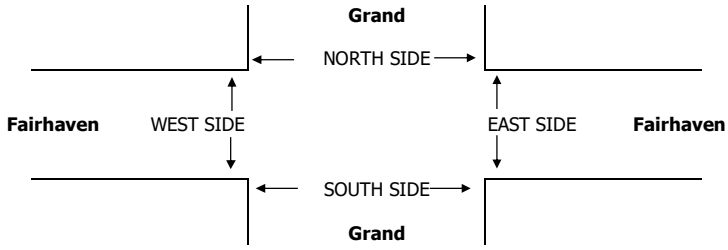
PROJECT #: SC0846
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND Fairhaven			WESTBOUND Fairhaven				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 2	SR 1	EL 1	ET 2	ER 0	WL 1	WT 1	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	4	146	15	32	350	6	19	6	11	38	3	30	660	1	0	0	0	1
	7:15 AM	3	169	23	27	367	7	18	15	13	55	3	55	755	3	0	0	0	3
	7:30 AM	6	198	30	45	341	12	26	13	20	56	2	57	806	1	0	0	0	1
	7:45 AM	3	183	31	50	333	8	29	22	13	63	9	52	796	1	1	0	0	2
	8:00 AM	5	158	17	45	346	3	22	7	10	70	12	56	751	2	0	0	0	2
	8:15 AM	9	152	27	28	387	3	19	5	11	66	5	35	747	2	1	0	0	3
	8:30 AM	6	154	7	36	342	16	26	6	8	62	4	42	709	2	0	0	0	2
	8:45 AM	2	164	22	31	335	11	15	6	9	47	1	41	684	1	0	0	0	1
	VOLUMES	38	1,324	172	294	2,801	66	174	80	95	457	39	368	5,908	13	2	0	0	15
	APPROACH %	2%	86%	11%	9%	89%	2%	50%	23%	27%	53%	5%	43%						
	APP/DEPART	1,534	/	1,868	3,161	/	3,366	349	/	544	864	/	130	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	17	708	101	167	1,387	30	95	57	56	244	26	220	3,108					
	APPROACH %	2%	86%	12%	11%	88%	2%	46%	27%	27%	50%	5%	45%						
	PEAK HR FACTOR		0.882			0.988			0.813			0.888		0.964					
	APP/DEPART	826	/	1,024	1,584	/	1,694	208	/	324	490	/	66	0					
PM	4:00 PM	11	271	36	31	181	12	14	11	3	40	6	31	647	4	2	0	0	6
	4:15 PM	17	254	36	36	206	18	21	6	4	44	7	29	678	3	0	0	0	3
	4:30 PM	15	306	34	45	187	14	12	4	4	44	9	24	698	5	3	0	0	8
	4:45 PM	9	313	47	45	203	21	13	7	7	44	7	36	752	3	1	0	0	4
	5:00 PM	9	303	53	54	164	23	25	12	7	54	4	38	746	3	4	0	0	7
	5:15 PM	11	293	62	58	238	16	12	7	4	56	9	47	813	1	4	0	0	5
	5:30 PM	14	297	60	58	218	17	23	13	11	61	18	45	835	3	1	0	0	4
	5:45 PM	10	273	58	43	239	22	15	11	9	74	15	43	812	1	1	0	0	2
	VOLUMES	96	2,310	386	370	1,636	143	135	71	49	417	75	293	5,981	23	16	0	0	39
	APPROACH %	3%	83%	14%	17%	76%	7%	53%	28%	19%	53%	10%	37%						
	APP/DEPART	2,792	/	2,754	2,149	/	2,125	255	/	811	785	/	291	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	44	1,166	233	213	859	78	75	43	31	245	46	173	3,206					
	APPROACH %	3%	81%	16%	19%	75%	7%	50%	29%	21%	53%	10%	37%						
	PEAK HR FACTOR		0.972			0.921			0.793			0.879		0.960					
	APP/DEPART	1,443	/	1,424	1,150	/	1,143	149	/	479	464	/	160	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	6	3	1	10	0	6	1	1	8	0	0	2	0	2
	7:15 AM	0	2	2	0	4	0	2	2	0	4	0	0	0	0	0
	7:30 AM	2	18	9	3	32	2	18	9	1	30	0	0	0	2	2
	7:45 AM	18	22	18	8	66	18	22	16	8	64	0	0	2	0	2
	8:00 AM	6	13	1	3	23	6	13	1	2	22	0	0	0	1	1
	8:15 AM	1	3	1	1	6	1	3	1	1	6	0	0	0	0	0
	8:30 AM	2	3	3	2	10	2	3	1	1	7	0	0	2	1	3
	8:45 AM	2	1	4	0	7	2	0	3	0	5	0	1	1	0	2
	TOTAL	31	68	41	18	158	31	67	34	14	146	0	1	7	4	12
PM	4:00 PM	3	4	1	1	9	3	4	1	0	8	0	0	0	1	1
	4:15 PM	4	2	1	1	8	4	1	1	1	7	0	1	0	0	1
	4:30 PM	2	3	4	2	11	2	2	3	0	7	0	1	1	2	4
	4:45 PM	1	6	2	3	12	1	6	2	3	12	0	0	0	0	0
	5:00 PM	6	8	4	0	18	5	8	3	0	16	1	0	1	0	2
	5:15 PM	3	4	9	3	19	2	3	5	0	10	1	1	4	3	9
	5:30 PM	8	6	2	5	21	8	6	2	2	18	0	0	0	3	3
	5:45 PM	0	10	14	1	25	0	10	8	1	19	0	0	6	0	6
	TOTAL	27	43	37	16	123	25	40	25	7	97	2	3	12	9	26

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GRAND AVENUE
E-W Direction: SANTA CLARA AVENUE

File Name : H1702015
Site Code :
Start Date : 2/9/2017
Page No : 1

Groups Printed- Turning Movements

	GRAND AVENUE Southbound				SANTA CLARA AVENUE Westbound			GRAND AVENUE Northbound			SANTA CLARA AVENUE Eastbound			
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
07:00	47	415	37	1	39	31	17	17	88	7	10	31	26	766
07:15	78	364	64	0	47	54	19	28	83	13	11	56	35	852
07:30	84	333	80	1	67	58	33	31	131	15	13	65	26	937
07:45	76	317	83	0	52	51	36	37	133	29	16	58	32	920
Total	285	1429	264	2	205	194	105	113	435	64	50	210	119	3475
08:00	71	362	54	0	38	61	28	19	102	7	6	47	45	840
08:15	70	442	35	0	32	47	30	24	91	5	6	32	26	840
08:30	46	429	54	0	29	18	22	19	118	10	15	20	20	800
08:45	45	338	48	0	30	17	25	20	104	11	12	25	21	696
Total	232	1571	191	0	129	143	105	82	415	33	39	124	112	3176
*** BREAK ***														
16:00	45	163	42	1	44	56	35	42	249	22	5	32	33	769
16:15	47	168	38	1	25	46	38	62	268	18	10	31	37	789
16:30	26	195	31	0	43	45	36	55	280	18	11	36	36	812
16:45	43	170	48	1	49	57	25	47	276	17	14	34	36	817
Total	161	696	159	3	161	204	134	206	1073	75	40	133	142	3187
17:00	61	201	40	2	87	68	32	64	297	16	7	56	43	974
17:15	60	234	60	2	52	63	29	59	286	28	7	39	46	965
17:30	48	179	56	0	59	55	37	50	287	26	8	43	27	875
17:45	44	228	57	1	54	50	34	65	280	15	12	50	38	928
Total	213	842	213	5	252	236	132	238	1150	85	34	188	154	3742
Grand Total	891	4538	827	10	747	777	476	639	3073	257	163	655	527	13580
Apprch %	14.2	72.4	13.2	0.2	37.3	38.8	23.8	16.1	77.4	6.5	12.1	48.7	39.2	
Total %	6.6	33.4	6.1	0.1	5.5	5.7	3.5	4.7	22.6	1.9	1.2	4.8	3.9	

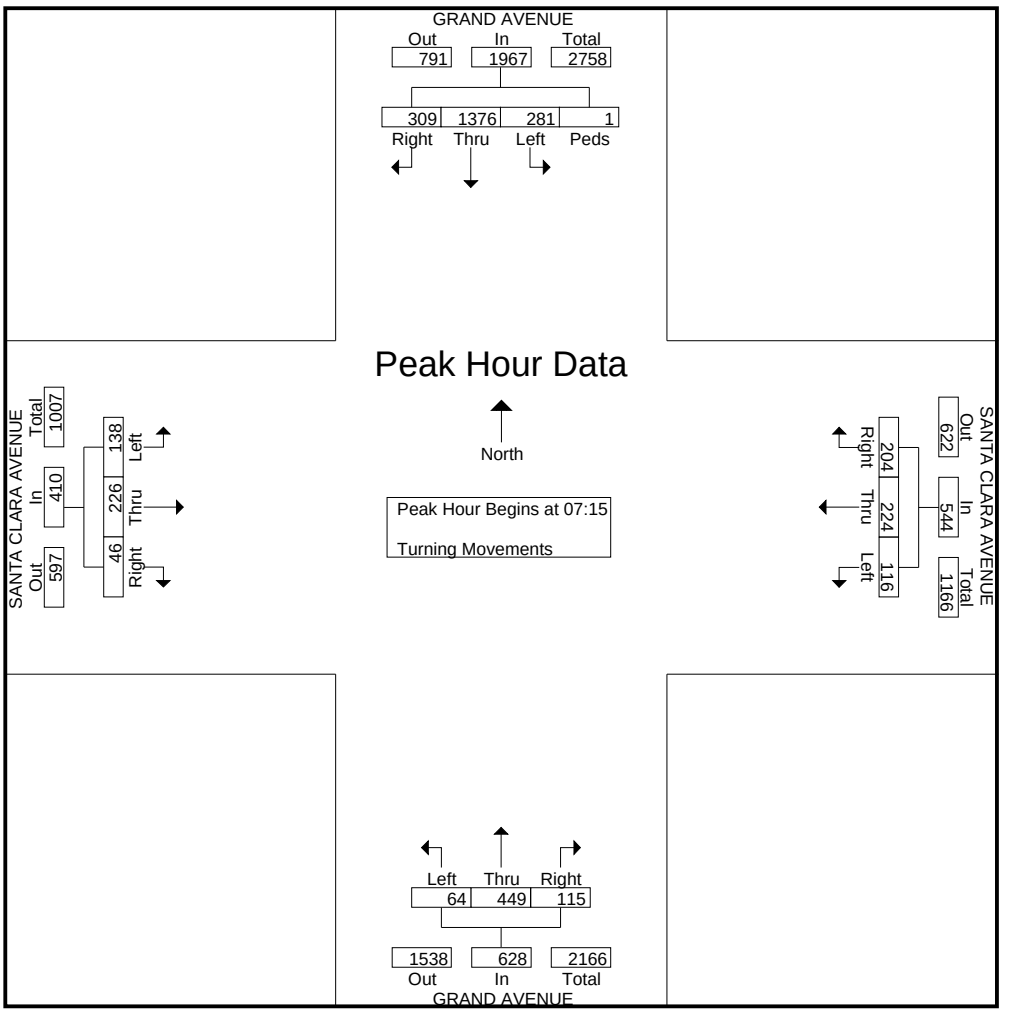
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GRAND AVENUE
E-W Direction: SANTA CLARA AVENUE

File Name : H1702015
Site Code :
Start Date : 2/9/2017
Page No : 2

	GRAND AVENUE Southbound					SANTA CLARA AVENUE Westbound				GRAND AVENUE Northbound				SANTA CLARA AVENUE Eastbound				
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:15																		
07:15	78	**364**	64	0	**506**	47	54	19	120	28	83	13	124	11	56	35	102	852
07:30	**84**	333	80	**1**	498	**67**	58	33	**158**	31	131	15	177	13	**65**	26	104	**937**
07:45	76	317	**83**	0	476	52	51	**36**	139	**37**	**133**	**29**	**199**	**16**	58	32	**106**	920
08:00	71	362	54	0	487	38	**61**	28	127	19	102	7	128	6	47	**45**	98	840
Total Volume	309	1376	281	1	1967	204	224	116	544	115	449	64	628	46	226	138	410	3549
% App. Total	15.7	70	14.3	0.1		37.5	41.2	21.3		18.3	71.5	10.2		11.2	55.1	33.7		
PHF	.920	.945	.846	.250	.972	.761	.918	.806	.861	.777	.844	.552	.789	.719	.869	.767	.967	.947



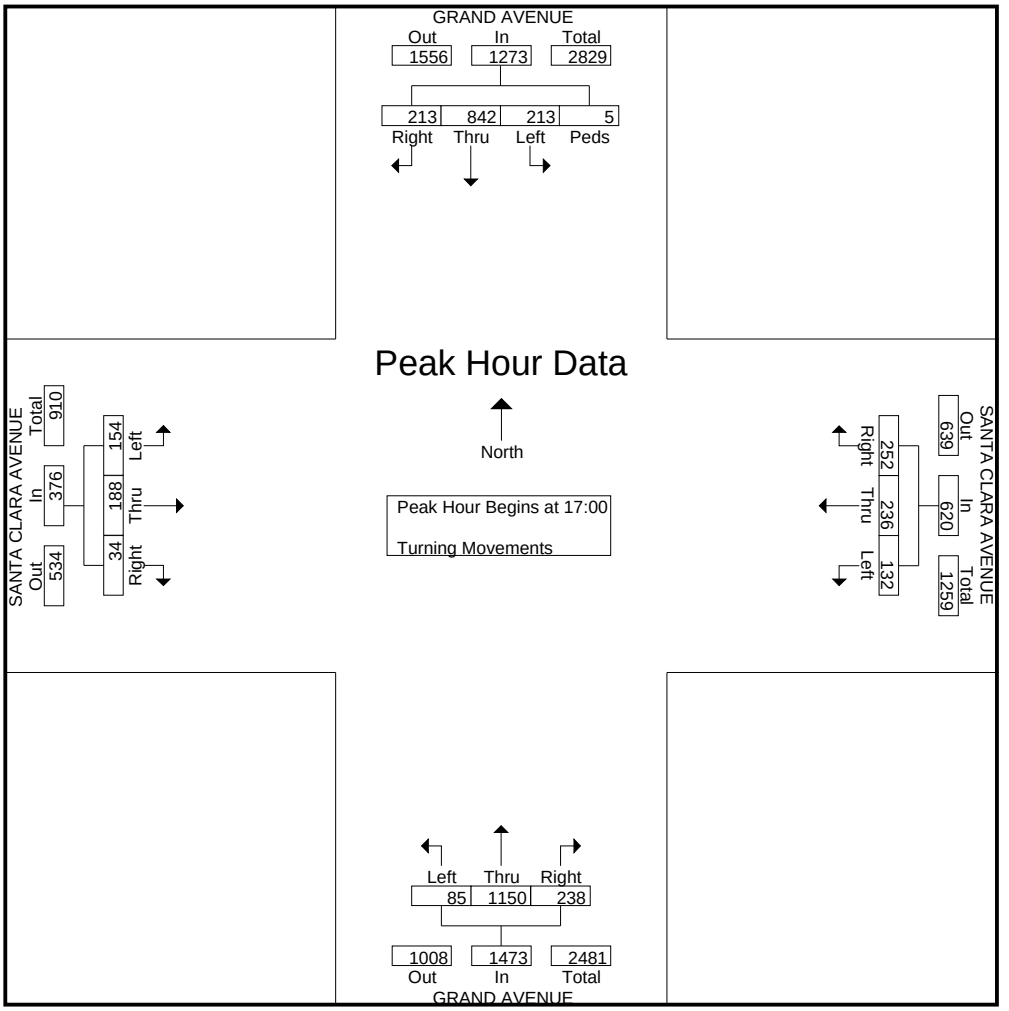
Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

City: SANTA ANA
N-S Direction: GRAND AVENUE
E-W Direction: SANTA CLARA AVENUE

File Name : H1702015
Site Code :
Start Date : 2/9/2017
Page No : 3

	GRAND AVENUE Southbound					SANTA CLARA AVENUE Westbound				GRAND AVENUE Northbound				SANTA CLARA AVENUE Eastbound				
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 17:00																		
17:00	**61**	201	40	**2**	304	**87**	**68**	32	**187**	64	**297**	16	**377**	7	**56**	43	**106**	**974**
17:15	60	**234**	**60**	2	**356**	52	63	29	144	59	286	**28**	373	7	39	**46**	92	965
17:30	48	179	56	0	283	59	55	**37**	151	50	287	26	363	8	43	27	78	875
17:45	44	228	57	1	330	54	50	34	138	**65**	280	15	360	**12**	50	38	100	928
Total Volume	213	842	213	5	1273	252	236	132	620	238	1150	85	1473	34	188	154	376	3742
% App. Total	16.7	66.1	16.7	0.4		40.6	38.1	21.3		16.2	78.1	5.8		9	50	41		
PHF	.873	.900	.888	.625	.894	.724	.868	.892	.829	.915	.968	.759	.977	.708	.839	.837	.887	.960



INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 14, 19

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: 17th

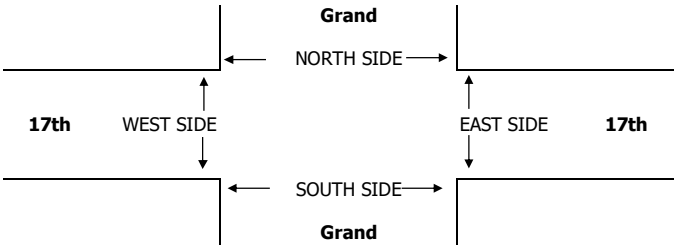
PROJECT #: SC2183
LOCATION #: 24
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND 17th			WESTBOUND 17th				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 2	SR 1	EL 2	ET 3	ER 0	WL 2	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	24	85	43	45	293	34	38	137	41	46	115	10	911	1	0	5	0	6
	7:15 AM	32	100	80	51	301	46	46	183	31	67	176	18	1,131	3	0	5	0	8
	7:30 AM	49	146	87	60	309	60	64	216	31	89	210	26	1,347	1	0	6	0	7
	7:45 AM	43	137	97	77	289	73	53	217	17	84	236	24	1,347	2	0	3	0	5
	8:00 AM	37	88	59	95	287	53	58	210	25	65	177	19	1,173	0	0	4	0	4
	8:15 AM	36	70	56	67	314	39	35	169	34	59	132	15	1,026	3	0	5	0	8
	8:30 AM	44	93	50	62	305	35	33	137	35	48	114	26	982	1	0	12	0	13
	8:45 AM	41	77	50	80	293	45	30	144	30	46	113	13	962	1	0	2	0	3
	VOLUMES	306	796	522	537	2,391	385	357	1,413	244	504	1,273	151	8,879	12	0	42	0	54
	APPROACH %	19%	49%	32%	16%	72%	12%	18%	70%	12%	26%	66%	8%						
	APP/DEPART	1,624	/	1,262	3,313	/	3,151	2,014	/	2,472	1,928	/	1,994	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	161	471	323	283	1,186	232	221	826	104	305	799	87	4,998					
	APPROACH %	17%	49%	34%	17%	70%	14%	19%	72%	9%	26%	67%	7%						
	PEAK HR FACTOR		0.847			0.969			0.925			0.866		0.928					
	APP/DEPART	955	/	761	1,701	/	1,601	1,151	/	1,432	1,191	/	1,204	0					
PM	4:00 PM	76	196	78	49	111	33	54	171	24	60	246	58	1,156	0	0	5	0	5
	4:15 PM	64	193	55	55	132	51	62	204	29	59	255	50	1,209	0	0	8	0	8
	4:30 PM	64	222	62	45	105	28	69	185	25	79	251	45	1,180	0	0	13	0	13
	4:45 PM	68	211	58	59	111	24	72	196	39	74	292	51	1,255	2	0	9	0	11
	5:00 PM	61	186	47	72	154	31	111	232	42	80	262	36	1,314	1	0	13	0	14
	5:15 PM	52	212	49	77	157	29	82	242	39	68	287	46	1,340	1	0	6	0	7
	5:30 PM	62	259	64	59	154	42	77	207	27	75	255	66	1,347	1	0	11	0	12
	5:45 PM	68	249	48	66	126	52	75	168	40	61	213	49	1,215	3	0	14	0	17
	VOLUMES	515	1,728	461	482	1,050	290	602	1,605	265	556	2,061	401	10,016	8	0	79	0	87
	APPROACH %	19%	64%	17%	26%	58%	16%	24%	65%	11%	18%	68%	13%						
	APP/DEPART	2,704	/	2,652	1,822	/	1,879	2,472	/	2,548	3,018	/	2,937	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	243	868	218	267	576	126	342	877	147	297	1,096	199	5,256					
	APPROACH %	18%	65%	16%	28%	59%	13%	25%	64%	11%	19%	69%	13%						
	PEAK HR FACTOR		0.863			0.921			0.887			0.954		0.976					
	APP/DEPART	1,329	/	1,370	969	/	1,025	1,366	/	1,362	1,592	/	1,499	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Feb 16, 17

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: I-5 NB Ramps

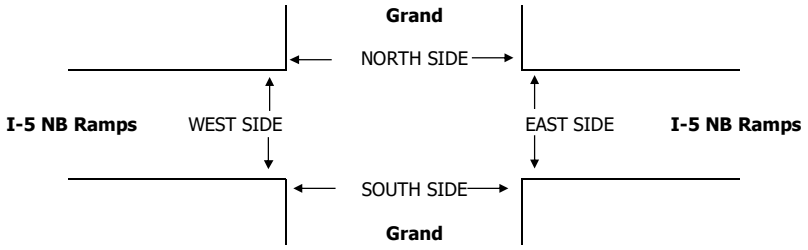
PROJECT #: SC1220
LOCATION #: 3
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND I-5 NB Ramps			WESTBOUND I-5 NB Ramps				U-TURNS				
	LANES:	NL X	NT 2	NR 1	SL 1	ST 3	SR X	EL X	ET X	ER X	WL 2	WT X	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	123	106	19	411	0	0	0	0	104	0	31	794	0	3	0	0	3
	7:15 AM	0	184	108	8	495	0	0	0	0	97	0	15	907	0	3	0	0	3
	7:30 AM	0	226	137	12	482	0	0	0	0	94	0	31	982	0	1	0	0	1
	7:45 AM	0	229	117	20	425	0	0	0	0	131	0	43	965	0	7	0	0	7
	8:00 AM	0	167	103	16	412	0	0	0	0	120	0	33	851	0	6	0	0	6
	8:15 AM	0	147	103	12	389	0	0	0	0	97	0	41	789	0	5	0	0	5
	8:30 AM	0	153	104	9	380	0	0	0	0	93	0	33	772	0	4	0	0	4
	8:45 AM	0	151	96	6	354	0	0	0	0	115	0	37	759	0	0	0	0	0
	VOLUMES	0	1,380	874	102	3,348	0	0	0	0	851	0	264	6,819	0	29	0	0	29
	APPROACH %	0%	61%	39%	3%	97%	0%	0%	0%	0%	76%	0%	24%						
	APP/DEPART	2,254	/	1,673	3,450	/	4,199	0	/	947	1,115	/	0	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	0	806	465	56	1,814	0	0	0	0	442	0	122	3,705					
	APPROACH %	0%	63%	37%	3%	97%	0%	0%	0%	0%	78%	0%	22%						
	PEAK HR FACTOR		0.875			0.929			0.000			0.810		0.943					
	APP/DEPART	1,271	/	945	1,870	/	2,256	0	/	504	564	/	0	0					
PM	4:00 PM	0	292	260	12	217	0	0	0	0	38	0	38	857	0	8	0	0	8
	4:15 PM	0	286	262	14	210	0	0	0	0	43	0	46	861	0	7	0	0	7
	4:30 PM	0	313	244	14	223	0	0	0	0	50	0	46	890	0	7	0	0	7
	4:45 PM	0	337	221	8	262	0	0	0	0	37	0	36	901	0	7	0	0	7
	5:00 PM	0	307	246	12	280	0	0	0	0	22	0	42	909	0	6	0	0	6
	5:15 PM	0	335	273	12	273	0	0	0	0	42	0	28	963	0	6	0	0	6
	5:30 PM	0	286	233	12	285	0	0	0	0	30	0	51	897	0	6	0	0	6
	5:45 PM	0	330	219	10	291	0	0	0	0	44	0	45	939	0	5	0	0	5
	VOLUMES	0	2,486	1,958	94	2,041	0	0	0	0	306	0	332	7,217	0	52	0	0	52
	APPROACH %	0%	56%	44%	4%	96%	0%	0%	0%	0%	48%	0%	52%						
	APP/DEPART	4,444	/	2,870	2,135	/	2,347	0	/	2,000	638	/	0	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	1,258	971	46	1,129	0	0	0	0	138	0	166	3,708					
	APPROACH %	0%	56%	44%	4%	96%	0%	0%	0%	0%	45%	0%	55%						
	PEAK HR FACTOR		0.917			0.976			0.000			0.854		0.963					
	APP/DEPART	2,229	/	1,447	1,175	/	1,267	0	/	994	304	/	0	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Feb 16, 17

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: Santa Ana

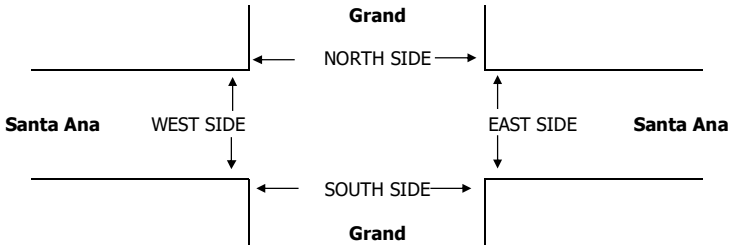
PROJECT #: SC1220
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND Santa Ana			WESTBOUND Santa Ana				U-TURNS				
	LANES:	NL 1	NT 2.5	NR 0.5	SL 1	ST 2	SR 2	EL 2	ET 1	ER 2	WL 0.5	WT 1	WR 0.5	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	14	210	14	25	256	235	30	35	126	2	25	8	980	0	0	0	0	0
	7:15 AM	12	194	11	49	263	241	62	49	90	1	51	8	1,031	1	0	0	0	1
	7:30 AM	18	292	18	37	308	253	60	61	99	2	123	9	1,280	2	0	0	0	2
	7:45 AM	18	273	13	22	307	239	75	51	97	0	141	9	1,245	0	0	0	0	0
	8:00 AM	20	214	7	28	253	265	58	49	129	1	47	7	1,078	0	1	0	0	1
	8:15 AM	19	214	9	10	271	219	45	33	98	3	27	3	951	4	0	0	0	4
	8:30 AM	22	198	10	15	275	186	46	25	99	3	32	3	914	2	0	0	0	2
	8:45 AM	17	186	5	13	286	181	49	22	95	5	24	11	894	1	0	0	0	1
	VOLUMES	140	1,781	87	199	2,219	1,819	425	325	833	17	470	58	8,373	10	1	0	0	11
	APPROACH %	7%	89%	4%	5%	52%	43%	27%	21%	53%	3%	86%	11%						
	APP/DEPART	2,008	/	2,265	4,237	/	3,079	1,583	/	610	545	/	2,419	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	68	973	49	136	1,131	998	255	210	415	4	362	33	4,634					
	APPROACH %	6%	89%	4%	6%	50%	44%	29%	24%	47%	1%	91%	8%						
	PEAK HR FACTOR		0.831			0.947			0.932			0.665		0.905					
	APP/DEPART	1,090	/	1,262	2,265	/	1,553	880	/	394	399	/	1,425	0					
PM	4:00 PM	31	435	3	5	131	103	63	18	68	4	19	12	892	0	1	0	0	1
	4:15 PM	33	417	3	12	160	98	87	22	91	4	26	23	976	2	1	0	0	3
	4:30 PM	50	461	3	5	126	122	95	24	88	6	45	21	1,046	1	1	0	0	2
	4:45 PM	40	441	4	9	167	118	87	23	105	3	41	18	1,056	0	0	0	0	0
	5:00 PM	48	427	5	5	190	120	85	91	77	3	34	22	1,107	0	0	0	0	0
	5:15 PM	47	483	5	8	177	126	80	47	69	7	40	20	1,109	5	1	0	0	6
	5:30 PM	38	457	13	12	177	137	73	37	84	5	33	23	1,089	1	0	0	0	1
	5:45 PM	29	465	7	8	183	133	80	19	76	4	23	29	1,056	2	0	0	0	2
	VOLUMES	316	3,586	43	64	1,311	957	650	281	658	36	261	168	8,331	11	4	0	0	15
	APPROACH %	8%	91%	1%	3%	56%	41%	41%	18%	41%	8%	56%	36%						
	APP/DEPART	3,945	/	4,408	2,332	/	2,016	1,589	/	384	465	/	1,523	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	162	1,832	30	33	727	516	318	194	306	19	130	94	4,361					
	APPROACH %	8%	91%	1%	3%	57%	40%	39%	24%	37%	8%	53%	39%						
	PEAK HR FACTOR		0.946			0.979			0.808			0.907		0.983					
	APP/DEPART	2,024	/	2,245	1,276	/	1,060	818	/	256	243	/	800	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: 1st

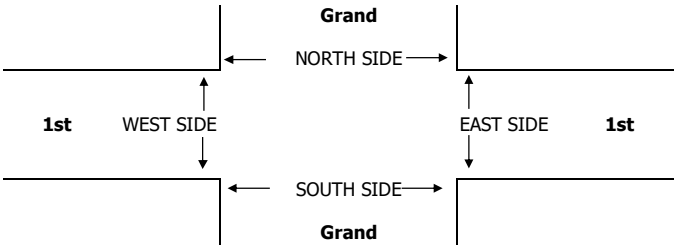
PROJECT #: SC2183
LOCATION #: 25
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND 1st			WESTBOUND 1st				U-TURNS				
	LANES:	NL 2	NT 3	NR 0	SL 2	ST 3	SR 1	EL 2	ET 3	ER 0	WL 2	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	14	109	12	23	348	25	48	241	26	50	192	18	1,106	0	0	0	1	1
	7:15 AM	42	163	8	25	357	47	64	246	37	50	212	23	1,274	0	0	1	0	1
	7:30 AM	63	223	10	25	379	36	91	169	70	76	233	28	1,403	0	2	2	0	4
	7:45 AM	69	197	9	18	351	38	94	177	62	71	233	24	1,343	0	1	0	2	3
	8:00 AM	36	160	7	30	330	51	79	193	53	47	180	23	1,189	0	0	1	2	3
	8:15 AM	35	136	11	22	381	35	67	249	34	47	182	25	1,224	0	0	2	1	3
	8:30 AM	42	146	6	24	342	39	63	250	43	44	191	30	1,220	0	1	2	2	5
	8:45 AM	35	138	7	19	346	35	48	257	56	53	180	27	1,201	0	0	0	4	4
	VOLUMES	336	1,272	70	186	2,834	306	554	1,782	381	438	1,603	198	9,960	0	4	8	12	24
	APPROACH %	20%	76%	4%	6%	85%	9%	20%	66%	14%	20%	72%	9%						
	APP/DEPART	1,678	/	2,020	3,326	/	3,641	2,717	/	2,046	2,239	/	2,253	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	210	743	34	98	1,417	172	328	785	222	244	858	98	5,209					
	APPROACH %	21%	75%	3%	6%	84%	10%	25%	59%	17%	20%	72%	8%						
	PEAK HR FACTOR		0.834			0.959			0.962			0.890		0.928					
	APP/DEPART	987	/	1,168	1,687	/	1,879	1,335	/	918	1,200	/	1,244	0					
PM	4:00 PM	42	338	10	27	149	75	67	224	26	31	238	34	1,261	0	2	3	1	6
	4:15 PM	31	300	12	35	181	63	69	201	23	33	213	57	1,218	0	1	2	4	7
	4:30 PM	47	299	7	34	191	75	63	240	20	39	232	44	1,291	2	2	0	3	7
	4:45 PM	43	311	8	22	178	66	75	243	21	46	248	36	1,297	0	0	4	5	9
	5:00 PM	37	279	10	27	149	61	88	265	21	36	239	45	1,257	0	4	3	2	9
	5:15 PM	37	279	7	22	190	47	71	216	28	30	231	49	1,207	0	3	1	0	4
	5:30 PM	37	250	8	21	168	69	85	204	26	26	223	40	1,157	0	2	3	0	5
	5:45 PM	43	269	11	18	166	66	93	225	18	34	221	55	1,219	0	2	0	2	4
	VOLUMES	317	2,325	73	206	1,372	522	611	1,818	183	275	1,845	360	9,907	2	16	16	17	51
	APPROACH %	12%	86%	3%	10%	65%	25%	23%	70%	7%	11%	74%	15%						
	APP/DEPART	2,715	/	3,296	2,100	/	1,815	2,612	/	2,098	2,480	/	2,698	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	163	1,248	37	118	699	279	274	908	90	149	931	171	5,067					
	APPROACH %	11%	86%	3%	11%	64%	25%	22%	71%	7%	12%	74%	14%						
	PEAK HR FACTOR		0.928			0.913			0.938			0.948		0.977					
	APP/DEPART	1,448	/	1,689	1,096	/	927	1,272	/	1,071	1,251	/	1,380	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:00 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Thu, Feb 11, 16

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: Chestnut

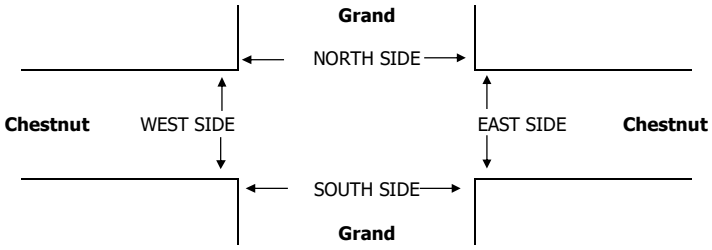
PROJECT #: SC0846
LOCATION #: 29
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND Chestnut			WESTBOUND Chestnut				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	10	136	30	31	363	21	15	77	22	23	28	41	797	0	0	0	0	0
	7:15 AM	9	152	44	39	406	14	21	114	35	21	82	53	990	0	0	0	0	0
	7:30 AM	15	186	48	41	443	9	13	135	34	21	109	54	1,108	0	1	0	0	1
	7:45 AM	16	184	47	31	473	10	12	89	19	40	105	66	1,092	0	0	0	0	0
	8:00 AM	10	186	17	32	396	14	11	64	17	31	37	34	849	0	0	0	0	0
	8:15 AM	4	138	26	32	403	14	18	70	21	17	27	32	802	0	0	0	0	0
	8:30 AM	5	157	20	30	360	9	15	54	21	16	38	35	760	0	0	0	0	0
	8:45 AM	13	133	21	24	346	22	18	39	11	15	39	21	702	0	0	0	0	0
	VOLUMES	82	1,272	253	260	3,190	113	123	642	180	184	465	336	7,100	0	1	0	0	1
	APPROACH %	5%	79%	16%	7%	90%	3%	13%	68%	19%	19%	47%	34%						
	APP/DEPART	1,607	/	1,732	3,563	/	3,554	945	/	1,154	985	/	660	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	50	708	156	143	1,718	47	57	402	105	113	333	207	4,039					
	APPROACH %	5%	77%	17%	7%	90%	2%	10%	71%	19%	17%	51%	32%						
	PEAK HR FACTOR		0.918			0.928			0.775			0.774		0.911					
	APP/DEPART	914	/	973	1,908	/	1,936	564	/	700	653	/	430	0					
PM	4:00 PM	40	279	50	37	166	21	15	82	14	29	69	58	860	0	0	0	0	0
	4:15 PM	25	246	42	35	152	22	22	58	11	32	97	45	787	0	0	0	0	0
	4:30 PM	42	243	41	32	162	34	26	69	21	21	76	46	813	0	1	0	0	1
	4:45 PM	27	241	41	39	158	30	26	64	13	20	78	37	774	0	1	0	0	1
	5:00 PM	28	182	20	24	176	35	23	59	13	26	96	43	725	0	0	0	0	0
	5:15 PM	35	232	42	36	192	19	25	81	13	18	74	26	793	0	0	0	1	1
	5:30 PM	30	222	61	31	184	21	16	86	16	26	84	62	839	0	0	0	0	0
	5:45 PM	18	278	42	28	163	22	25	66	14	33	84	45	818	0	2	0	0	2
	VOLUMES	245	1,923	339	262	1,353	204	178	565	115	205	658	362	6,409	0	4	0	1	5
	APPROACH %	10%	77%	14%	14%	74%	11%	21%	66%	13%	17%	54%	30%						
	APP/DEPART	2,507	/	2,467	1,819	/	1,672	858	/	1,163	1,225	/	1,107	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	134	1,009	174	143	638	107	89	273	59	102	320	186	3,234					
	APPROACH %	10%	77%	13%	16%	72%	12%	21%	65%	14%	17%	53%	31%						
	PEAK HR FACTOR		0.892			0.974			0.907			0.874		0.940					
	APP/DEPART	1,317	/	1,286	888	/	799	421	/	588	608	/	561	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	18	9	10	2	39	17	8	7	2	34	1	1	3	0	5
	7:15 AM	59	25	29	13	126	57	20	29	12	118	2	5	0	1	8
	7:30 AM	178	35	63	42	318	175	33	62	39	309	3	2	1	3	9
	7:45 AM	122	11	20	21	174	119	10	19	18	166	3	1	1	3	8
	8:00 AM	4	3	2	2	11	3	1	1	2	7	1	2	1	0	4
	8:15 AM	2	6	7	0	15	2	5	5	0	12	0	1	2	0	3
	8:30 AM	5	2	3	2	12	4	1	2	2	9	1	1	1	0	3
	8:45 AM	0	1	2	1	4	0	0	2	1	3	0	1	0	0	1
	TOTAL	388	92	136	83	699	377	78	127	76	658	11	14	9	7	41
PM	4:00 PM	69	11	4	17	101	68	9	3	16	96	1	2	1	1	5
	4:15 PM	29	9	4	7	49	27	7	2	6	42	2	2	2	1	7
	4:30 PM	28	6	9	7	50	23	4	5	5	37	5	2	4	2	13
	4:45 PM	9	4	6	8	27	6	1	2	5	14	3	3	4	3	13
	5:00 PM	10	8	7	4	29	10	4	5	2	21	0	4	2	2	8
	5:15 PM	6	1	3	2	12	4	1	2	1	8	2	0	1	1	4
	5:30 PM	6	7	6	6	25	1	7	2	4	14	5	0	4	2	11
	5:45 PM	5	4	3	6	18	4	4	2	5	15	1	0	1	1	3
	TOTAL	162	50	42	57	311	143	37	23	44	247	19	13	19	13	64

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Feb 9, 16

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: McFadden

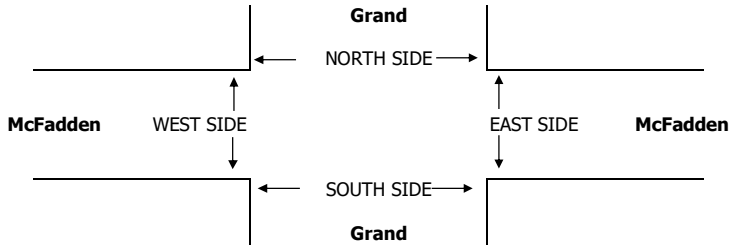
PROJECT #: SC0846
LOCATION #: 38
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND McFadden			WESTBOUND McFadden				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	22	137	16	40	320	28	37	136	31	22	90	20	899	0	0	0	0	0
	7:15 AM	28	144	22	54	321	35	46	156	48	25	93	14	986	0	0	0	0	0
	7:30 AM	37	180	29	44	439	41	48	127	52	20	81	26	1,124	0	0	0	0	0
	7:45 AM	50	192	24	68	362	43	43	135	43	28	133	29	1,150	0	0	0	0	0
	8:00 AM	49	177	28	61	405	29	41	159	31	39	96	32	1,147	0	0	0	0	0
	8:15 AM	19	130	28	45	317	29	28	143	20	29	78	29	895	0	0	0	0	0
	8:30 AM	16	125	18	35	329	21	31	106	21	25	57	9	793	0	0	0	0	0
	8:45 AM	13	114	18	47	270	27	25	87	17	18	70	30	736	0	0	0	0	0
	VOLUMES	234	1,199	183	394	2,763	253	299	1,049	263	206	698	189	7,730	0	0	0	0	0
	APPROACH %	14%	74%	11%	12%	81%	7%	19%	65%	16%	19%	64%	17%						
	APP/DEPART	1,616	/	1,687	3,410	/	3,232	1,611	/	1,626	1,093	/	1,185	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	164	693	103	227	1,527	148	178	577	174	112	403	101	4,407					
	APPROACH %	17%	72%	11%	12%	80%	8%	19%	62%	19%	18%	65%	16%						
	PEAK HR FACTOR		0.902			0.907			0.929			0.811		0.958					
	APP/DEPART	960	/	972	1,902	/	1,813	929	/	907	616	/	715	0					
PM	4:00 PM	39	278	39	28	135	53	33	96	19	24	138	35	917	0	0	0	0	0
	4:15 PM	42	244	50	41	143	56	28	93	19	21	169	26	932	0	0	0	0	0
	4:30 PM	52	280	47	40	161	33	30	99	25	17	163	34	981	0	0	0	0	0
	4:45 PM	52	285	47	30	118	56	25	96	16	16	143	36	920	0	0	0	0	0
	5:00 PM	42	264	41	34	172	36	38	127	24	27	178	39	1,022	0	0	0	0	0
	5:15 PM	48	276	55	28	150	36	30	135	14	22	175	36	1,005	0	0	0	0	0
	5:30 PM	39	291	61	35	123	49	20	96	20	22	176	26	958	0	0	0	0	0
	5:45 PM	27	275	50	22	130	45	21	121	14	15	160	37	917	0	0	0	0	0
	VOLUMES	341	2,193	390	258	1,132	364	225	863	151	164	1,302	269	7,652	0	0	0	0	0
	APPROACH %	12%	75%	13%	15%	65%	21%	18%	70%	12%	9%	75%	16%						
	APP/DEPART	2,924	/	2,687	1,754	/	1,447	1,239	/	1,511	1,735	/	2,007	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	194	1,105	190	132	601	161	123	457	79	82	659	145	3,928					
	APPROACH %	13%	74%	13%	15%	67%	18%	19%	69%	12%	9%	74%	16%						
	PEAK HR FACTOR		0.969			0.924			0.872			0.908		0.961					
	APP/DEPART	1,489	/	1,373	894	/	762	659	/	779	886	/	1,014	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	14	11	8	7	40	10	8	7	4	29	4	3	1	3	11
	7:15 AM	23	31	13	23	90	19	30	12	20	81	4	1	1	3	9
	7:30 AM	23	51	22	21	117	21	49	22	18	110	2	2	0	3	7
	7:45 AM	52	105	38	55	250	50	104	38	49	241	2	1	0	6	9
	8:00 AM	17	26	5	8	56	16	24	4	6	50	1	2	1	2	6
	8:15 AM	11	7	6	5	29	9	7	5	5	26	2	0	1	0	3
	8:30 AM	13	8	9	6	36	9	8	7	6	30	4	0	2	0	6
	8:45 AM	5	2	2	3	12	3	2	2	3	10	2	0	0	0	2
	TOTAL	158	241	103	128	630	137	232	97	111	577	21	9	6	17	53
PM	4:00 PM	21	18	14	7	60	16	12	12	7	47	5	6	2	0	13
	4:15 PM	16	11	8	8	43	13	10	5	7	35	3	1	3	1	8
	4:30 PM	12	19	14	21	66	6	15	11	16	48	6	4	3	5	18
	4:45 PM	10	9	7	3	29	7	4	5	2	18	3	5	2	1	11
	5:00 PM	16	11	12	7	46	13	10	12	6	41	3	1	0	1	5
	5:15 PM	18	15	6	4	43	14	11	6	4	35	4	4	0	0	8
	5:30 PM	7	13	2	5	27	4	9	2	2	17	3	4	0	3	10
	5:45 PM	15	13	3	3	34	11	8	1	1	21	4	5	2	2	13
	TOTAL	115	109	66	58	348	84	79	54	45	262	31	30	12	13	86

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: Edinger

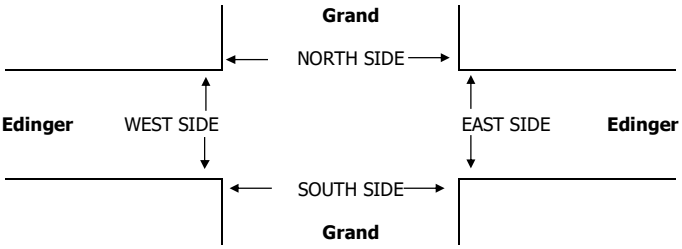
PROJECT #: SC2183
LOCATION #: 26
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND Edinger			WESTBOUND Edinger				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	11	97	25	61	253	50	63	309	35	18	141	30	1,093	0	0	0	0	0
	7:15 AM	4	119	20	58	263	55	82	333	19	30	125	27	1,135	0	0	0	1	1
	7:30 AM	15	143	26	54	288	49	88	328	33	46	144	34	1,248	0	0	1	3	4
	7:45 AM	9	120	28	51	274	68	90	320	34	45	160	35	1,234	0	0	1	2	3
	8:00 AM	18	85	17	58	309	49	55	337	40	28	144	28	1,168	0	0	0	1	1
	8:15 AM	25	94	31	58	249	43	48	306	28	22	191	33	1,128	0	0	3	2	5
	8:30 AM	11	94	25	52	237	39	50	239	34	29	125	33	968	0	0	3	4	7
	8:45 AM	15	105	25	46	236	37	44	245	39	24	109	32	957	0	0	2	5	7
	VOLUMES	108	857	197	438	2,109	390	520	2,417	262	242	1,139	252	8,931	0	0	10	18	28
	APPROACH %	9%	74%	17%	15%	72%	13%	16%	76%	8%	15%	70%	15%						
	APP/DEPART	1,162	/	1,619	2,937	/	2,595	3,199	/	3,070	1,633	/	1,647	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	46	467	91	221	1,134	221	315	1,318	126	149	573	124	4,785					
	APPROACH %	8%	77%	15%	14%	72%	14%	18%	75%	7%	18%	68%	15%						
	PEAK HR FACTOR		0.821			0.947			0.979			0.881		0.959					
	APP/DEPART	604	/	904	1,576	/	1,402	1,759	/	1,637	846	/	842	0					
PM	4:00 PM	70	317	45	41	88	52	57	193	14	23	299	43	1,242	0	0	2	1	3
	4:15 PM	59	317	35	36	92	62	32	190	13	21	332	54	1,243	0	0	1	3	4
	4:30 PM	68	323	23	44	111	73	52	186	16	26	321	39	1,282	0	0	4	1	5
	4:45 PM	54	334	35	38	111	54	46	190	24	20	331	45	1,282	0	0	2	0	2
	5:00 PM	65	356	28	48	122	75	53	211	17	17	328	38	1,358	0	0	5	2	7
	5:15 PM	65	348	28	29	87	49	44	229	15	19	335	49	1,297	0	0	2	3	5
	5:30 PM	55	345	28	48	83	48	56	229	13	17	325	39	1,286	0	0	0	0	0
	5:45 PM	41	300	22	36	66	64	55	181	11	14	336	45	1,171	0	0	1	0	1
	VOLUMES	477	2,640	244	320	760	477	395	1,609	123	157	2,607	352	10,161	0	0	17	10	27
	APPROACH %	14%	79%	7%	21%	49%	31%	19%	76%	6%	5%	84%	11%						
	APP/DEPART	3,361	/	3,370	1,557	/	1,030	2,127	/	2,183	3,116	/	3,578	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	239	1,383	119	163	403	226	199	859	69	73	1,319	171	5,223					
	APPROACH %	14%	79%	7%	21%	51%	29%	18%	76%	6%	5%	84%	11%						
	PEAK HR FACTOR		0.969			0.808			0.945			0.970		0.962					
	APP/DEPART	1,741	/	1,744	792	/	540	1,127	/	1,146	1,563	/	1,793	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 16, 19

LOCATION: Santa Ana
NORTH & SOUTH: Grand
EAST & WEST: Warner

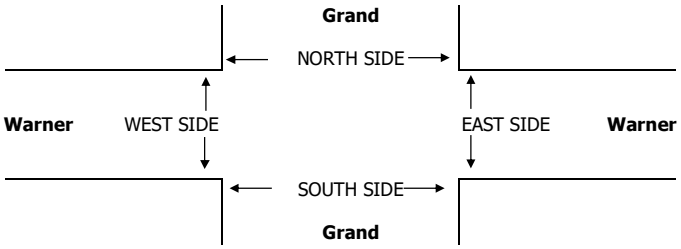
PROJECT #: SC2183
LOCATION #: 27
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

Add U-Turns to Left Turns

		NORTHBOUND Grand			SOUTHBOUND Grand			EASTBOUND Warner			WESTBOUND Warner				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 2	ET 3	ER 1	WL 2	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	41	102	39	31	90	48	46	182	77	10	73	14	753	0	0	0	0	0
	7:15 AM	50	116	50	42	124	53	67	206	82	26	74	24	914	0	0	0	0	0
	7:30 AM	46	125	49	47	158	44	62	207	108	19	114	23	1,002	0	0	1	0	1
	7:45 AM	36	133	51	60	146	50	57	286	89	21	107	39	1,075	0	0	0	0	0
	8:00 AM	35	130	65	48	140	45	67	205	76	21	89	43	964	0	1	0	0	1
	8:15 AM	26	98	56	52	128	52	75	188	56	23	113	27	894	1	0	0	0	1
	8:30 AM	32	87	40	57	142	51	49	188	49	26	84	13	818	0	0	0	0	0
	8:45 AM	30	87	32	58	125	30	66	169	55	19	91	37	799	0	0	0	0	0
	VOLUMES	296	878	382	395	1,053	373	489	1,631	592	165	745	220	7,219	1	1	1	0	3
	APPROACH %	19%	56%	25%	22%	58%	20%	18%	60%	22%	15%	66%	19%						
	APP/DEPART	1,556	/	1,587	1,821	/	1,811	2,712	/	2,407	1,130	/	1,414	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	167	504	215	197	568	192	253	904	355	87	384	129	3,955					
	APPROACH %	19%	57%	24%	21%	59%	20%	17%	60%	23%	15%	64%	22%						
	PEAK HR FACTOR		0.963			0.935			0.875			0.898		0.920					
	APP/DEPART	886	/	886	957	/	1,010	1,512	/	1,315	600	/	744	0					
PM	4:00 PM	45	159	48	29	68	61	108	146	35	28	242	82	1,051	0	0	0	0	0
	4:15 PM	51	222	40	26	73	56	93	125	36	36	204	76	1,038	0	0	0	2	2
	4:30 PM	56	211	32	32	106	57	86	120	42	45	211	71	1,069	0	1	0	0	1
	4:45 PM	65	249	45	29	132	54	77	163	36	40	248	65	1,203	0	0	0	0	0
	5:00 PM	60	188	43	38	131	62	84	164	36	49	220	81	1,156	0	0	0	0	0
	5:15 PM	56	218	46	31	104	60	86	161	39	29	254	91	1,175	0	1	0	0	1
	5:30 PM	58	209	57	46	99	38	91	161	29	31	232	75	1,126	0	0	0	1	1
	5:45 PM	53	233	40	24	75	58	75	159	15	23	208	79	1,042	0	0	0	0	0
	VOLUMES	444	1,689	351	255	788	446	700	1,199	268	281	1,819	620	8,860	0	2	0	3	5
	APPROACH %	18%	68%	14%	17%	53%	30%	32%	55%	12%	10%	67%	23%						
	APP/DEPART	2,484	/	3,011	1,489	/	1,334	2,167	/	1,806	2,720	/	2,709	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	239	864	191	144	466	214	338	649	140	149	954	312	4,660					
	APPROACH %	18%	67%	15%	17%	57%	26%	30%	58%	12%	11%	67%	22%						
	PEAK HR FACTOR		0.901			0.892			0.985			0.946		0.968					
	APP/DEPART	1,294	/	1,515	824	/	754	1,127	/	984	1,415	/	1,407	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:15 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

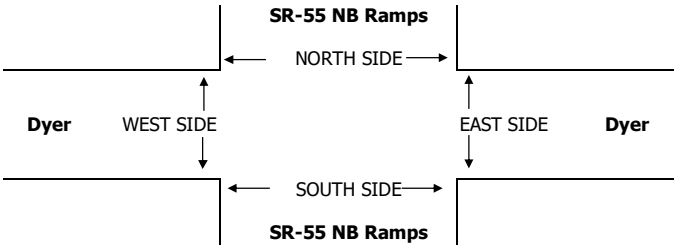
DATE:					
Thu, May 16, 19	LOCATION:	Santa Ana	PROJECT #:	SC2183	
	NORTH & SOUTH:	SR-55 NB Ramps	LOCATION #:	29	
	EAST & WEST:	Dyer	CONTROL:	SIGNAL	

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☐ Add U-Turns to Left Turns

		NORTHBOUND SR-55 NB Ramps			SOUTHBOUND SR-55 NB Ramps			EASTBOUND Dyer			WESTBOUND Dyer				U-TURNS				
	LANES:	NL 1.5	NT X	NR 1.5	SL X	ST X	SR X	EL X	ET 3	ER 1	WL X	WT 3	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	171	0	88	0	0	0	0	333	152	0	120	84	948	0	0	0	0	0
	7:15 AM	167	0	116	0	0	0	0	357	172	0	152	69	1,033	0	0	0	0	0
	7:30 AM	142	0	114	0	0	0	0	390	139	0	157	95	1,037	0	0	0	0	0
	7:45 AM	169	0	121	0	0	0	0	385	158	0	179	82	1,094	0	0	0	0	0
	8:00 AM	128	0	99	0	0	0	0	366	142	0	168	110	1,013	0	0	1	0	1
	8:15 AM	112	0	117	0	0	0	0	376	167	0	207	141	1,120	0	0	0	0	0
	8:30 AM	110	0	107	0	0	0	0	300	146	0	195	97	955	0	0	0	0	0
	8:45 AM	140	0	99	0	0	0	0	276	139	0	200	89	943	0	0	0	0	0
	VOLUMES	1,139	0	861	0	0	0	0	2,783	1,215	0	1,378	767	8,144	0	0	1	0	1
	APPROACH %	57%	0%	43%	0%	0%	0%	0%	70%	30%	0%	64%	36%						
	APP/DEPART	2,000	/	767	0	/	1,215	3,999	/	3,644	2,145	/	2,518	0					
	BEGIN PEAK HR		7:30 AM																
	VOLUMES	551	0	451	0	0	0	0	1,517	606	0	711	428	4,265					
	APPROACH %	55%	0%	45%	0%	0%	0%	0%	71%	29%	0%	62%	38%						
	PEAK HR FACTOR		0.864			0.000			0.978			0.818		0.952					
	APP/DEPART	1,002	/	428	0	/	606	2,124	/	1,968	1,139	/	1,263	0					
PM	4:00 PM	56	0	16	0	0	0	0	241	175	0	342	249	1,079	0	0	0	0	0
	4:15 PM	37	0	16	0	0	0	0	279	169	0	370	258	1,129	0	0	0	0	0
	4:30 PM	42	0	8	0	0	0	0	278	170	0	366	248	1,112	0	0	0	0	0
	4:45 PM	48	0	14	0	0	0	0	312	155	0	360	241	1,130	0	0	0	0	0
	5:00 PM	40	0	11	0	0	0	0	320	177	0	399	241	1,188	0	0	0	0	0
	5:15 PM	42	0	14	0	0	0	0	351	176	0	395	242	1,220	0	0	0	0	0
	5:30 PM	56	0	11	0	0	0	0	342	166	0	375	231	1,181	0	0	0	0	0
	5:45 PM	38	0	24	0	0	0	0	278	138	0	318	197	993	0	0	0	0	0
	VOLUMES	359	0	114	0	0	0	0	2,401	1,326	0	2,925	1,907	9,032	0	0	0	0	0
	APPROACH %	76%	0%	24%	0%	0%	0%	0%	64%	36%	0%	61%	39%						
	APP/DEPART	473	/	1,907	0	/	1,326	3,727	/	2,515	4,832	/	3,284	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	186	0	50	0	0	0	0	1,325	674	0	1,529	955	4,719					
	APPROACH %	79%	0%	21%	0%	0%	0%	0%	66%	34%	0%	62%	38%						
	PEAK HR FACTOR		0.881			0.000			0.948			0.970		0.967					
	APP/DEPART	236	/	955	0	/	674	1,999	/	1,375	2,484	/	1,715	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:30 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:45 PM					0	0	0	0	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 pacific@aimtd.com

DATE: Tue, Mar 1, 16

LOCATION: Santa Ana
NORTH & SOUTH: Cambridge
EAST & WEST: La Veta

PROJECT #: SC0846
LOCATION #: 6
CONTROL: STOP ALL

NOTES:

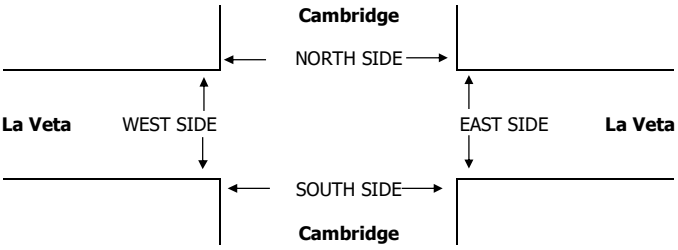
AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

		NORTHBOUND Cambridge			SOUTHBOUND Cambridge			EASTBOUND La Veta			WESTBOUND La Veta			
	LANES:	NL 1	NT 1	NR X	SL X	ST 1	SR 1	EL 1	ET X	ER 1	WL X	WT X	WR X	TOTAL
AM	7:00 AM	19	21	0	0	76	37	16	0	20	0	0	0	189
	7:15 AM	22	34	0	0	114	47	18	0	40	0	0	0	275
	7:30 AM	35	46	0	0	113	62	33	0	46	0	0	0	335
	7:45 AM	51	68	0	0	106	68	43	0	50	0	0	0	386
	8:00 AM	45	48	0	0	128	58	18	0	43	0	0	0	340
	8:15 AM	27	32	0	0	112	55	23	0	24	0	0	0	273
	8:30 AM	16	27	0	0	63	36	15	0	14	0	0	0	171
	8:45 AM	12	36	0	0	65	48	23	0	18	0	0	0	202
	VOLUMES	227	312	0	0	777	411	189	0	255	0	0	0	2,171
	APPROACH %	42%	58%	0%	0%	65%	35%	43%	0%	57%	0%	0%	0%	
	APP/DEPART	539	/	501	1,188	/	1,032	444	/	0	0	/	638	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	153	196	0	0	461	235	112	0	179	0	0	0	1,336
	APPROACH %	44%	56%	0%	0%	66%	34%	38%	0%	62%	0%	0%	0%	
	PEAK HR FACTOR		0.733			0.935			0.782			0.000		0.865
	APP/DEPART	349	/	308	696	/	640	291	/	0	0	/	388	0
PM	4:00 PM	22	37	0	0	49	27	59	0	28	0	0	0	222
	4:15 PM	25	47	0	0	30	33	59	0	30	0	0	0	224
	4:30 PM	29	49	0	0	49	23	49	0	22	0	0	0	221
	4:45 PM	34	60	0	0	43	30	53	0	33	0	0	0	253
	5:00 PM	36	62	0	0	40	33	40	0	31	0	0	0	242
	5:15 PM	41	60	0	0	47	48	67	0	35	0	0	0	298
	5:30 PM	45	63	0	0	59	52	55	0	42	0	0	0	316
	5:45 PM	61	70	0	0	42	40	48	0	30	0	0	0	291
	VOLUMES	293	448	0	0	359	286	430	0	251	0	0	0	2,067
	APPROACH %	40%	60%	0%	0%	56%	44%	63%	0%	37%	0%	0%	0%	
	APP/DEPART	741	/	878	645	/	612	681	/	0	0	/	577	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	183	255	0	0	188	173	210	0	138	0	0	0	1,147
	APPROACH %	42%	58%	0%	0%	52%	48%	60%	0%	40%	0%	0%	0%	
	PEAK HR FACTOR		0.836			0.813			0.853			0.000		0.907
	APP/DEPART	438	/	465	361	/	327	348	/	0	0	/	355	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
2	0	0	0	2



PEDESTRIAN + BIKE CROSSINGS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM	0	1	1	3	5
7:15 AM	1	2	1	1	5
7:30 AM	4	1	0	5	10
7:45 AM	0	4	0	3	7
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	1	1	0	2
8:45 AM	0	0	1	4	5
TOTAL	5	9	4	16	34
4:00 PM	0	1	2	3	6
4:15 PM	1	0	0	1	2
4:30 PM	0	1	0	2	3
4:45 PM	0	1	0	0	1
5:00 PM	0	0	0	2	2
5:15 PM	1	1	0	2	4
5:30 PM	0	0	3	4	7
5:45 PM	0	0	0	0	0
TOTAL	2	4	5	14	25

PEDESTRIAN CROSSINGS

N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
0	0	0	2	2
0	2	0	0	2
4	1	0	1	6
0	4	0	1	5
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	0	0	2	2
4	8	0	6	18
0	0	0	0	0
1	0	0	1	2
0	1	0	0	1
0	1	0	0	1
0	0	0	0	0
1	1	0	1	3
0	0	1	2	3
0	0	0	0	0
2	3	1	4	10

BICYCLE CROSSINGS

NS	SS	ES	WS	TOTAL
0	1	1	1	3
1	0	1	1	3
0	0	0	4	4
0	0	0	2	2
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	1	2	3
1	1	4	10	16
0	1	2	3	6
0	0	0	0	0
0	0	0	2	2
0	0	0	0	0
0	0	0	2	2
0	0	0	1	1
0	0	2	2	4
0	0	0	0	0
0	1	4	10	15

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Santa Ana
N/S: Cambridge Street
E/W: Fairhaven Avenue
Weather: Clear

File Name : 86_SNA_Cambridge_Fairhaven AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

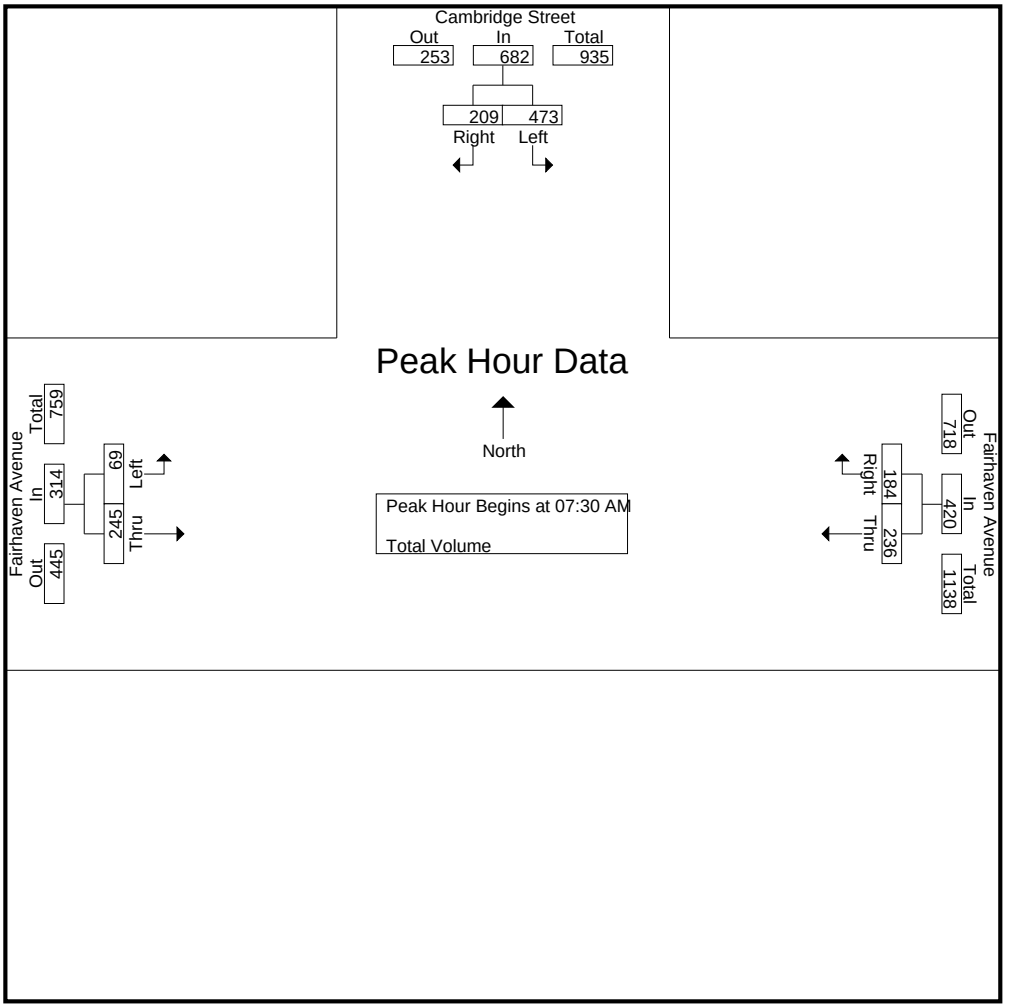
	Cambridge Street Southbound			Fairhaven Avenue Westbound			Fairhaven Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	74	26	100	16	15	31	5	36	41	172
07:15 AM	97	37	134	45	23	68	12	27	39	241
07:30 AM	117	58	175	59	42	101	16	50	66	342
07:45 AM	131	62	193	71	45	116	24	67	91	400
Total	419	183	602	191	125	316	57	180	237	1155
08:00 AM	122	56	178	62	57	119	13	69	82	379
08:15 AM	103	33	136	44	40	84	16	59	75	295
08:30 AM	73	34	107	37	26	63	9	41	50	220
08:45 AM	64	35	99	27	27	54	14	35	49	202
Total	362	158	520	170	150	320	52	204	256	1096
Grand Total	781	341	1122	361	275	636	109	384	493	2251
Apprch %	69.6	30.4		56.8	43.2		22.1	77.9		
Total %	34.7	15.1	49.8	16	12.2	28.3	4.8	17.1	21.9	

	Cambridge Street Southbound			Fairhaven Avenue Westbound			Fairhaven Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	117	58	175	59	42	101	16	50	66	342
07:45 AM	**131**	**62**	**193**	**71**	45	116	**24**	67	**91**	**400**
08:00 AM	122	56	178	62	**57**	**119**	13	**69**	82	379
08:15 AM	103	33	136	44	40	84	16	59	75	295
Total Volume	473	209	682	236	184	420	69	245	314	1416
% App. Total	69.4	30.6		56.2	43.8		22	78		
PHF	.903	.843	.883	.831	.807	.882	.719	.888	.863	.885

Counts Unlimited
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Corona, CA 92878
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City of Santa Ana
N/S: Cambridge Street
E/W: Fairhaven Avenue
Weather: Clear

File Name : 86_SNA_Cambridge_Fairhaven AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	117	58	175	59	42	101	16	50	66
+15 mins.	**131**	**62**	**193**	**71**	45	116	**24**	67	**91**
+30 mins.	122	56	178	62	**57**	**119**	13	**69**	82
+45 mins.	103	33	136	44	40	84	16	59	75
Total Volume	473	209	682	236	184	420	69	245	314
% App. Total	69.4	30.6		56.2	43.8		22	78	
PHF	.903	.843	.883	.831	.807	.882	.719	.888	.863

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Santa Ana
N/S: Cambridge Street
E/W: Fairhaven Avenue
Weather: Clear

File Name : 86_SNA_Cambridge_Fairhaven PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

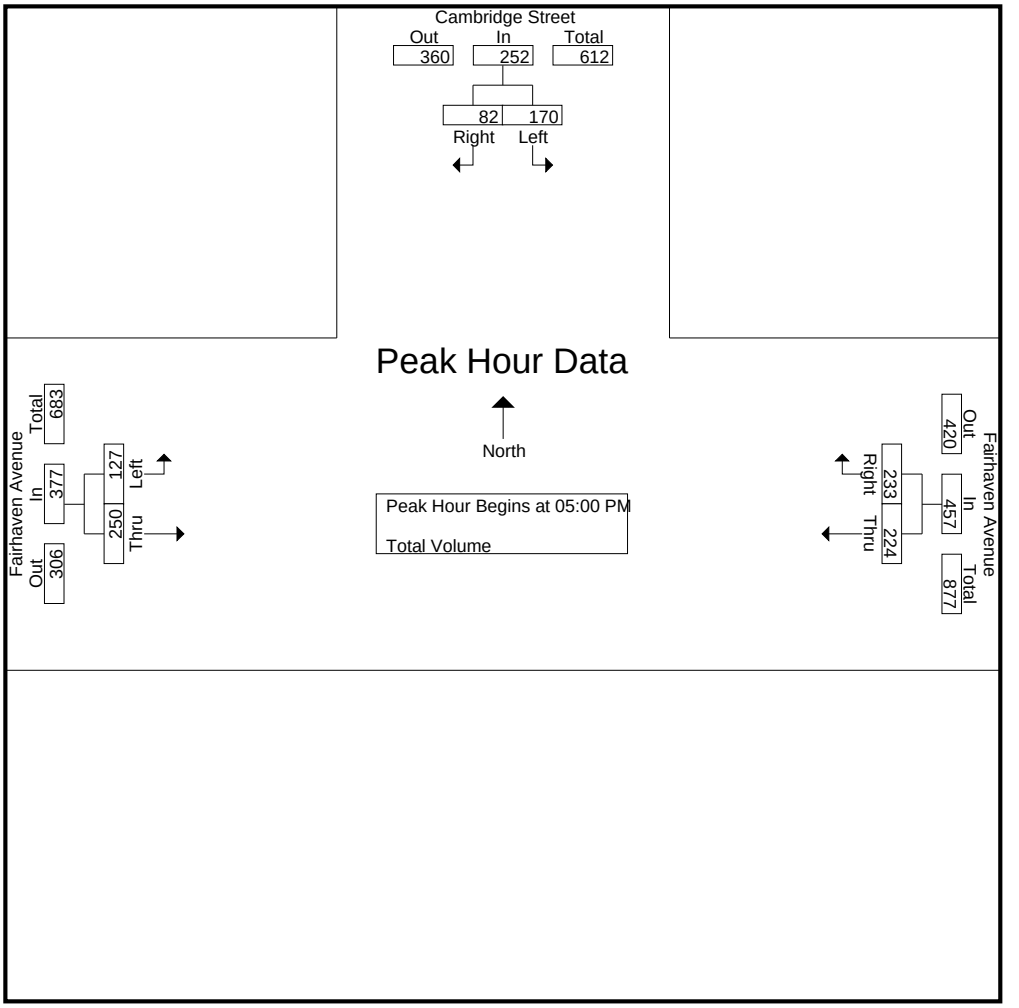
	Cambridge Street Southbound			Fairhaven Avenue Westbound			Fairhaven Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	41	19	60	39	46	85	15	40	55	200
04:15 PM	47	14	61	53	57	110	37	47	84	255
04:30 PM	40	20	60	45	52	97	31	63	94	251
04:45 PM	41	19	60	49	71	120	31	48	79	259
Total	169	72	241	186	226	412	114	198	312	965
05:00 PM	51	20	71	76	58	134	22	53	75	280
05:15 PM	38	20	58	47	59	106	42	79	121	285
05:30 PM	42	22	64	49	54	103	30	56	86	253
05:45 PM	39	20	59	52	62	114	33	62	95	268
Total	170	82	252	224	233	457	127	250	377	1086
Grand Total	339	154	493	410	459	869	241	448	689	2051
Apprch %	68.8	31.2		47.2	52.8		35	65		
Total %	16.5	7.5	24	20	22.4	42.4	11.8	21.8	33.6	

	Cambridge Street Southbound			Fairhaven Avenue Westbound			Fairhaven Avenue Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**51**	20	**71**	**76**	58	**134**	22	53	75	280
05:15 PM	38	20	58	47	59	106	**42**	**79**	**121**	**285**
05:30 PM	42	**22**	64	49	54	103	30	56	86	253
05:45 PM	39	20	59	52	**62**	114	33	62	95	268
Total Volume	170	82	252	224	233	457	127	250	377	1086
% App. Total	67.5	32.5		49	51		33.7	66.3		
PHF	.833	.932	.887	.737	.940	.853	.756	.791	.779	.953

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City of Santa Ana
N/S: Cambridge Street
E/W: Fairhaven Avenue
Weather: Clear

File Name : 86_SNA_Cambridge_Fairhaven PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			05:00 PM		
+0 mins.	41	19	60	49	**71**	120	22	53	75
+15 mins.	**51**	20	**71**	**76**	58	**134**	**42**	**79**	**121**
+30 mins.	38	20	58	47	59	106	30	56	86
+45 mins.	42	**22**	64	49	54	103	33	62	95
Total Volume	172	81	253	221	242	463	127	250	377
% App. Total	68	32		47.7	52.3		33.7	66.3	
PHF	.843	.920	.891	.727	.852	.864	.756	.791	.779

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City of Santa Ana
N/S: Mabury St/Elk Lane
E/W: E First Street
Weather: Clear

File Name : 87_SNA_Mabury_1st AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

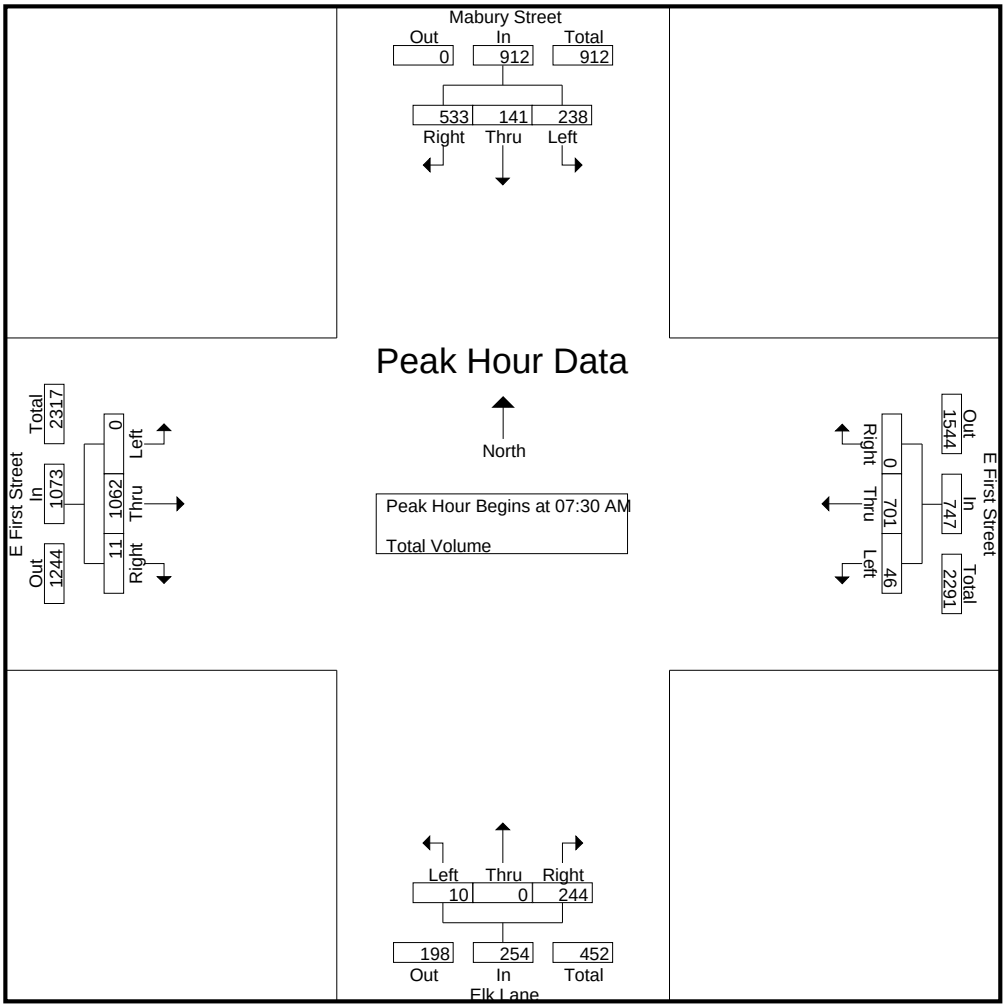
	Mabury Street Southbound				E First Street Westbound				Elk Lane Northbound				E First Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	57	32	132	221	6	91	0	97	2	0	52	54	0	262	8	270	642
07:15 AM	50	30	157	237	6	144	0	150	3	0	58	61	0	264	2	266	714
07:30 AM	53	37	134	224	12	191	0	203	3	0	75	78	0	265	2	267	772
07:45 AM	67	35	139	241	13	190	0	203	3	0	67	70	0	256	3	259	773
Total	227	134	562	923	37	616	0	653	11	0	252	263	0	1047	15	1062	2901
08:00 AM	58	38	114	210	8	171	0	179	2	0	52	54	0	277	2	279	722
08:15 AM	60	31	146	237	13	149	0	162	2	0	50	52	0	264	4	268	719
08:30 AM	61	31	122	214	13	131	0	144	3	0	46	49	0	291	3	294	701
08:45 AM	56	35	130	221	3	127	0	130	1	0	48	49	0	282	4	286	686
Total	235	135	512	882	37	578	0	615	8	0	196	204	0	1114	13	1127	2828
Grand Total	462	269	1074	1805	74	1194	0	1268	19	0	448	467	0	2161	28	2189	5729
Apprch %	25.6	14.9	59.5		5.8	94.2	0		4.1	0	95.9		0	98.7	1.3		
Total %	8.1	4.7	18.7	31.5	1.3	20.8	0	22.1	0.3	0	7.8	8.2	0	37.7	0.5	38.2	

	Mabury Street Southbound				E First Street Westbound				Elk Lane Northbound				E First Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	53	37	134	224	12	**191**	0	**203**	**3**	0	**75**	**78**	0	265	2	267	772
07:45 AM	**67**	35	139	**241**	**13**	190	0	203	3	0	67	70	0	256	3	259	**773**
08:00 AM	58	**38**	114	210	8	171	0	179	2	0	52	54	0	**277**	2	**279**	722
08:15 AM	60	31	**146**	237	13	149	0	162	2	0	50	52	0	264	**4**	268	719
Total Volume	238	141	533	912	46	701	0	747	10	0	244	254	0	1062	11	1073	2986
% App. Total	26.1	15.5	58.4		6.2	93.8	0		3.9	0	96.1		0	99	1		
PHF	.888	.928	.913	.946	.885	.918	.000	.920	.833	.000	.813	.814	.000	.958	.688	.961	.966

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City of Santa Ana
N/S: Mabury St/Elk Lane
E/W: E First Street
Weather: Clear

File Name : 87_SNA_Mabury_1st AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				07:00 AM				08:00 AM			
+0 mins.	57	32	132	221	12	**191**	0	**203**	2	0	52	54	0	277	2	279
+15 mins.	50	30	**157**	237	**13**	190	0	203	**3**	0	58	61	0	264	**4**	268
+30 mins.	53	**37**	134	224	8	171	0	179	3	0	**75**	**78**	0	**291**	3	**294**
+45 mins.	**67**	35	139	**241**	13	149	0	162	3	0	67	70	0	282	4	286
Total Volume	227	134	562	923	46	701	0	747	11	0	252	263	0	1114	13	1127
% App. Total	24.6	14.5	60.9		6.2	93.8	0		4.2	0	95.8		0	98.8	1.2	
PHF	.847	.905	.895	.957	.885	.918	.000	.920	.917	.000	.840	.843	.000	.957	.813	.958

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City of Santa Ana
N/S: Mabury St/Elk Lane
E/W: E First Street
Weather: Clear

File Name : 87_SNA_Mabury_1st PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

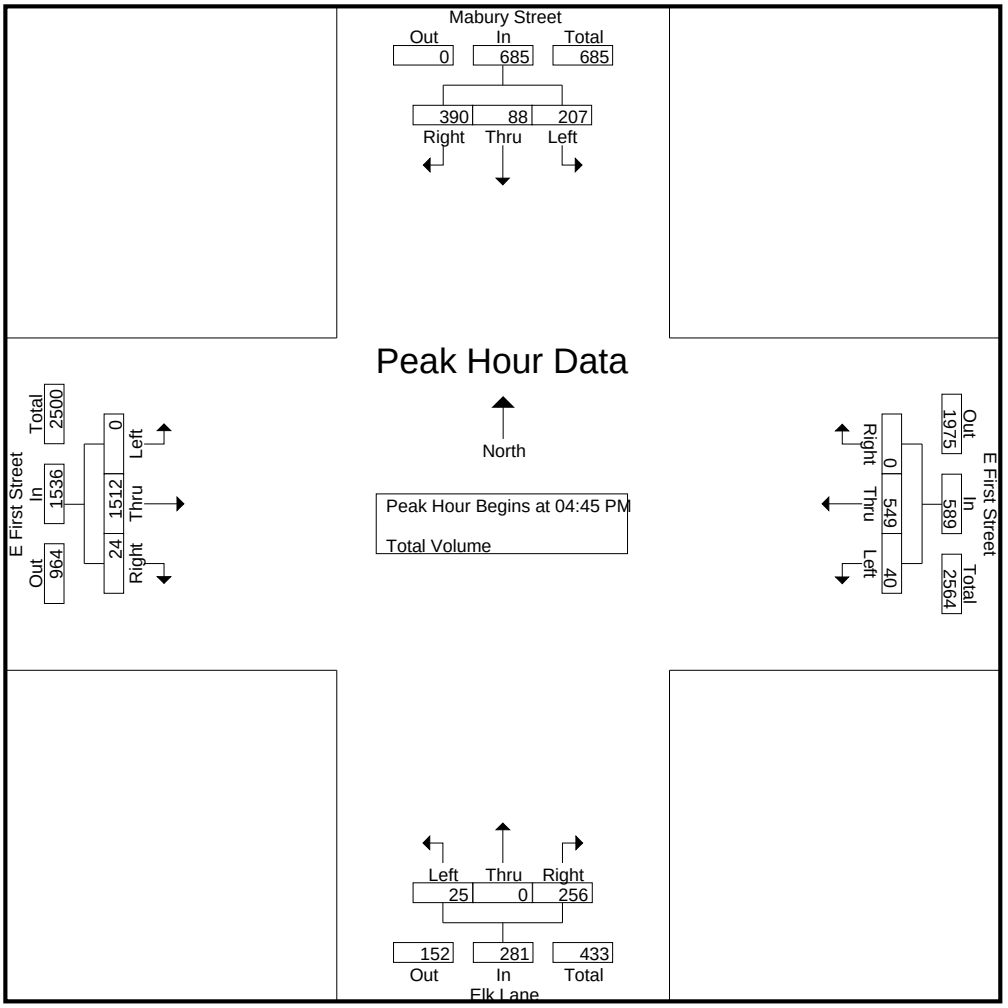
	Mabury Street Southbound				E First Street Westbound				Elk Lane Northbound				E First Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	64	29	90	183	10	151	0	161	10	0	75	85	0	332	2	334	763
04:15 PM	39	15	97	151	15	153	0	168	4	0	55	59	0	314	4	318	696
04:30 PM	58	31	98	187	5	141	0	146	6	0	89	95	0	295	4	299	727
04:45 PM	37	23	100	160	12	126	0	138	5	0	70	75	0	379	4	383	756
Total	198	98	385	681	42	571	0	613	25	0	289	314	0	1320	14	1334	2942
05:00 PM	59	21	109	189	8	151	0	159	3	0	49	52	0	374	6	380	780
05:15 PM	64	25	96	185	13	166	0	179	9	0	75	84	0	351	8	359	807
05:30 PM	47	19	85	151	7	106	0	113	8	0	62	70	0	408	6	414	748
05:45 PM	54	28	106	188	15	99	0	114	5	0	72	77	0	327	7	334	713
Total	224	93	396	713	43	522	0	565	25	0	258	283	0	1460	27	1487	3048
Grand Total	422	191	781	1394	85	1093	0	1178	50	0	547	597	0	2780	41	2821	5990
Apprch %	30.3	13.7	56		7.2	92.8	0		8.4	0	91.6		0	98.5	1.5		
Total %	7	3.2	13	23.3	1.4	18.2	0	19.7	0.8	0	9.1	10	0	46.4	0.7	47.1	

	Mabury Street Southbound				E First Street Westbound				Elk Lane Northbound				E First Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	37	23	100	160	12	126	0	138	5	0	70	75	0	379	4	383	756
05:00 PM	59	21	**109**	**189**	8	151	0	159	3	0	49	52	0	374	6	380	780
05:15 PM	**64**	**25**	96	185	**13**	**166**	0	**179**	**9**	0	**75**	**84**	0	351	**8**	359	**807**
05:30 PM	47	19	85	151	7	106	0	113	8	0	62	70	0	**408**	6	**414**	748
Total Volume	207	88	390	685	40	549	0	589	25	0	256	281	0	1512	24	1536	3091
% App. Total	30.2	12.8	56.9		6.8	93.2	0		8.9	0	91.1		0	98.4	1.6		
PHF	.809	.880	.894	.906	.769	.827	.000	.823	.694	.000	.853	.836	.000	.926	.750	.928	.958

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City of Santa Ana
N/S: Mabury St/Elk Lane
E/W: E First Street
Weather: Clear

File Name : 87_SNA_Mabury_1st PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:00 PM				04:45 PM			
+0 mins.	58	**31**	98	187	5	141	0	146	**10**	0	75	85	0	379	4	383
+15 mins.	37	23	100	160	12	126	0	138	4	0	55	59	0	374	6	380
+30 mins.	59	21	**109**	**189**	8	151	0	159	6	0	**89**	**95**	0	351	**8**	359
+45 mins.	**64**	25	96	185	**13**	**166**	0	**179**	5	0	70	75	0	**408**	6	**414**
Total Volume	218	100	403	721	38	584	0	622	25	0	289	314	0	1512	24	1536
% App. Total	30.2	13.9	55.9		6.1	93.9	0		8	0	92		0	98.4	1.6	
PHF	.852	.806	.924	.954	.731	.880	.000	.869	.625	.000	.812	.826	.000	.926	.750	.928

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City of Orange
N/S: Tustin Street
E/W: Rock Creek Drive/La Veta Avenue
Weather: Clear

File Name : 88_ORN_Tustin_La Veta AM
Site Code : 20220171
Start Date : 1/8/2020
Page No : 1

Groups Printed- Total Volume

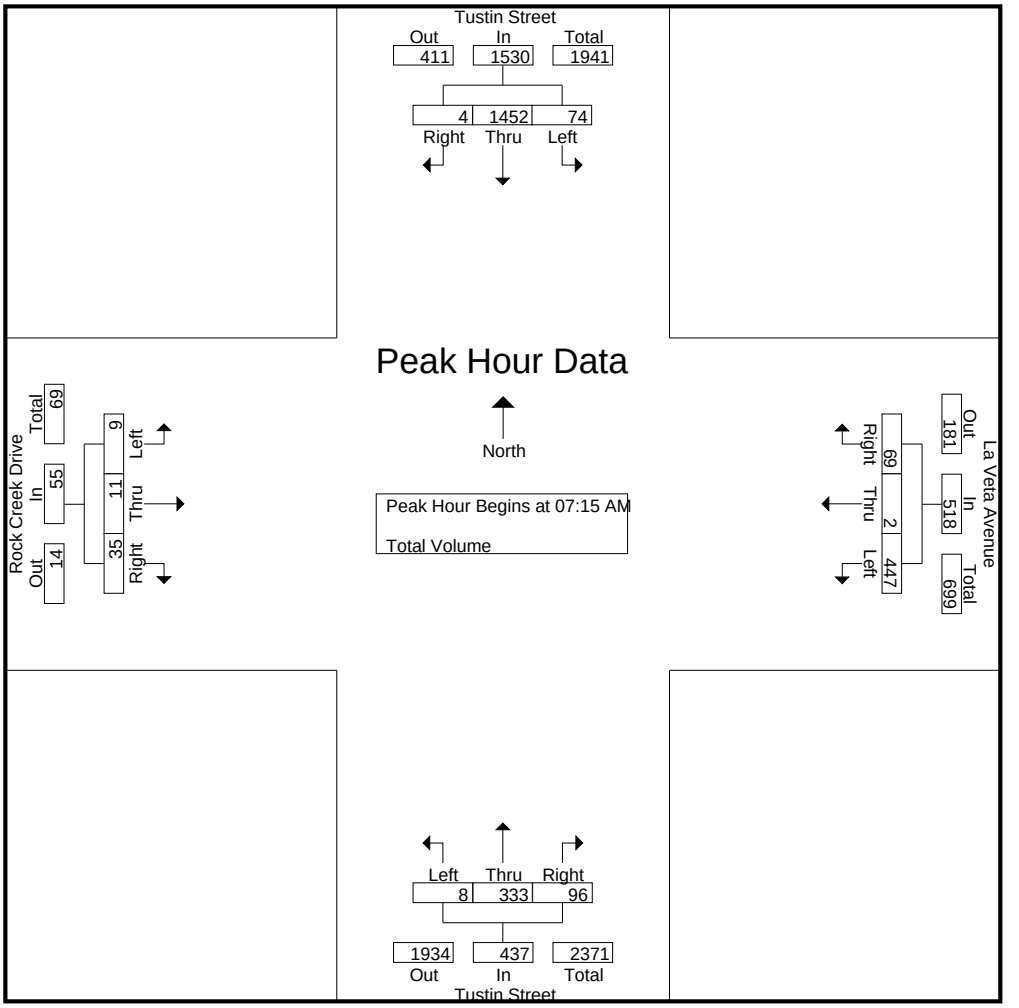
	Tustin Street Southbound				La Veta Avenue Westbound				Tustin Street Northbound				Rock Creek Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	6	346	1	353	84	2	10	96	5	72	22	99	1	1	7	9	557
07:15 AM	19	385	0	404	114	2	11	127	2	79	28	109	1	3	9	13	653
07:30 AM	21	367	0	388	144	0	14	158	0	70	17	87	3	1	9	13	646
07:45 AM	20	378	2	400	95	0	24	119	5	94	21	120	2	6	9	17	656
Total	66	1476	3	1545	437	4	59	500	12	315	88	415	7	11	34	52	2512
08:00 AM	14	322	2	338	94	0	20	114	1	90	30	121	3	1	8	12	585
08:15 AM	14	314	0	328	92	1	24	117	7	89	31	127	0	3	10	13	585
08:30 AM	16	323	0	339	69	0	19	88	4	108	26	138	5	1	9	15	580
08:45 AM	25	295	0	320	60	6	21	87	3	122	25	150	5	0	3	8	565
Total	69	1254	2	1325	315	7	84	406	15	409	112	536	13	5	30	48	2315
Grand Total	135	2730	5	2870	752	11	143	906	27	724	200	951	20	16	64	100	4827
Apprch %	4.7	95.1	0.2		83	1.2	15.8		2.8	76.1	21		20	16	64		
Total %	2.8	56.6	0.1	59.5	15.6	0.2	3	18.8	0.6	15	4.1	19.7	0.4	0.3	1.3	2.1	

	Tustin Street Southbound				La Veta Avenue Westbound				Tustin Street Northbound				Rock Creek Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	19	**385**	0	**404**	114	**2**	11	127	2	79	28	109	1	3	**9**	13	653
07:30 AM	**21**	367	0	388	**144**	0	14	**158**	0	70	17	87	**3**	1	9	13	646
07:45 AM	20	378	**2**	400	95	0	**24**	119	**5**	**94**	21	120	2	**6**	9	**17**	**656**
08:00 AM	14	322	2	338	94	0	20	114	1	90	**30**	**121**	3	1	8	12	585
Total Volume	74	1452	4	1530	447	2	69	518	8	333	96	437	9	11	35	55	2540
% App. Total	4.8	94.9	0.3		86.3	0.4	13.3		1.8	76.2	22		16.4	20	63.6		
PHF	.881	.943	.500	.947	.776	.250	.719	.820	.400	.886	.800	.903	.750	.458	.972	.809	.968

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City of Orange
N/S: Tustin Street
E/W: Rock Creek Drive/La Veta Avenue
Weather: Clear

File Name : 88_ORN_Tustin_La Veta AM
Site Code : 20220171
Start Date : 1/8/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				08:00 AM				07:45 AM			
+0 mins.	6	346	1	353	114	**2**	11	127	1	90	30	121	2	**6**	9	**17**
+15 mins.	19	**385**	0	**404**	**144**	0	14	**158**	**7**	89	**31**	127	3	1	8	12
+30 mins.	**21**	367	0	388	95	0	**24**	119	4	108	26	138	0	3	**10**	13
+45 mins.	20	378	**2**	400	94	0	20	114	3	**122**	25	**150**	**5**	1	9	15
Total Volume	66	1476	3	1545	447	2	69	518	15	409	112	536	10	11	36	57
% App. Total	4.3	95.5	0.2		86.3	0.4	13.3		2.8	76.3	20.9		17.5	19.3	63.2	
PHF	.786	.958	.375	.956	.776	.250	.719	.820	.536	.838	.903	.893	.500	.458	.900	.838

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City of Orange
N/S: Tustin Street
E/W: Rock Creek Drive/La Veta Avenue
Weather: Clear

File Name : 88_ORN_Tustin_La Veta PM
Site Code : 20220171
Start Date : 1/8/2020
Page No : 1

Groups Printed- Total Volume

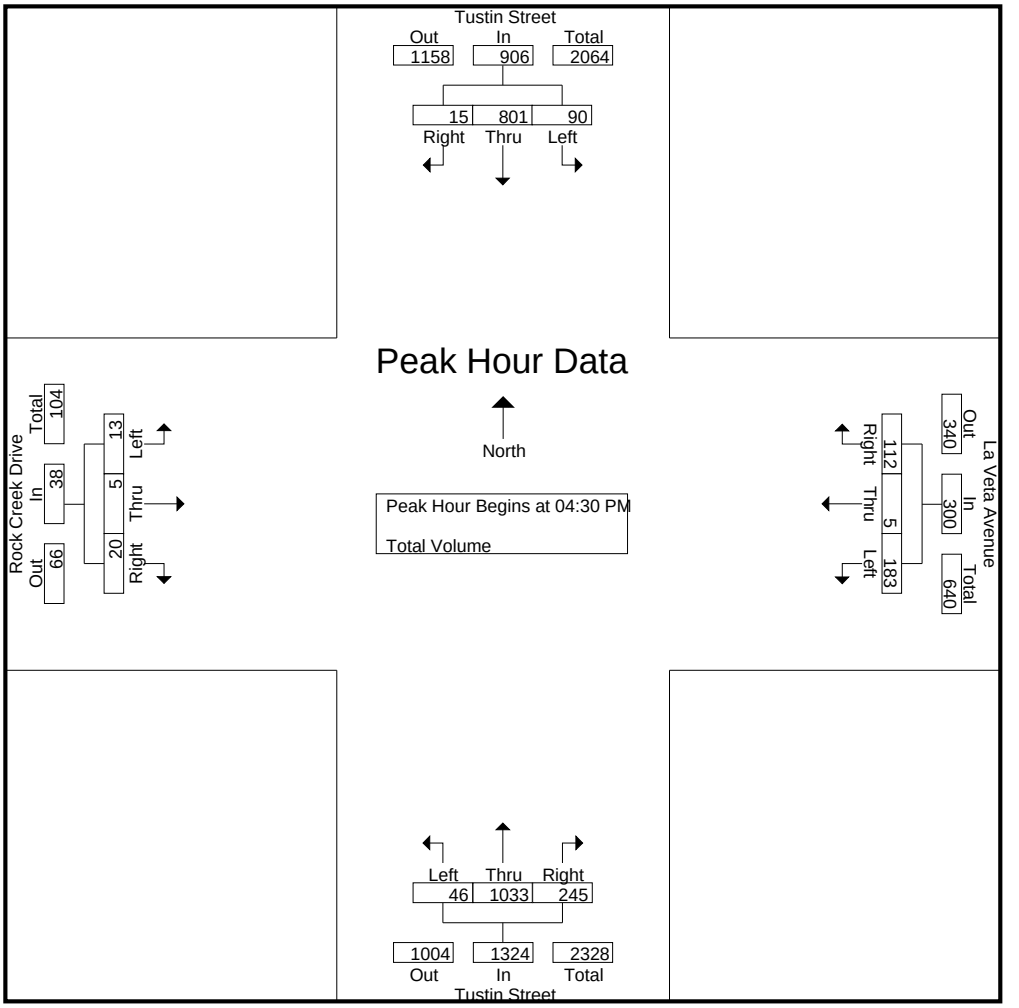
	Tustin Street Southbound				La Veta Avenue Westbound				Tustin Street Northbound				Rock Creek Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	26	208	1	235	59	3	32	94	5	285	56	346	4	1	2	7	682
04:15 PM	16	163	1	180	32	0	33	65	12	253	51	316	3	2	4	9	570
04:30 PM	18	191	5	214	55	0	24	79	9	272	52	333	2	1	5	8	634
04:45 PM	19	195	2	216	50	4	24	78	12	232	76	320	2	1	1	4	618
Total	79	757	9	845	196	7	113	316	38	1042	235	1315	11	5	12	28	2504
05:00 PM	28	224	6	258	33	1	35	69	15	278	63	356	6	1	10	17	700
05:15 PM	25	191	2	218	45	0	29	74	10	251	54	315	3	2	4	9	616
05:30 PM	34	168	4	206	51	3	23	77	19	231	49	299	5	4	2	11	593
05:45 PM	16	195	1	212	37	4	32	73	10	255	67	332	4	9	3	16	633
Total	103	778	13	894	166	8	119	293	54	1015	233	1302	18	16	19	53	2542
Grand Total	182	1535	22	1739	362	15	232	609	92	2057	468	2617	29	21	31	81	5046
Apprch %	10.5	88.3	1.3		59.4	2.5	38.1		3.5	78.6	17.9		35.8	25.9	38.3		
Total %	3.6	30.4	0.4	34.5	7.2	0.3	4.6	12.1	1.8	40.8	9.3	51.9	0.6	0.4	0.6	1.6	

	Tustin Street Southbound				La Veta Avenue Westbound				Tustin Street Northbound				Rock Creek Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	18	191	5	214	**55**	0	24	**79**	9	272	52	333	2	1	5	8	634
04:45 PM	19	195	2	216	50	**4**	24	78	12	232	**76**	320	2	1	1	4	618
05:00 PM	**28**	**224**	**6**	**258**	33	1	**35**	69	**15**	**278**	63	**356**	**6**	1	**10**	**17**	**700**
05:15 PM	25	191	2	218	45	0	29	74	10	251	54	315	3	**2**	4	9	616
Total Volume	90	801	15	906	183	5	112	300	46	1033	245	1324	13	5	20	38	2568
% App. Total	9.9	88.4	1.7		61	1.7	37.3		3.5	78	18.5		34.2	13.2	52.6		
PHF	.804	.894	.625	.878	.832	.313	.800	.949	.767	.929	.806	.930	.542	.625	.500	.559	.917

Counts Unlimited
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City of Orange
N/S: Tustin Street
E/W: Rock Creek Drive/La Veta Avenue
Weather: Clear

File Name : 88_ORN_Tustin_La Veta PM
Site Code : 20220171
Start Date : 1/8/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:15 PM				05:00 PM			
+0 mins.	18	191	5	214	**59**	3	32	**94**	12	253	51	316	**6**	1	**10**	**17**
+15 mins.	19	195	2	216	32	0	**33**	65	9	272	52	333	3	2	4	9
+30 mins.	**28**	**224**	**6**	**258**	55	0	24	79	12	232	**76**	320	5	4	2	11
+45 mins.	25	191	2	218	50	**4**	24	78	**15**	**278**	63	**356**	4	**9**	3	16
Total Volume	90	801	15	906	196	7	113	316	48	1035	242	1325	18	16	19	53
% App. Total	9.9	88.4	1.7		62	2.2	35.8		3.6	78.1	18.3		34	30.2	35.8	
PHF	.804	.894	.625	.878	.831	.438	.856	.840	.800	.931	.796	.930	.750	.444	.475	.779

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City of Orange
N/S: Tustin Street
E/W: SR-22 Westbound On Ramp
Weather: Clear

File Name : 89_ORN_Tustin_22W AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

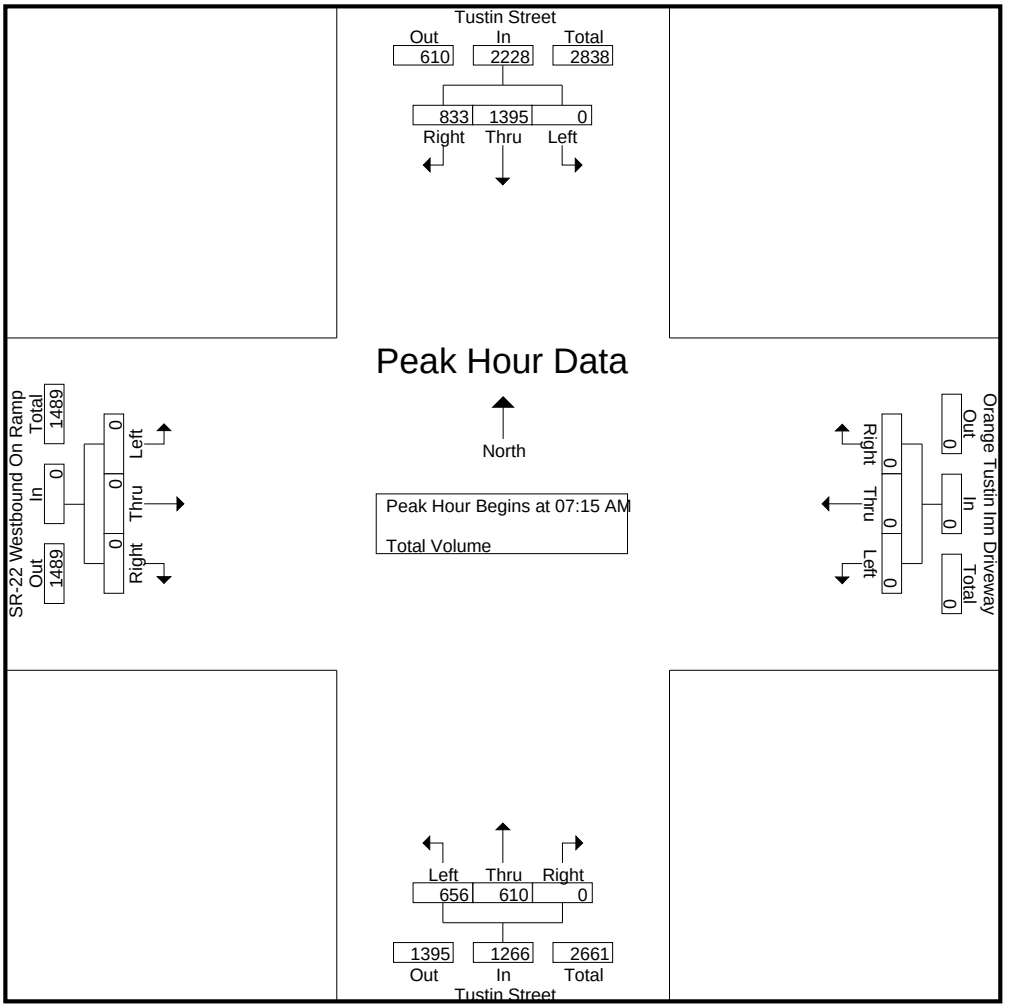
	Tustin Street Southbound				Orange Tustin Inn Driveway Westbound				Tustin Street Northbound				SR-22 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	301	193	494	0	0	0	0	102	115	0	217	0	0	0	0	711
07:15 AM	0	389	195	584	0	0	0	0	127	115	0	242	0	0	0	0	826
07:30 AM	0	355	210	565	0	0	0	0	170	154	0	324	0	0	0	0	889
07:45 AM	0	329	233	562	0	0	0	0	216	161	0	377	0	0	0	0	939
Total	0	1374	831	2205	0	0	0	0	615	545	0	1160	0	0	0	0	3365
08:00 AM	0	322	195	517	0	0	0	0	143	180	0	323	0	0	0	0	840
08:15 AM	0	300	186	486	0	0	0	0	151	168	0	319	0	0	0	0	805
08:30 AM	0	269	151	420	0	0	0	0	121	156	0	277	0	0	0	0	697
08:45 AM	0	231	148	379	0	0	0	0	94	170	0	264	0	0	0	0	643
Total	0	1122	680	1802	0	0	0	0	509	674	0	1183	0	0	0	0	2985
Grand Total	0	2496	1511	4007	0	0	0	0	1124	1219	0	2343	0	0	0	0	6350
Apprch %	0	62.3	37.7		0	0	0		48	52	0		0	0	0		
Total %	0	39.3	23.8	63.1	0	0	0	0	17.7	19.2	0	36.9	0	0	0	0	

	Tustin Street Southbound				Orange Tustin Inn Driveway Westbound				Tustin Street Northbound				SR-22 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	**389**	195	**584**	0	0	0	0	127	115	0	242	0	0	0	0	826
07:30 AM	0	355	210	565	0	0	0	0	170	154	0	324	0	0	0	0	889
07:45 AM	0	329	**233**	562	0	0	0	0	**216**	161	0	**377**	0	0	0	0	**939**
08:00 AM	0	322	195	517	0	0	0	0	143	**180**	0	323	0	0	0	0	840
Total Volume	0	1395	833	2228	0	0	0	0	656	610	0	1266	0	0	0	0	3494
% App. Total	0	62.6	37.4		0	0	0		51.8	48.2	0		0	0	0		
PHF	.000	.897	.894	.954	.000	.000	.000	.000	.759	.847	.000	.840	.000	.000	.000	.000	.930

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City of Orange
N/S: Tustin Street
E/W: SR-22 Westbound On Ramp
Weather: Clear

File Name : 89_ORN_Tustin_22W AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:30 AM				07:00 AM			
+0 mins.	0	**389**	195	**584**	0	0	0	0	170	154	0	324	0	0	0	0
+15 mins.	0	355	210	565	0	0	0	0	**216**	161	0	**377**	0	0	0	0
+30 mins.	0	329	**233**	562	0	0	0	0	143	**180**	0	323	0	0	0	0
+45 mins.	0	322	195	517	0	0	0	0	151	168	0	319	0	0	0	0
Total Volume	0	1395	833	2228	0	0	0	0	680	663	0	1343	0	0	0	0
% App. Total	0	62.6	37.4		0	0	0		50.6	49.4	0		0	0	0	
PHF	.000	.897	.894	.954	.000	.000	.000	.000	.787	.921	.000	.891	.000	.000	.000	.000

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City of Orange
N/S: Tustin Street
E/W: SR-22 Westbound On Ramp
Weather: Clear

File Name : 89_ORN_Tustin_22W PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

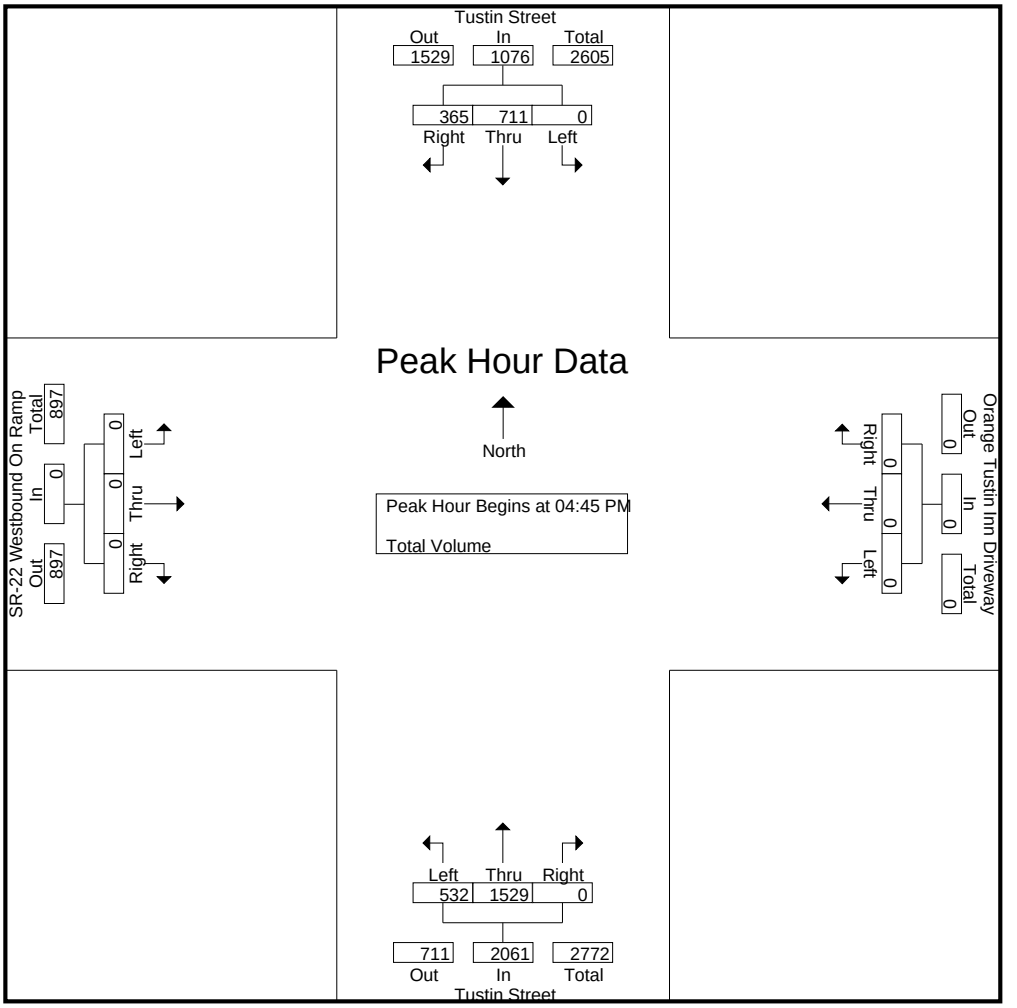
	Tustin Street Southbound				Orange Tustin Inn Driveway Westbound				Tustin Street Northbound				SR-22 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	161	113	274	0	0	0	0	148	374	0	522	0	0	0	0	796
04:15 PM	0	146	88	234	0	0	0	0	142	377	0	519	0	0	0	0	753
04:30 PM	0	148	102	250	0	0	0	0	142	376	0	518	0	0	0	0	768
04:45 PM	0	166	100	266	0	0	0	0	111	373	0	484	0	0	0	0	750
Total	0	621	403	1024	0	0	0	0	543	1500	0	2043	0	0	0	0	3067
05:00 PM	0	173	99	272	0	0	0	0	149	379	0	528	0	0	0	0	800
05:15 PM	0	182	98	280	0	0	0	0	130	391	0	521	0	0	0	0	801
05:30 PM	0	190	68	258	0	0	0	0	142	386	0	528	0	0	0	0	786
05:45 PM	0	169	81	250	0	0	0	0	105	391	0	496	0	0	0	0	746
Total	0	714	346	1060	0	0	0	0	526	1547	0	2073	0	0	0	0	3133
Grand Total	0	1335	749	2084	0	0	0	0	1069	3047	0	4116	0	0	0	0	6200
Apprch %	0	64.1	35.9		0	0	0		26	74	0		0	0	0		
Total %	0	21.5	12.1	33.6	0	0	0	0	17.2	49.1	0	66.4	0	0	0	0	

	Tustin Street Southbound				Orange Tustin Inn Driveway Westbound				Tustin Street Northbound				SR-22 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	166	**100**	266	0	0	0	0	111	373	0	484	0	0	0	0	750
05:00 PM	0	173	99	272	0	0	0	0	**149**	379	0	**528**	0	0	0	0	800
05:15 PM	0	182	98	**280**	0	0	0	0	130	**391**	0	521	0	0	0	0	**801**
05:30 PM	0	**190**	68	258	0	0	0	0	142	386	0	528	0	0	0	0	786
Total Volume	0	711	365	1076	0	0	0	0	532	1529	0	2061	0	0	0	0	3137
% App. Total	0	66.1	33.9		0	0	0		25.8	74.2	0		0	0	0		
PHF	.000	.936	.913	.961	.000	.000	.000	.000	.893	.978	.000	.976	.000	.000	.000	.000	.979

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City of Orange
N/S: Tustin Street
E/W: SR-22 Westbound On Ramp
Weather: Clear

File Name : 89_ORN_Tustin_22W PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	166	**100**	266	0	0	0	0	**149**	379	0	**528**	0	0	0	0
+15 mins.	0	173	99	272	0	0	0	0	130	**391**	0	521	0	0	0	0
+30 mins.	0	182	98	**280**	0	0	0	0	142	386	0	528	0	0	0	0
+45 mins.	0	**190**	68	258	0	0	0	0	105	391	0	496	0	0	0	0
Total Volume	0	711	365	1076	0	0	0	0	526	1547	0	2073	0	0	0	0
% App. Total	0	66.1	33.9		0	0	0		25.4	74.6	0		0	0	0	
PHF	.000	.936	.913	.961	.000	.000	.000	.000	.883	.989	.000	.982	.000	.000	.000	.000

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City of Orange
N/S: Tustin Street
E/W: SR-22 EB Off Ramp/Seba Avenue
Weather: Clear

File Name : 90_ORN_Tustin_22E AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

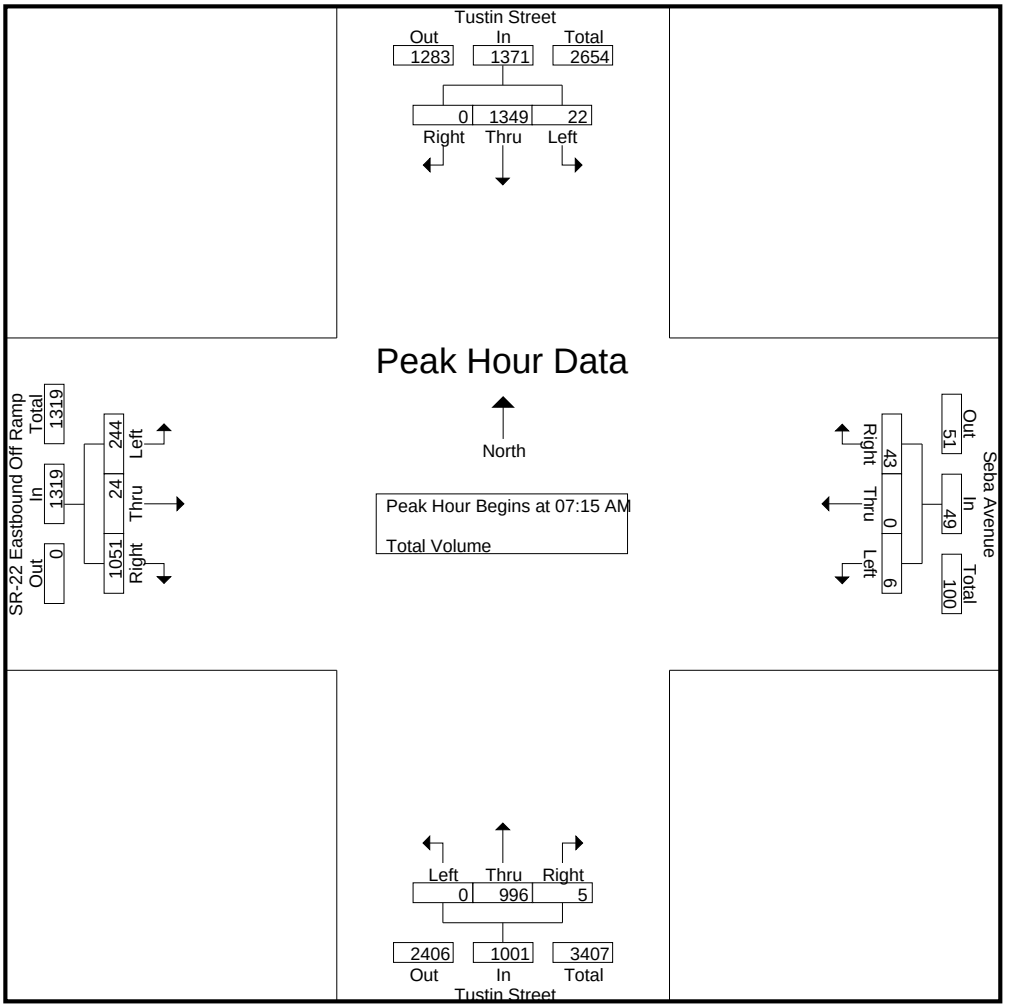
	Tustin Street Southbound				Seba Avenue Westbound				Tustin Street Northbound				SR-22 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	299	0	301	3	0	4	7	0	170	0	170	49	2	208	259	737
07:15 AM	2	370	0	372	1	0	6	7	0	200	0	200	59	4	288	351	930
07:30 AM	2	316	0	318	0	0	10	10	0	263	1	264	62	9	269	340	932
07:45 AM	5	321	0	326	3	0	15	18	0	291	1	292	51	2	250	303	939
Total	11	1306	0	1317	7	0	35	42	0	924	2	926	221	17	1015	1253	3538
08:00 AM	13	342	0	355	2	0	12	14	0	242	3	245	72	9	244	325	939
08:15 AM	13	294	0	307	4	0	13	17	0	231	0	231	76	8	251	335	890
08:30 AM	6	261	0	267	6	0	9	15	0	217	2	219	63	8	184	255	756
08:45 AM	7	221	0	228	1	0	7	8	0	192	2	194	79	3	227	309	739
Total	39	1118	0	1157	13	0	41	54	0	882	7	889	290	28	906	1224	3324
Grand Total	50	2424	0	2474	20	0	76	96	0	1806	9	1815	511	45	1921	2477	6862
Apprch %	2	98	0		20.8	0	79.2		0	99.5	0.5		20.6	1.8	77.6		
Total %	0.7	35.3	0	36.1	0.3	0	1.1	1.4	0	26.3	0.1	26.5	7.4	0.7	28	36.1	

	Tustin Street Southbound				Seba Avenue Westbound				Tustin Street Northbound				SR-22 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	2	**370**	0	**372**	1	0	6	7	0	200	0	200	59	4	**288**	**351**	930
07:30 AM	2	316	0	318	0	0	10	10	0	263	1	264	62	**9**	269	340	932
07:45 AM	5	321	0	326	**3**	0	**15**	**18**	0	**291**	1	**292**	51	2	250	303	**939**
08:00 AM	**13**	342	0	355	2	0	12	14	0	242	**3**	245	**72**	9	244	325	939
Total Volume	22	1349	0	1371	6	0	43	49	0	996	5	1001	244	24	1051	1319	3740
% App. Total	1.6	98.4	0		12.2	0	87.8		0	99.5	0.5		18.5	1.8	79.7		
PHF	.423	.911	.000	.921	.500	.000	.717	.681	.000	.856	.417	.857	.847	.667	.912	.939	.996

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City of Orange
N/S: Tustin Street
E/W: SR-22 EB Off Ramp/Seba Avenue
Weather: Clear

File Name : 90_ORN_Tustin_22E AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:45 AM				07:30 AM				07:15 AM			
+0 mins.	2	**370**	0	**372**	3	0	**15**	**18**	0	263	1	264	59	4	**288**	**351**
+15 mins.	2	316	0	318	2	0	12	14	0	**291**	1	**292**	62	**9**	269	340
+30 mins.	5	321	0	326	4	0	13	17	0	242	**3**	245	51	2	250	303
+45 mins.	**13**	342	0	355	**6**	0	9	15	0	231	0	231	**72**	9	244	325
Total Volume	22	1349	0	1371	15	0	49	64	0	1027	5	1032	244	24	1051	1319
% App. Total	1.6	98.4	0		23.4	0	76.6		0	99.5	0.5		18.5	1.8	79.7	
PHF	.423	.911	.000	.921	.625	.000	.817	.889	.000	.882	.417	.884	.847	.667	.912	.939

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City of Orange
N/S: Tustin Street
E/W: SR-22 EB Off Ramp/Seba Avenue
Weather: Clear

File Name : 90_ORN_Tustin_22E PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

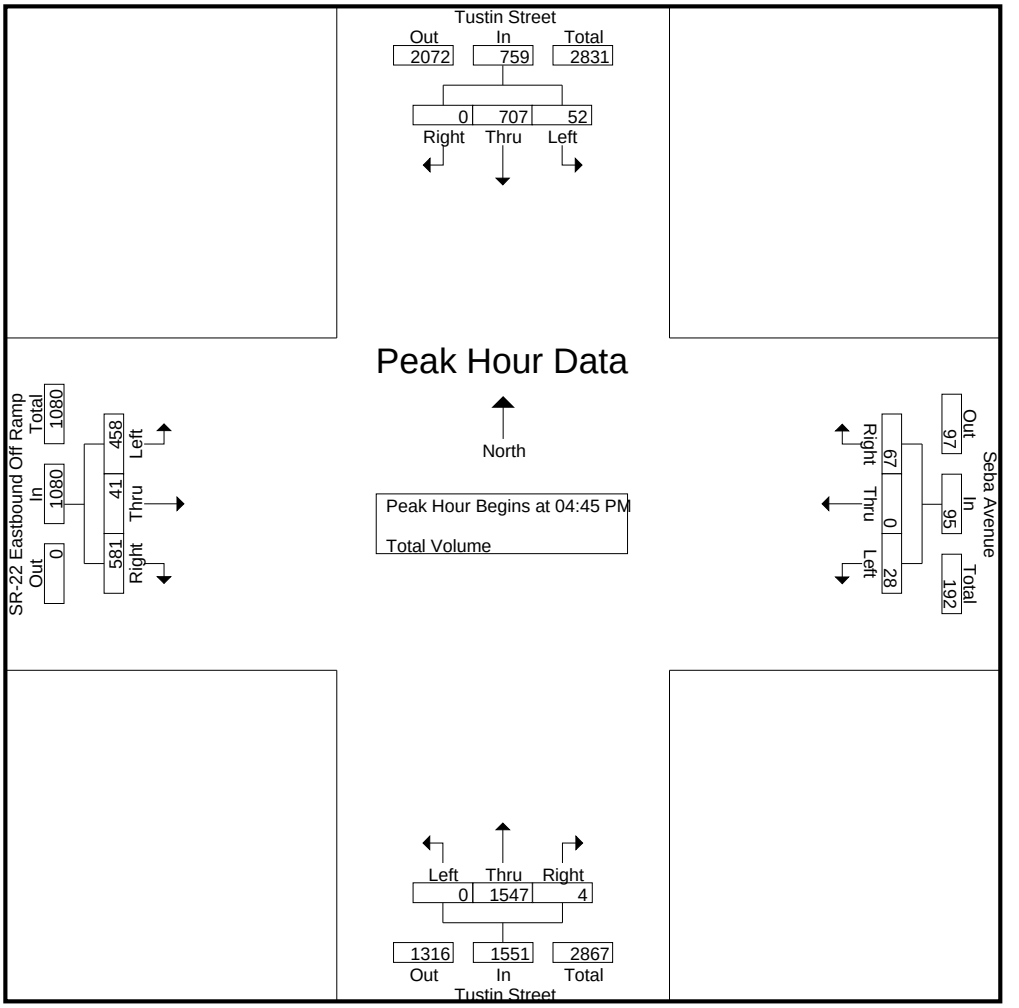
	Tustin Street Southbound				Seba Avenue Westbound				Tustin Street Northbound				SR-22 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	7	144	0	151	8	0	10	18	0	359	1	360	164	11	142	317	846
04:15 PM	10	155	0	165	7	0	16	23	0	350	2	352	153	16	146	315	855
04:30 PM	17	142	0	159	6	0	18	24	0	359	2	361	144	7	142	293	837
04:45 PM	14	167	0	181	5	0	11	16	0	380	0	380	114	7	123	244	821
Total	48	608	0	656	26	0	55	81	0	1448	5	1453	575	41	553	1169	3359
05:00 PM	12	177	0	189	8	0	21	29	0	382	1	383	108	10	138	256	857
05:15 PM	10	155	0	165	9	0	18	27	0	372	3	375	120	11	162	293	860
05:30 PM	16	208	0	224	6	0	17	23	0	413	0	413	116	13	158	287	947
05:45 PM	14	144	0	158	5	0	24	29	0	344	2	346	123	7	142	272	805
Total	52	684	0	736	28	0	80	108	0	1511	6	1517	467	41	600	1108	3469
Grand Total	100	1292	0	1392	54	0	135	189	0	2959	11	2970	1042	82	1153	2277	6828
Apprch %	7.2	92.8	0		28.6	0	71.4		0	99.6	0.4		45.8	3.6	50.6		
Total %	1.5	18.9	0	20.4	0.8	0	2	2.8	0	43.3	0.2	43.5	15.3	1.2	16.9	33.3	

	Tustin Street Southbound				Seba Avenue Westbound				Tustin Street Northbound				SR-22 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	14	167	0	181	5	0	11	16	0	380	0	380	114	7	123	244	821
05:00 PM	12	177	0	189	8	0	**21**	**29**	0	382	1	383	108	10	138	256	857
05:15 PM	10	155	0	165	**9**	0	18	27	0	372	**3**	375	**120**	11	**162**	**293**	860
05:30 PM	**16**	**208**	0	**224**	6	0	17	23	0	**413**	0	**413**	116	**13**	158	287	**947**
Total Volume	52	707	0	759	28	0	67	95	0	1547	4	1551	458	41	581	1080	3485
% App. Total	6.9	93.1	0		29.5	0	70.5		0	99.7	0.3		42.4	3.8	53.8		
PHF	.813	.850	.000	.847	.778	.000	.798	.819	.000	.936	.333	.939	.954	.788	.897	.922	.920

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City of Orange
N/S: Tustin Street
E/W: SR-22 EB Off Ramp/Seba Avenue
Weather: Clear

File Name : 90_ORN_Tustin_22E PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:45 PM				04:00 PM			
+0 mins.	14	167	0	181	8	0	21	**29**	0	380	0	380	**164**	11	142	**317**
+15 mins.	12	177	0	189	**9**	0	18	27	0	382	1	383	153	**16**	**146**	315
+30 mins.	10	155	0	165	6	0	17	23	0	372	**3**	375	144	7	142	293
+45 mins.	**16**	**208**	0	**224**	5	0	**24**	29	0	**413**	0	**413**	114	7	123	244
Total Volume	52	707	0	759	28	0	80	108	0	1547	4	1551	575	41	553	1169
% App. Total	6.9	93.1	0		25.9	0	74.1		0	99.7	0.3		49.2	3.5	47.3	
PHF	.813	.850	.000	.847	.778	.000	.833	.931	.000	.936	.333	.939	.877	.641	.947	.922

Counts Unlimited
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City of Santa Ana
N/S: Tustin Street/Tustin Avenue
E/W: Fairhaven Avenue
Weather: Clear

File Name : 91_SNA_Tustin_Fairhaven AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

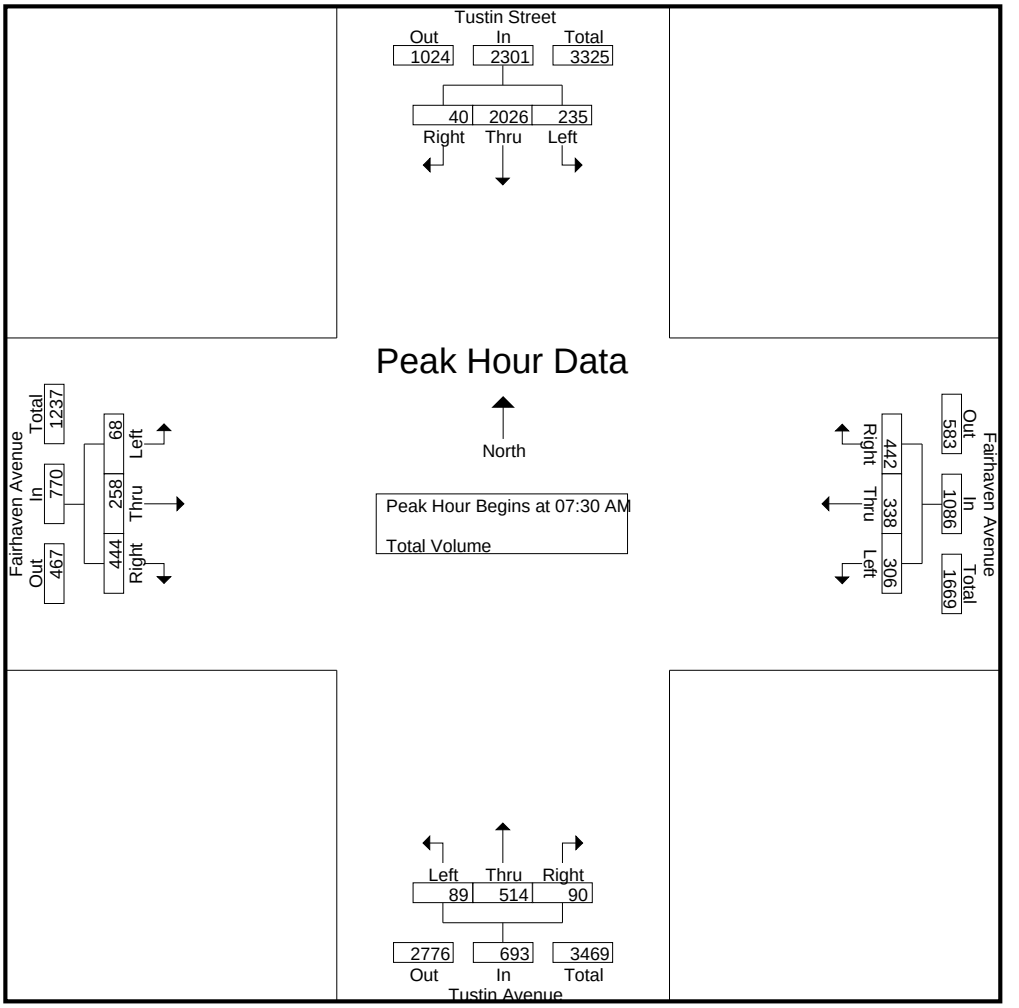
	Tustin Street Southbound				Fairhaven Avenue Westbound				Tustin Avenue Northbound				Fairhaven Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	39	455	3	497	44	20	70	134	8	93	12	113	11	27	66	104	848
07:15 AM	59	554	8	621	51	45	85	181	14	108	19	141	14	45	85	144	1087
07:30 AM	61	526	4	591	77	71	112	260	21	123	30	174	17	72	119	208	1233
07:45 AM	67	501	13	581	80	92	139	311	28	138	17	183	16	73	101	190	1265
Total	226	2036	28	2290	252	228	406	886	71	462	78	611	58	217	371	646	4433
08:00 AM	53	520	11	584	81	106	102	289	24	125	23	172	19	57	126	202	1247
08:15 AM	54	479	12	545	68	69	89	226	16	128	20	164	16	56	98	170	1105
08:30 AM	53	399	6	458	54	39	82	175	16	136	19	171	21	50	71	142	946
08:45 AM	49	387	5	441	48	32	61	141	13	109	15	137	17	25	68	110	829
Total	209	1785	34	2028	251	246	334	831	69	498	77	644	73	188	363	624	4127
Grand Total	435	3821	62	4318	503	474	740	1717	140	960	155	1255	131	405	734	1270	8560
Apprch %	10.1	88.5	1.4		29.3	27.6	43.1		11.2	76.5	12.4		10.3	31.9	57.8		
Total %	5.1	44.6	0.7	50.4	5.9	5.5	8.6	20.1	1.6	11.2	1.8	14.7	1.5	4.7	8.6	14.8	

	Tustin Street Southbound				Fairhaven Avenue Westbound				Tustin Avenue Northbound				Fairhaven Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	61	**526**	4	**591**	77	71	112	260	21	123	**30**	174	17	72	119	**208**	1233
07:45 AM	**67**	501	**13**	581	80	92	**139**	**311**	**28**	**138**	17	**183**	16	**73**	101	190	**1265**
08:00 AM	53	520	11	584	**81**	**106**	102	289	24	125	23	172	**19**	57	**126**	202	1247
08:15 AM	54	479	12	545	68	69	89	226	16	128	20	164	16	56	98	170	1105
Total Volume	235	2026	40	2301	306	338	442	1086	89	514	90	693	68	258	444	770	4850
% App. Total	10.2	88	1.7		28.2	31.1	40.7		12.8	74.2	13		8.8	33.5	57.7		
PHF	.877	.963	.769	.973	.944	.797	.795	.873	.795	.931	.750	.947	.895	.884	.881	.925	.958

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City of Santa Ana
N/S: Tustin Street/Tustin Avenue
E/W: Fairhaven Avenue
Weather: Clear

File Name : 91_SNA_Tustin_Fairhaven AM
Site Code : 20220171
Start Date : 3/12/2020
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	59	**554**	8	**621**	77	71	112	260	21	123	**30**	174	17	72	119	**208**
+15 mins.	61	526	4	591	80	92	**139**	**311**	**28**	**138**	17	**183**	16	**73**	101	190
+30 mins.	**67**	501	**13**	581	**81**	**106**	102	289	24	125	23	172	**19**	57	**126**	202
+45 mins.	53	520	11	584	68	69	89	226	16	128	20	164	16	56	98	170
Total Volume	240	2101	36	2377	306	338	442	1086	89	514	90	693	68	258	444	770
% App. Total	10.1	88.4	1.5		28.2	31.1	40.7		12.8	74.2	13		8.8	33.5	57.7	
PHF	.896	.948	.692	.957	.944	.797	.795	.873	.795	.931	.750	.947	.895	.884	.881	.925

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City of Santa Ana
N/S: Tustin Street/Tustin Avenue
E/W: Fairhaven Avenue
Weather: Clear

File Name : 91_SNA_Tustin_Fairhaven PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

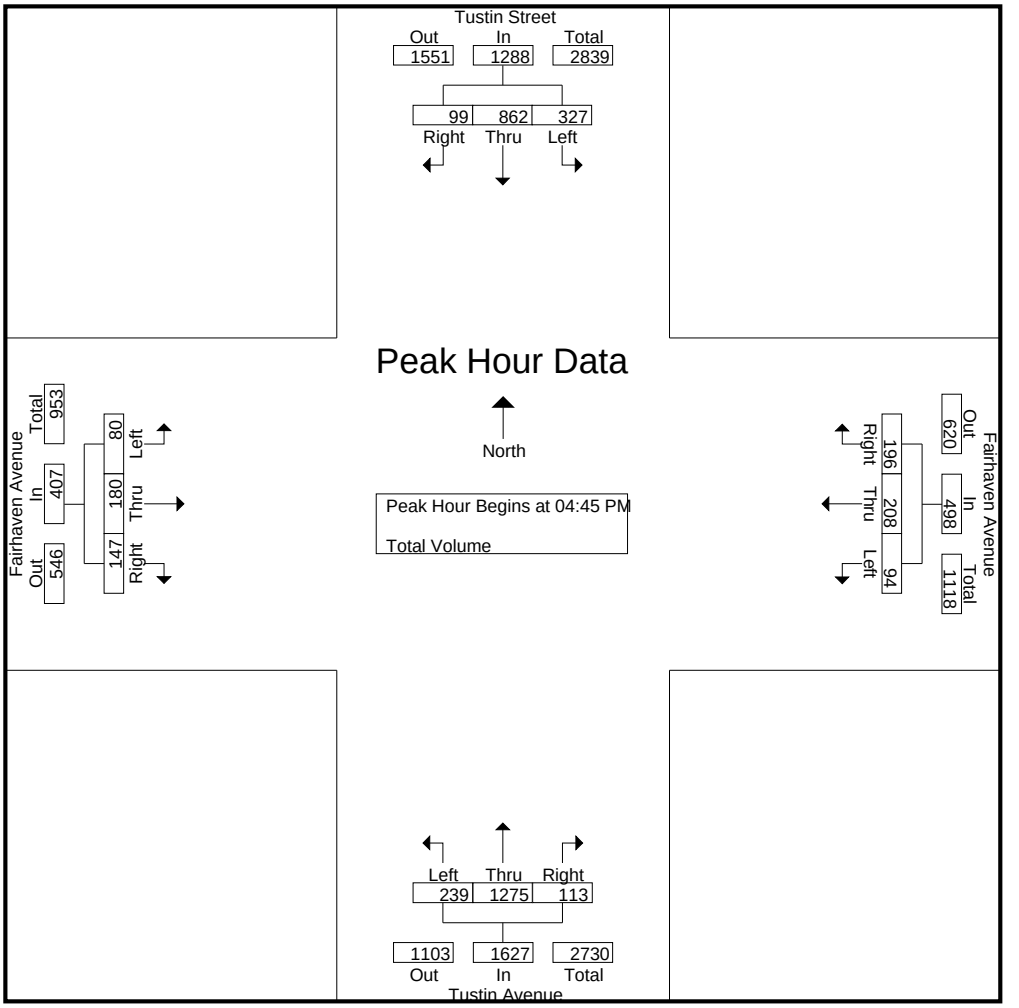
	Tustin Street Southbound				Fairhaven Avenue Westbound				Tustin Avenue Northbound				Fairhaven Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	80	189	19	288	46	39	63	148	48	270	27	345	21	44	32	97	878
04:15 PM	84	210	14	308	25	47	50	122	50	277	35	362	18	40	35	93	885
04:30 PM	68	182	21	271	22	55	51	128	48	289	42	379	19	43	37	99	877
04:45 PM	71	205	18	294	20	47	42	109	66	311	33	410	20	32	38	90	903
Total	303	786	72	1161	113	188	206	507	212	1147	137	1496	78	159	142	379	3543
05:00 PM	72	205	32	309	19	56	51	126	61	324	32	417	23	56	37	116	968
05:15 PM	92	198	28	318	30	46	45	121	57	329	21	407	20	52	39	111	957
05:30 PM	92	254	21	367	25	59	58	142	55	311	27	393	17	40	33	90	992
05:45 PM	70	195	14	279	29	54	47	130	58	273	27	358	17	35	46	98	865
Total	326	852	95	1273	103	215	201	519	231	1237	107	1575	77	183	155	415	3782
Grand Total	629	1638	167	2434	216	403	407	1026	443	2384	244	3071	155	342	297	794	7325
Apprch %	25.8	67.3	6.9		21.1	39.3	39.7		14.4	77.6	7.9		19.5	43.1	37.4		
Total %	8.6	22.4	2.3	33.2	2.9	5.5	5.6	14	6	32.5	3.3	41.9	2.1	4.7	4.1	10.8	

	Tustin Street Southbound				Fairhaven Avenue Westbound				Tustin Avenue Northbound				Fairhaven Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	71	205	18	294	20	47	42	109	**66**	311	**33**	410	20	32	38	90	903
05:00 PM	72	205	**32**	309	19	56	51	126	61	324	32	**417**	**23**	**56**	37	**116**	968
05:15 PM	**92**	198	28	318	**30**	46	45	121	57	**329**	21	407	20	52	**39**	111	957
05:30 PM	92	**254**	21	**367**	25	**59**	**58**	**142**	55	311	27	393	17	40	33	90	**992**
Total Volume	327	862	99	1288	94	208	196	498	239	1275	113	1627	80	180	147	407	3820
% App. Total	25.4	66.9	7.7		18.9	41.8	39.4		14.7	78.4	6.9		19.7	44.2	36.1		
PHF	.889	.848	.773	.877	.783	.881	.845	.877	.905	.969	.856	.975	.870	.804	.942	.877	.963

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File Name : 91_SNA_Tustin_Fairhaven PM
Site Code : 20220171
Start Date : 3/12/2020
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:45 PM				04:30 PM			
+0 mins.	71	205	18	294	19	56	51	126	**66**	311	**33**	410	19	43	37	99
+15 mins.	72	205	**32**	309	**30**	46	45	121	61	324	32	**417**	20	32	38	90
+30 mins.	**92**	198	28	318	25	**59**	**58**	**142**	57	**329**	21	407	**23**	**56**	37	**116**
+45 mins.	92	**254**	21	**367**	29	54	47	130	55	311	27	393	20	52	**39**	111
Total Volume	327	862	99	1288	103	215	201	519	239	1275	113	1627	82	183	151	416
% App. Total	25.4	66.9	7.7		19.8	41.4	38.7		14.7	78.4	6.9		19.7	44	36.3	
PHF	.889	.848	.773	.877	.858	.911	.866	.914	.905	.969	.856	.975	.891	.817	.968	.897

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City of Santa Ana
N/S: Tustin Avenue
E/W: Santa Clara Avenue
Weather: Clear

File Name : 92_SNA_Tustin_Santa Clara AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

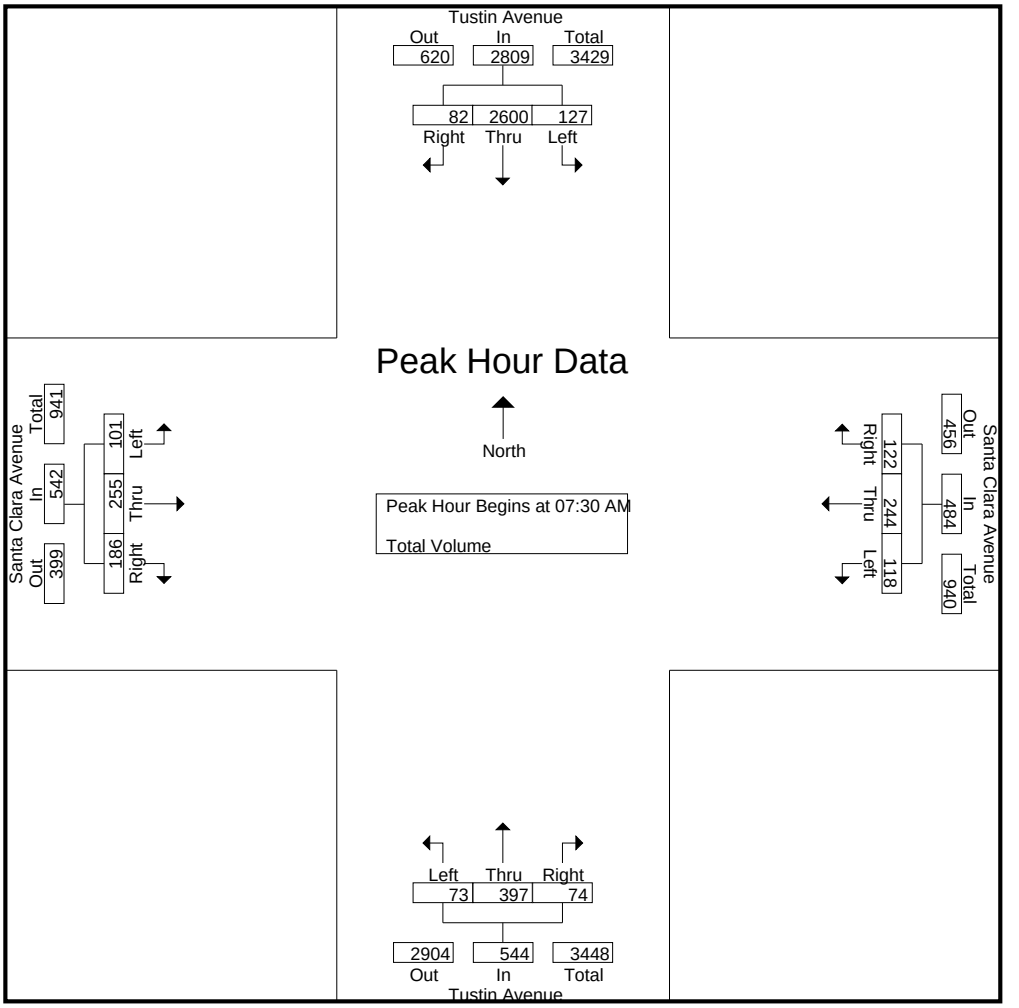
	Tustin Avenue Southbound				Santa Clara Avenue Westbound				Tustin Avenue Northbound				Santa Clara Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	19	509	22	550	18	20	21	59	15	65	13	93	23	34	35	92	794
07:15 AM	31	655	24	710	20	29	32	81	9	78	24	111	16	86	40	142	1044
07:30 AM	24	633	22	679	31	67	32	130	17	92	20	129	33	82	54	169	1107
07:45 AM	26	654	15	695	23	59	29	111	22	101	16	139	19	73	32	124	1069
Total	100	2451	83	2634	92	175	114	381	63	336	73	472	91	275	161	527	4014
08:00 AM	33	661	28	722	30	63	37	130	17	101	20	138	32	61	56	149	1139
08:15 AM	44	652	17	713	34	55	24	113	17	103	18	138	17	39	44	100	1064
08:30 AM	23	473	17	513	19	33	23	75	20	94	13	127	25	31	37	93	808
08:45 AM	25	465	18	508	28	28	19	75	14	91	8	113	29	34	54	117	813
Total	125	2251	80	2456	111	179	103	393	68	389	59	516	103	165	191	459	3824
Grand Total	225	4702	163	5090	203	354	217	774	131	725	132	988	194	440	352	986	7838
Apprch %	4.4	92.4	3.2		26.2	45.7	28		13.3	73.4	13.4		19.7	44.6	35.7		
Total %	2.9	60	2.1	64.9	2.6	4.5	2.8	9.9	1.7	9.2	1.7	12.6	2.5	5.6	4.5	12.6	

	Tustin Avenue Southbound				Santa Clara Avenue Westbound				Tustin Avenue Northbound				Santa Clara Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	24	633	22	679	31	**67**	32	**130**	17	92	**20**	129	**33**	**82**	54	**169**	1107
07:45 AM	26	654	15	695	23	59	29	111	**22**	101	16	**139**	19	73	32	124	1069
08:00 AM	33	**661**	**28**	**722**	30	63	**37**	130	17	101	20	138	32	61	**56**	149	**1139**
08:15 AM	**44**	652	17	713	**34**	55	24	113	17	**103**	18	138	17	39	44	100	1064
Total Volume	127	2600	82	2809	118	244	122	484	73	397	74	544	101	255	186	542	4379
% App. Total	4.5	92.6	2.9		24.4	50.4	25.2		13.4	73	13.6		18.6	47	34.3		
PHF	.722	.983	.732	.973	.868	.910	.824	.931	.830	.964	.925	.978	.765	.777	.830	.802	.961

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City of Santa Ana
N/S: Tustin Avenue
E/W: Santa Clara Avenue
Weather: Clear

File Name : 92_SNA_Tustin_Santa Clara AM
Site Code : 20220171
Start Date : 3/12/2020
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:15 AM			
+0 mins.	24	633	22	679	31	**67**	32	**130**	17	92	**20**	129	16	**86**	40	142
+15 mins.	26	654	15	695	23	59	29	111	**22**	101	16	**139**	**33**	82	54	**169**
+30 mins.	33	**661**	**28**	**722**	30	63	**37**	130	17	101	20	138	19	73	32	124
+45 mins.	**44**	652	17	713	**34**	55	24	113	17	**103**	18	138	32	61	**56**	149
Total Volume	127	2600	82	2809	118	244	122	484	73	397	74	544	100	302	182	584
% App. Total	4.5	92.6	2.9		24.4	50.4	25.2		13.4	73	13.6		17.1	51.7	31.2	
PHF	.722	.983	.732	.973	.868	.910	.824	.931	.830	.964	.925	.978	.758	.878	.813	.864

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City of Santa Ana
N/S: Tustin Avenue
E/W: Santa Clara Avenue
Weather: Clear

File Name : 92_SNA_Tustin_Santa Clara PM
Site Code : 20220171
Start Date : 3/12/2020
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Groups Printed- Total Volume

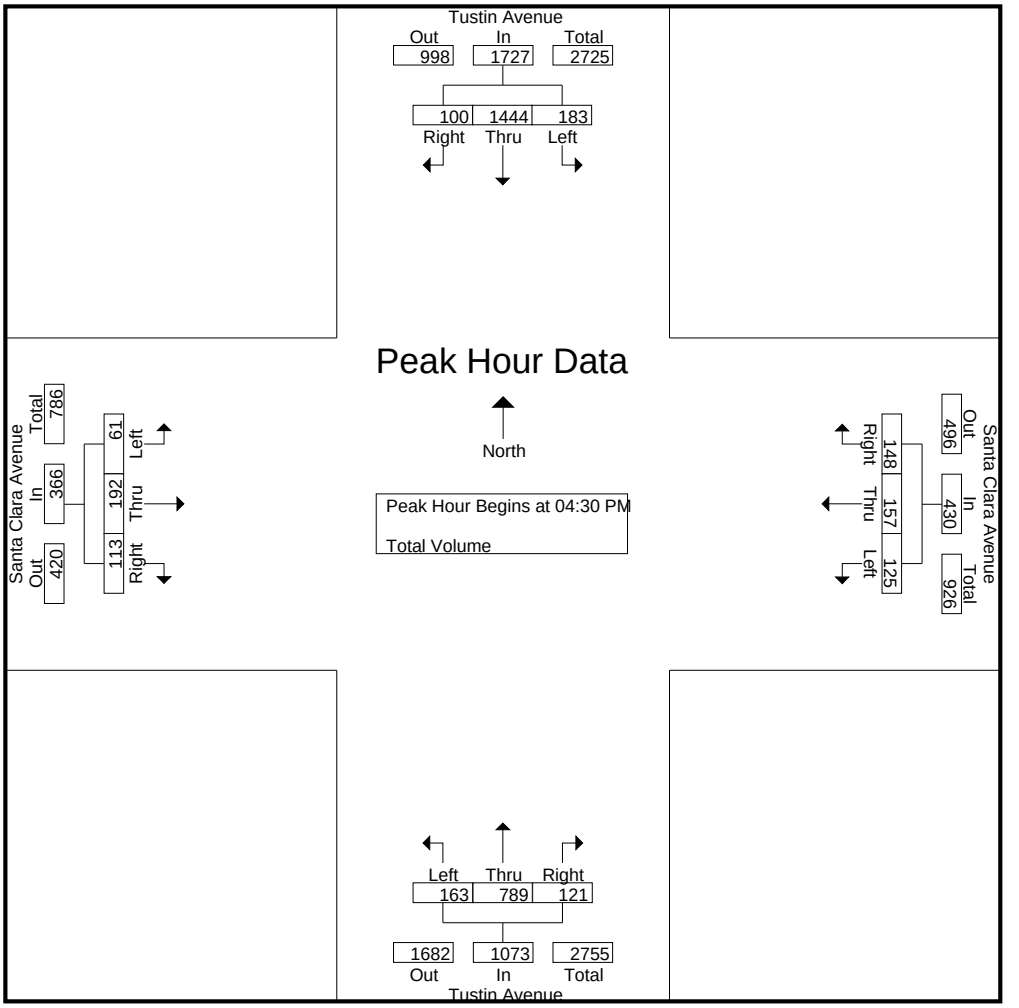
	Tustin Avenue Southbound				Santa Clara Avenue Westbound				Tustin Avenue Northbound				Santa Clara Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	34	318	34	386	35	26	22	83	40	197	26	263	19	41	28	88	820
04:15 PM	53	301	29	383	29	31	28	88	32	182	30	244	14	45	30	89	804
04:30 PM	47	358	26	431	31	44	44	119	38	174	32	244	16	52	22	90	884
04:45 PM	44	349	18	411	23	40	32	95	32	197	31	260	15	47	24	86	852
Total	178	1326	107	1611	118	141	126	385	142	750	119	1011	64	185	104	353	3360
05:00 PM	37	372	30	439	28	40	30	98	37	199	29	265	17	45	40	102	904
05:15 PM	55	365	26	446	43	33	42	118	56	219	29	304	13	48	27	88	956
05:30 PM	41	344	17	402	34	50	32	116	36	203	24	263	16	52	33	101	882
05:45 PM	40	304	26	370	34	39	24	97	47	213	23	283	15	33	25	73	823
Total	173	1385	99	1657	139	162	128	429	176	834	105	1115	61	178	125	364	3565
Grand Total	351	2711	206	3268	257	303	254	814	318	1584	224	2126	125	363	229	717	6925
Apprch %	10.7	83	6.3		31.6	37.2	31.2		15	74.5	10.5		17.4	50.6	31.9		
Total %	5.1	39.1	3	47.2	3.7	4.4	3.7	11.8	4.6	22.9	3.2	30.7	1.8	5.2	3.3	10.4	

	Tustin Avenue Southbound				Santa Clara Avenue Westbound				Tustin Avenue Northbound				Santa Clara Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	47	358	26	431	31	**44**	**44**	**119**	38	174	**32**	244	16	**52**	22	90	884
04:45 PM	44	349	18	411	23	40	32	95	32	197	31	260	15	47	24	86	852
05:00 PM	37	**372**	**30**	439	28	40	30	98	37	199	29	265	**17**	45	**40**	**102**	904
05:15 PM	**55**	365	26	**446**	**43**	33	42	118	**56**	**219**	29	**304**	13	48	27	88	**956**
Total Volume	183	1444	100	1727	125	157	148	430	163	789	121	1073	61	192	113	366	3596
% App. Total	10.6	83.6	5.8		29.1	36.5	34.4		15.2	73.5	11.3		16.7	52.5	30.9		
PHF	.832	.970	.833	.968	.727	.892	.841	.903	.728	.901	.945	.882	.897	.923	.706	.897	.940

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City of Santa Ana
N/S: Tustin Avenue
E/W: Santa Clara Avenue
Weather: Clear

File Name : 92_SNA_Tustin_Santa Clara PM
Site Code : 20220171
Start Date : 3/12/2020
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				05:00 PM				04:45 PM			
+0 mins.	47	358	26	431	31	**44**	**44**	**119**	37	199	**29**	265	15	47	24	86
+15 mins.	44	349	18	411	23	40	32	95	**56**	**219**	29	**304**	**17**	45	**40**	**102**
+30 mins.	37	**372**	**30**	439	28	40	30	98	36	203	24	263	13	48	27	88
+45 mins.	**55**	365	26	**446**	**43**	33	42	118	47	213	23	283	16	**52**	33	101
Total Volume	183	1444	100	1727	125	157	148	430	176	834	105	1115	61	192	124	377
% App. Total	10.6	83.6	5.8		29.1	36.5	34.4		15.8	74.8	9.4		16.2	50.9	32.9	
PHF	.832	.970	.833	.968	.727	.892	.841	.903	.786	.952	.905	.917	.897	.923	.775	.924

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City of Santa Ana
N/S: Tustin Avenue
E/W: 17th Street
Weather: Clear

File Name : 93_SNA_Tustin_17th St AM
Site Code : 20220171
Start Date : 3/12/2020
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Groups Printed- Total Volume

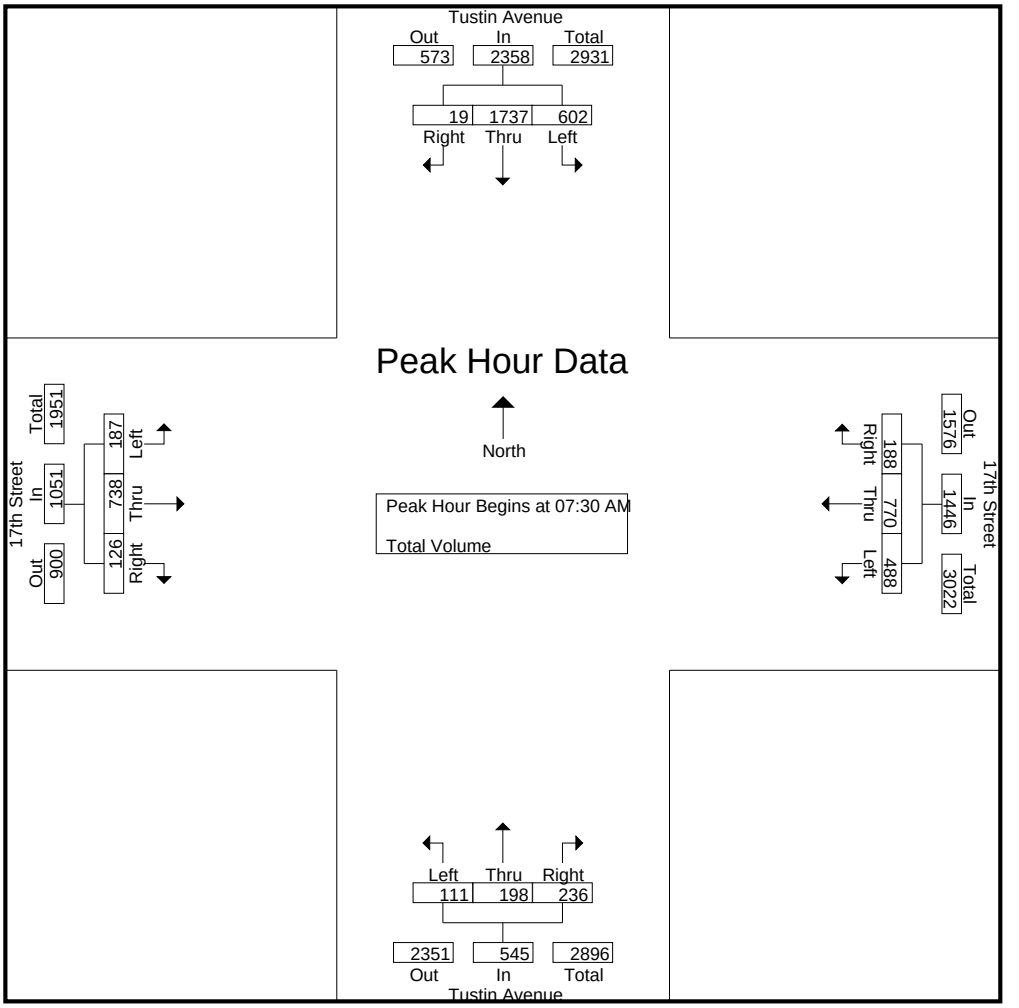
	Tustin Avenue Southbound				17th Street Westbound				Tustin Avenue Northbound				17th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	147	328	3	478	79	95	23	197	21	35	45	101	23	118	17	158	934
07:15 AM	133	414	1	548	77	131	33	241	20	41	55	116	32	228	22	282	1187
07:30 AM	174	475	6	655	79	147	28	254	26	41	61	128	27	216	22	265	1302
07:45 AM	123	408	1	532	139	227	51	417	25	54	58	137	46	188	26	260	1346
Total	577	1625	11	2213	374	600	135	1109	92	171	219	482	128	750	87	965	4769
08:00 AM	154	454	5	613	131	201	51	383	27	56	47	130	53	199	33	285	1411
08:15 AM	151	400	7	558	139	195	58	392	33	47	70	150	61	135	45	241	1341
08:30 AM	128	288	10	426	122	145	40	307	28	65	40	133	45	124	35	204	1070
08:45 AM	117	314	9	440	142	176	47	365	37	44	45	126	46	132	35	213	1144
Total	550	1456	31	2037	534	717	196	1447	125	212	202	539	205	590	148	943	4966
Grand Total	1127	3081	42	4250	908	1317	331	2556	217	383	421	1021	333	1340	235	1908	9735
Apprch %	26.5	72.5	1		35.5	51.5	12.9		21.3	37.5	41.2		17.5	70.2	12.3		
Total %	11.6	31.6	0.4	43.7	9.3	13.5	3.4	26.3	2.2	3.9	4.3	10.5	3.4	13.8	2.4	19.6	

	Tustin Avenue Southbound				17th Street Westbound				Tustin Avenue Northbound				17th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**174**	**475**	6	**655**	79	147	28	254	26	41	61	128	27	**216**	22	265	1302
07:45 AM	123	408	1	532	**139**	**227**	51	**417**	25	54	58	137	46	188	26	260	1346
08:00 AM	154	454	5	613	131	201	51	383	27	**56**	47	130	53	199	33	**285**	**1411**
08:15 AM	151	400	**7**	558	139	195	**58**	392	**33**	47	**70**	**150**	**61**	135	**45**	241	1341
Total Volume	602	1737	19	2358	488	770	188	1446	111	198	236	545	187	738	126	1051	5400
% App. Total	25.5	73.7	0.8		33.7	53.3	13		20.4	36.3	43.3		17.8	70.2	12		
PHF	.865	.914	.679	.900	.878	.848	.810	.867	.841	.884	.843	.908	.766	.854	.700	.922	.957

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City of Santa Ana
N/S: Tustin Avenue
E/W: 17th Street
Weather: Clear

File Name : 93_SNA_Tustin_17th St AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:45 AM				07:15 AM			
+0 mins.	**174**	**475**	6	**655**	**139**	**227**	51	**417**	25	54	58	137	32	**228**	22	282
+15 mins.	123	408	1	532	131	201	51	383	27	56	47	130	27	216	22	265
+30 mins.	154	454	5	613	139	195	**58**	392	**33**	47	**70**	**150**	46	188	26	260
+45 mins.	151	400	**7**	558	122	145	40	307	28	**65**	40	133	**53**	199	**33**	**285**
Total Volume	602	1737	19	2358	531	768	200	1499	113	222	215	550	158	831	103	1092
% App. Total	25.5	73.7	0.8		35.4	51.2	13.3		20.5	40.4	39.1		14.5	76.1	9.4	
PHF	.865	.914	.679	.900	.955	.846	.862	.899	.856	.854	.768	.917	.745	.911	.780	.958

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City of Santa Ana
N/S: Tustin Avenue
E/W: 17th Street
Weather: Clear

File Name : 93_SNA_Tustin_17th St PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

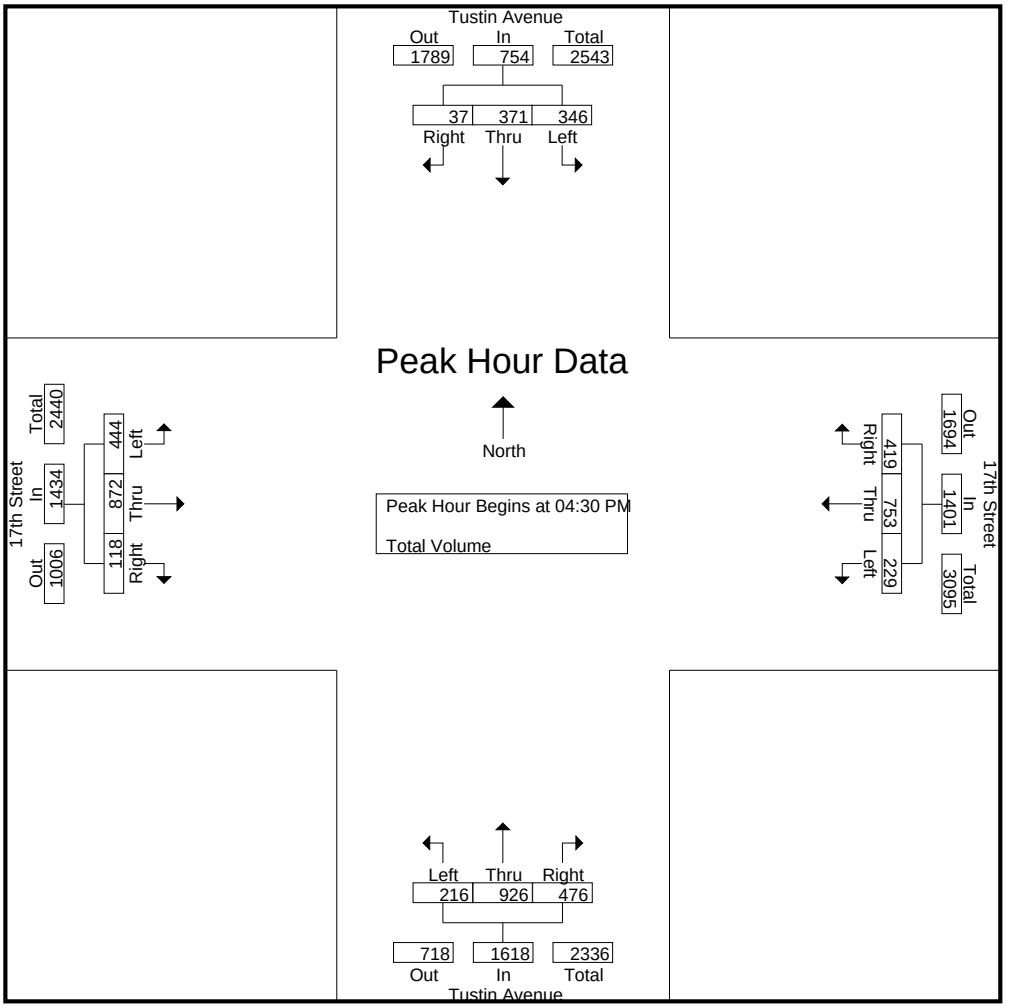
	Tustin Avenue Southbound				17th Street Westbound				Tustin Avenue Northbound				17th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	73	93	7	173	47	193	90	330	58	224	106	388	103	163	29	295	1186
04:15 PM	69	73	12	154	51	229	101	381	50	177	72	299	98	166	30	294	1128
04:30 PM	89	92	10	191	58	176	109	343	68	233	110	411	125	197	32	354	1299
04:45 PM	80	76	6	162	64	237	111	412	52	189	84	325	103	211	19	333	1232
Total	311	334	35	680	220	835	411	1466	228	823	372	1423	429	737	110	1276	4845
05:00 PM	90	92	9	191	46	160	108	314	57	238	169	464	115	244	29	388	1357
05:15 PM	87	111	12	210	61	180	91	332	39	266	113	418	101	220	38	359	1319
05:30 PM	89	88	12	189	48	205	88	341	47	176	102	325	129	219	37	385	1240
05:45 PM	89	101	18	208	49	186	88	323	44	207	88	339	94	180	24	298	1168
Total	355	392	51	798	204	731	375	1310	187	887	472	1546	439	863	128	1430	5084
Grand Total	666	726	86	1478	424	1566	786	2776	415	1710	844	2969	868	1600	238	2706	9929
Apprch %	45.1	49.1	5.8		15.3	56.4	28.3		14	57.6	28.4		32.1	59.1	8.8		
Total %	6.7	7.3	0.9	14.9	4.3	15.8	7.9	28	4.2	17.2	8.5	29.9	8.7	16.1	2.4	27.3	

	Tustin Avenue Southbound				17th Street Westbound				Tustin Avenue Northbound				17th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	89	92	10	191	58	176	109	343	**68**	233	110	411	**125**	197	32	354	1299
04:45 PM	80	76	6	162	**64**	**237**	**111**	**412**	52	189	84	325	103	211	19	333	1232
05:00 PM	**90**	92	9	191	46	160	108	314	57	238	**169**	**464**	115	**244**	29	**388**	**1357**
05:15 PM	87	**111**	**12**	**210**	61	180	91	332	39	**266**	113	418	101	220	**38**	359	1319
Total Volume	346	371	37	754	229	753	419	1401	216	926	476	1618	444	872	118	1434	5207
% App. Total	45.9	49.2	4.9		16.3	53.7	29.9		13.3	57.2	29.4		31	60.8	8.2		
PHF	.961	.836	.771	.898	.895	.794	.944	.850	.794	.870	.704	.872	.888	.893	.776	.924	.959

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City of Santa Ana
N/S: Tustin Avenue
E/W: 17th Street
Weather: Clear

File Name : 93_SNA_Tustin_17th St PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				04:30 PM				04:45 PM			
+0 mins.	**90**	92	9	191	47	193	90	330	**68**	233	110	411	103	211	19	333
+15 mins.	87	**111**	12	**210**	51	229	101	381	52	189	84	325	115	**244**	29	**388**
+30 mins.	89	88	12	189	58	176	109	343	57	238	**169**	**464**	101	220	**38**	359
+45 mins.	89	101	**18**	208	**64**	**237**	**111**	**412**	39	**266**	113	418	**129**	219	37	385
Total Volume	355	392	51	798	220	835	411	1466	216	926	476	1618	448	894	123	1465
% App. Total	44.5	49.1	6.4		15	57	28		13.3	57.2	29.4		30.6	61	8.4	
PHF	.986	.883	.708	.950	.859	.881	.926	.890	.794	.870	.704	.872	.868	.916	.809	.944

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City of Santa Ana
N/S: Tustin Avenue
E/W: 4th Street
Weather: Clear

File Name : 94_SNA_Tustin_4th St AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

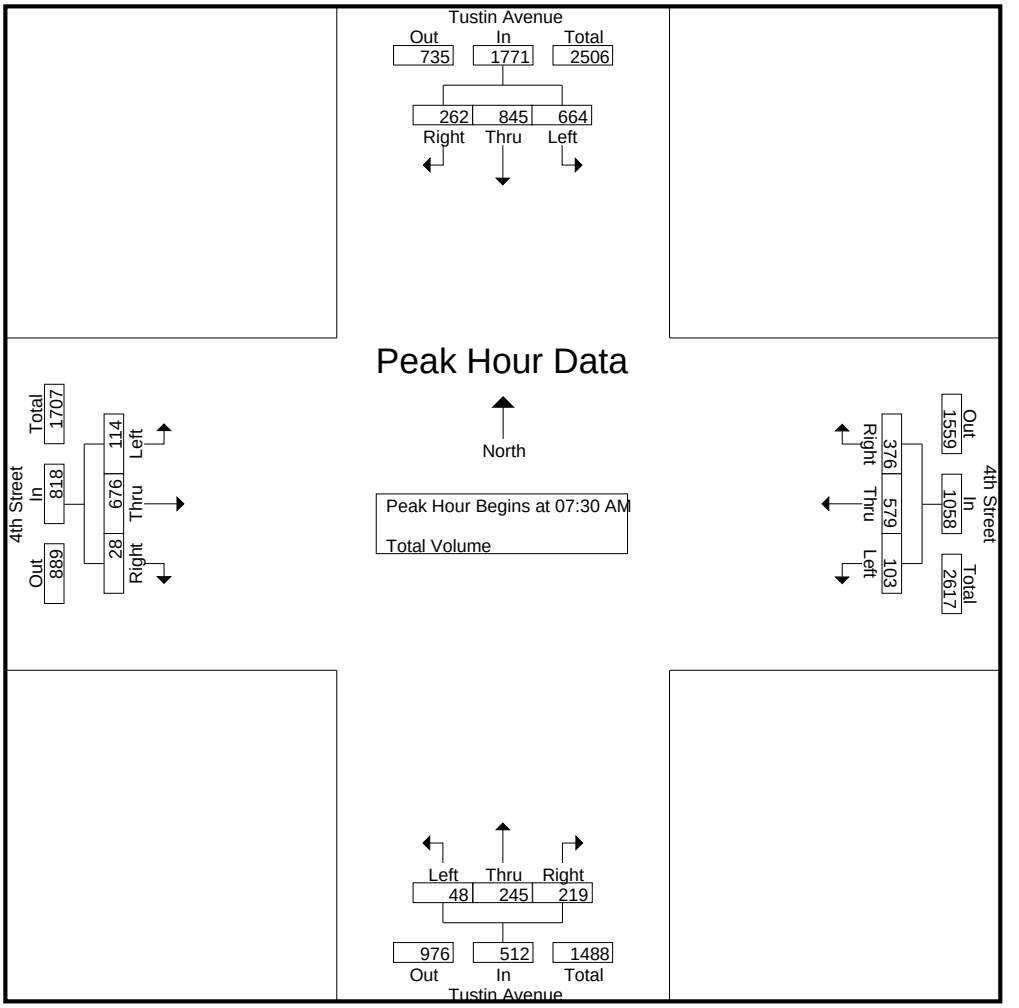
	Tustin Avenue Southbound				4th Street Westbound				Tustin Avenue Northbound				4th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	177	130	38	345	10	64	56	130	5	40	33	78	13	87	5	105	658
07:15 AM	185	164	39	388	23	92	63	178	9	43	32	84	31	130	12	173	823
07:30 AM	178	258	72	508	25	152	64	241	13	53	48	114	21	198	3	222	1085
07:45 AM	155	203	74	432	27	150	104	281	13	67	68	148	22	208	5	235	1096
Total	695	755	223	1673	85	458	287	830	40	203	181	424	87	623	25	735	3662
08:00 AM	156	191	63	410	20	131	96	247	10	67	57	134	38	161	12	211	1002
08:15 AM	175	193	53	421	31	146	112	289	12	58	46	116	33	109	8	150	976
08:30 AM	168	151	55	374	26	132	87	245	15	71	49	135	32	104	13	149	903
08:45 AM	131	135	64	330	17	146	85	248	10	54	25	89	38	108	13	159	826
Total	630	670	235	1535	94	555	380	1029	47	250	177	474	141	482	46	669	3707
Grand Total	1325	1425	458	3208	179	1013	667	1859	87	453	358	898	228	1105	71	1404	7369
Apprch %	41.3	44.4	14.3		9.6	54.5	35.9		9.7	50.4	39.9		16.2	78.7	5.1		
Total %	18	19.3	6.2	43.5	2.4	13.7	9.1	25.2	1.2	6.1	4.9	12.2	3.1	15	1	19.1	

	Tustin Avenue Southbound				4th Street Westbound				Tustin Avenue Northbound				4th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**178**	**258**	72	**508**	25	**152**	64	241	**13**	53	48	114	21	198	3	222	1085
07:45 AM	155	203	**74**	432	27	150	104	281	13	**67**	**68**	**148**	22	**208**	5	**235**	**1096**
08:00 AM	156	191	63	410	20	131	96	247	10	67	57	134	**38**	161	**12**	211	1002
08:15 AM	175	193	53	421	**31**	146	**112**	**289**	12	58	46	116	33	109	8	150	976
Total Volume	664	845	262	1771	103	579	376	1058	48	245	219	512	114	676	28	818	4159
% App. Total	37.5	47.7	14.8		9.7	54.7	35.5		9.4	47.9	42.8		13.9	82.6	3.4		
PHF	.933	.819	.885	.872	.831	.952	.839	.915	.923	.914	.805	.865	.750	.813	.583	.870	.949

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City of Santa Ana
N/S: Tustin Avenue
E/W: 4th Street
Weather: Clear

File Name : 94_SNA_Tustin_4th St AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:45 AM				07:15 AM			
+0 mins.	**178**	**258**	72	**508**	27	**150**	104	281	13	67	**68**	**148**	31	130	**12**	173
+15 mins.	155	203	**74**	432	20	131	96	247	10	67	57	134	21	198	3	222
+30 mins.	156	191	63	410	**31**	146	**112**	**289**	12	58	46	116	22	**208**	5	**235**
+45 mins.	175	193	53	421	26	132	87	245	**15**	**71**	49	135	**38**	161	12	211
Total Volume	664	845	262	1771	104	559	399	1062	50	263	220	533	112	697	32	841
% App. Total	37.5	47.7	14.8		9.8	52.6	37.6		9.4	49.3	41.3		13.3	82.9	3.8	
PHF	.933	.819	.885	.872	.839	.932	.891	.919	.833	.926	.809	.900	.737	.838	.667	.895

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City of Santa Ana
N/S: Tustin Avenue
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Weather: Clear

File Name : 94_SNA_Tustin_4th St PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

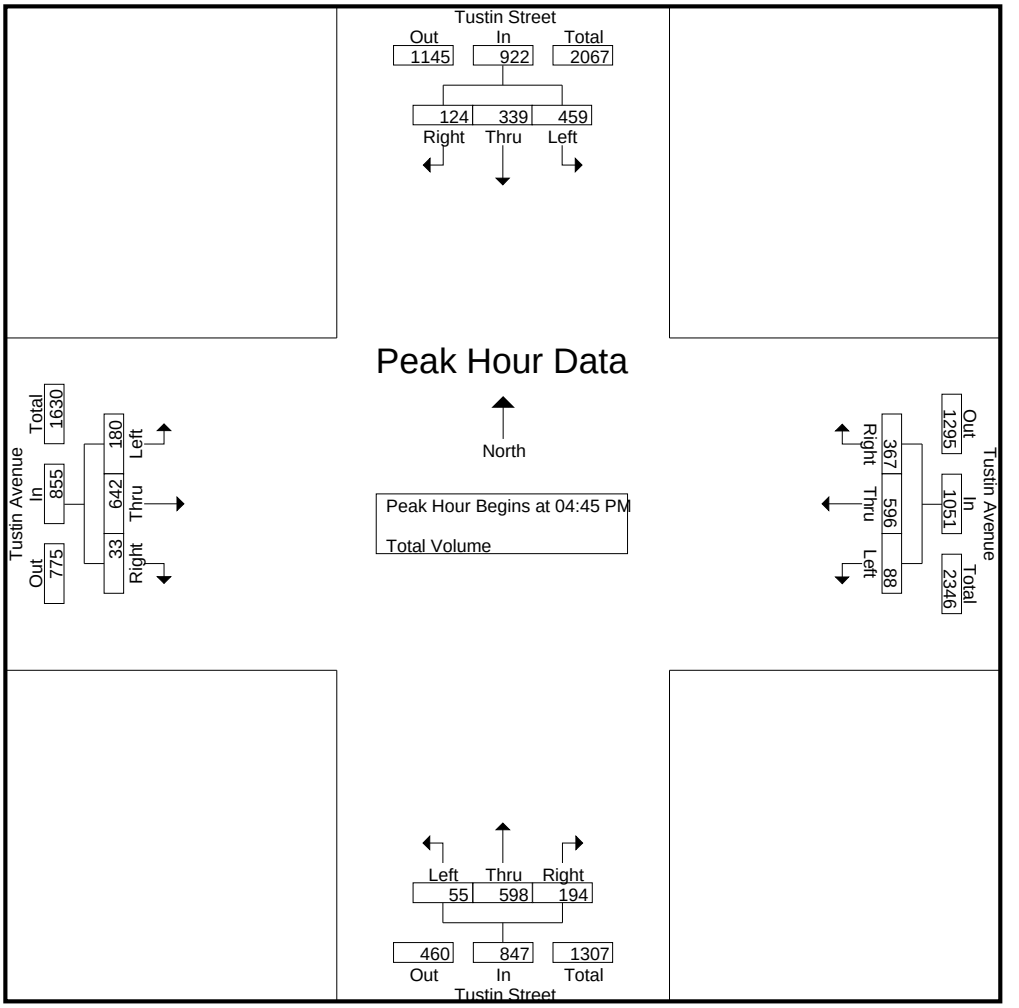
	Tustin Street Southbound				Tustin Avenue Westbound				Tustin Street Northbound				Tustin Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	100	89	30	219	29	160	59	248	21	145	26	192	41	152	7	200	859
04:15 PM	98	96	23	217	23	222	101	346	19	156	40	215	71	155	21	247	1025
04:30 PM	87	74	34	195	14	69	115	198	14	140	30	184	43	118	10	171	748
04:45 PM	118	79	37	234	22	180	103	305	14	137	41	192	51	164	13	228	959
Total	403	338	124	865	88	631	378	1097	68	578	137	783	206	589	51	846	3591
05:00 PM	109	86	34	229	18	124	77	219	15	166	56	237	40	163	5	208	893
05:15 PM	105	89	35	229	23	139	93	255	12	137	46	195	42	149	6	197	876
05:30 PM	127	85	18	230	25	153	94	272	14	158	51	223	47	166	9	222	947
05:45 PM	92	70	27	189	26	154	83	263	7	145	58	210	42	115	6	163	825
Total	433	330	114	877	92	570	347	1009	48	606	211	865	171	593	26	790	3541
Grand Total	836	668	238	1742	180	1201	725	2106	116	1184	348	1648	377	1182	77	1636	7132
Apprch %	48	38.3	13.7		8.5	57	34.4		7	71.8	21.1		23	72.2	4.7		
Total %	11.7	9.4	3.3	24.4	2.5	16.8	10.2	29.5	1.6	16.6	4.9	23.1	5.3	16.6	1.1	22.9	

	Tustin Street Southbound				Tustin Avenue Westbound				Tustin Street Northbound				Tustin Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	118	79	**37**	**234**	22	**180**	**103**	**305**	14	137	41	192	**51**	164	**13**	**228**	**959**
05:00 PM	109	86	34	229	18	124	77	219	**15**	**166**	**56**	**237**	40	163	5	208	893
05:15 PM	105	**89**	35	229	23	139	93	255	12	137	46	195	42	149	6	197	876
05:30 PM	**127**	85	18	230	**25**	153	94	272	14	158	51	223	47	**166**	9	222	947
Total Volume	459	339	124	922	88	596	367	1051	55	598	194	847	180	642	33	855	3675
% App. Total	49.8	36.8	13.4		8.4	56.7	34.9		6.5	70.6	22.9		21.1	75.1	3.9		
PHF	.904	.952	.838	.985	.880	.828	.891	.861	.917	.901	.866	.893	.882	.967	.635	.938	.958

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City of Santa Ana
N/S: Tustin Avenue
E/W: 4th Street
Weather: Clear

File Name : 94_SNA_Tustin_4th St PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:00 PM				05:00 PM				04:45 PM			
+0 mins.	118	79	**37**	**234**	**29**	160	59	248	**15**	**166**	56	**237**	**51**	164	**13**	**228**
+15 mins.	109	86	34	229	23	**222**	101	**346**	12	137	46	195	40	163	5	208
+30 mins.	105	**89**	35	229	14	69	**115**	198	14	158	51	223	42	149	6	197
+45 mins.	**127**	85	18	230	22	180	103	305	7	145	**58**	210	47	**166**	9	222
Total Volume	459	339	124	922	88	631	378	1097	48	606	211	865	180	642	33	855
% App. Total	49.8	36.8	13.4		8	57.5	34.5		5.5	70.1	24.4		21.1	75.1	3.9	
PHF	.904	.952	.838	.985	.759	.711	.822	.793	.800	.913	.909	.912	.882	.967	.635	.938

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City of Santa Ana
N/S: Auto Mall Dr/SR-55 Southbound Ramps
E/W: Edinger Avenue
Weather: Clear

File Name : 95_SNA_55S_Edinger AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

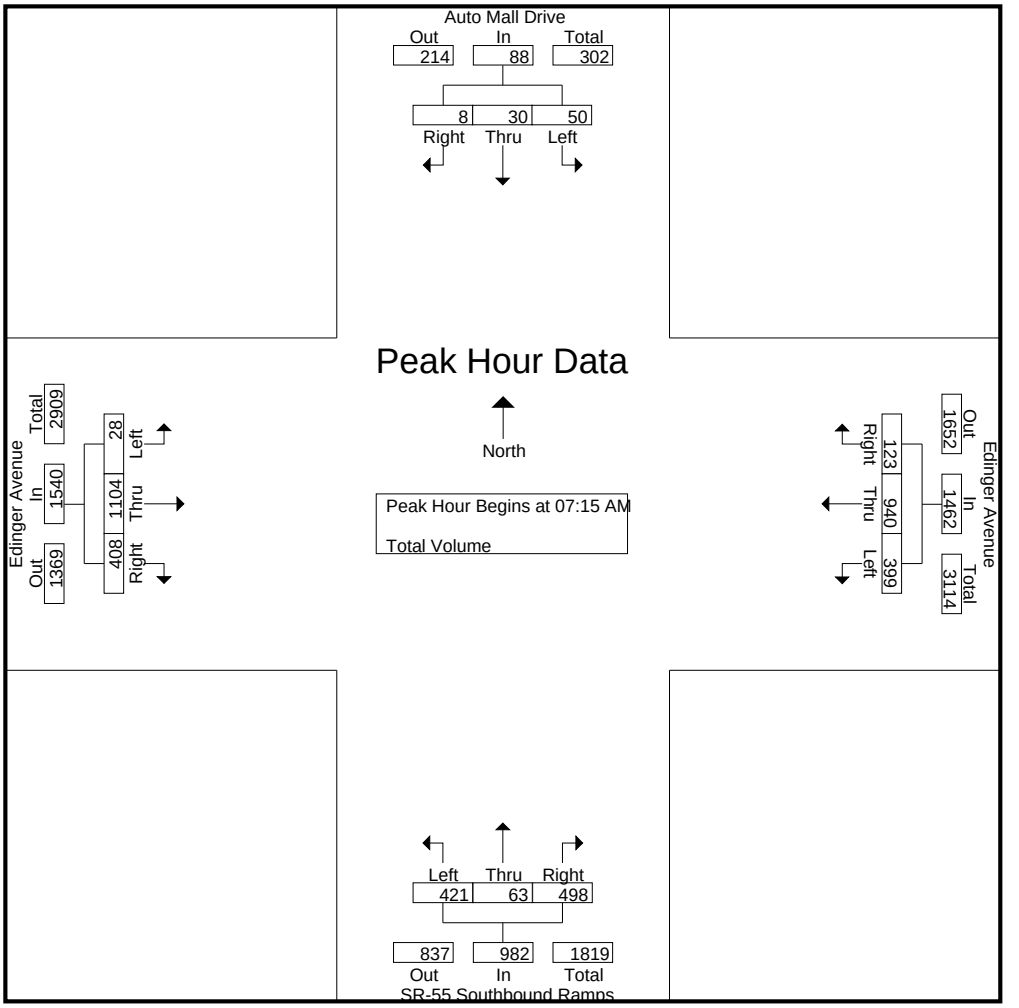
	Auto Mall Drive Southbound				Edinger Avenue Westbound				SR-55 Southbound Ramps Northbound				Edinger Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	0	4	11	56	126	14	196	109	24	117	250	7	261	81	349	806
07:15 AM	11	8	1	20	70	182	29	281	121	15	137	273	6	260	194	460	1034
07:30 AM	16	10	3	29	91	230	25	346	109	18	135	262	3	294	106	403	1040
07:45 AM	8	5	2	15	129	269	34	432	91	12	130	233	3	302	58	363	1043
Total	42	23	10	75	346	807	102	1255	430	69	519	1018	19	1117	439	1575	3923
08:00 AM	15	7	2	24	109	259	35	403	100	18	96	214	16	248	50	314	955
08:15 AM	23	6	2	31	93	269	32	394	86	15	90	191	4	244	62	310	926
08:30 AM	10	5	3	18	88	220	25	333	76	10	88	174	8	256	93	357	882
08:45 AM	19	12	7	38	95	226	29	350	78	23	100	201	6	225	73	304	893
Total	67	30	14	111	385	974	121	1480	340	66	374	780	34	973	278	1285	3656
Grand Total	109	53	24	186	731	1781	223	2735	770	135	893	1798	53	2090	717	2860	7579
Apprch %	58.6	28.5	12.9		26.7	65.1	8.2		42.8	7.5	49.7		1.9	73.1	25.1		
Total %	1.4	0.7	0.3	2.5	9.6	23.5	2.9	36.1	10.2	1.8	11.8	23.7	0.7	27.6	9.5	37.7	

	Auto Mall Drive Southbound				Edinger Avenue Westbound				SR-55 Southbound Ramps Northbound				Edinger Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	11	8	1	20	70	182	29	281	**121**	15	**137**	**273**	6	260	**194**	**460**	1034
07:30 AM	**16**	**10**	**3**	**29**	91	230	25	346	109	**18**	135	262	3	294	106	403	1040
07:45 AM	8	5	2	15	**129**	**269**	34	**432**	91	12	130	233	3	**302**	58	363	**1043**
08:00 AM	15	7	2	24	109	259	**35**	403	100	18	96	214	**16**	248	50	314	955
Total Volume	50	30	8	88	399	940	123	1462	421	63	498	982	28	1104	408	1540	4072
% App. Total	56.8	34.1	9.1		27.3	64.3	8.4		42.9	6.4	50.7		1.8	71.7	26.5		
PHF	.781	.750	.667	.759	.773	.874	.879	.846	.870	.875	.909	.899	.438	.914	.526	.837	.976

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City of Santa Ana
N/S: Auto Mall Dr/SR-55 Southbound Ramps
E/W: Edinger Avenue
Weather: Clear

File Name : 95_SNA_55S_Edinger AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:00 AM			
+0 mins.	15	7	2	24	91	230	25	346	109	**24**	117	250	**7**	261	81	349
+15 mins.	**23**	6	2	31	**129**	**269**	34	**432**	**121**	15	**137**	**273**	6	260	**194**	**460**
+30 mins.	10	5	3	18	109	259	**35**	403	109	18	135	262	3	294	106	403
+45 mins.	19	**12**	**7**	**38**	93	269	32	394	91	12	130	233	3	**302**	58	363
Total Volume	67	30	14	111	422	1027	126	1575	430	69	519	1018	19	1117	439	1575
% App. Total	60.4	27	12.6		26.8	65.2	8		42.2	6.8	51		1.2	70.9	27.9	
PHF	.728	.625	.500	.730	.818	.954	.900	.911	.888	.719	.947	.932	.679	.925	.566	.856

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City of Santa Ana
N/S: Auto Mall Dr/SR-55 Southbound Ramps
E/W: Edinger Avenue
Weather: Clear

File Name : 95_SNA_55S_Edinger PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

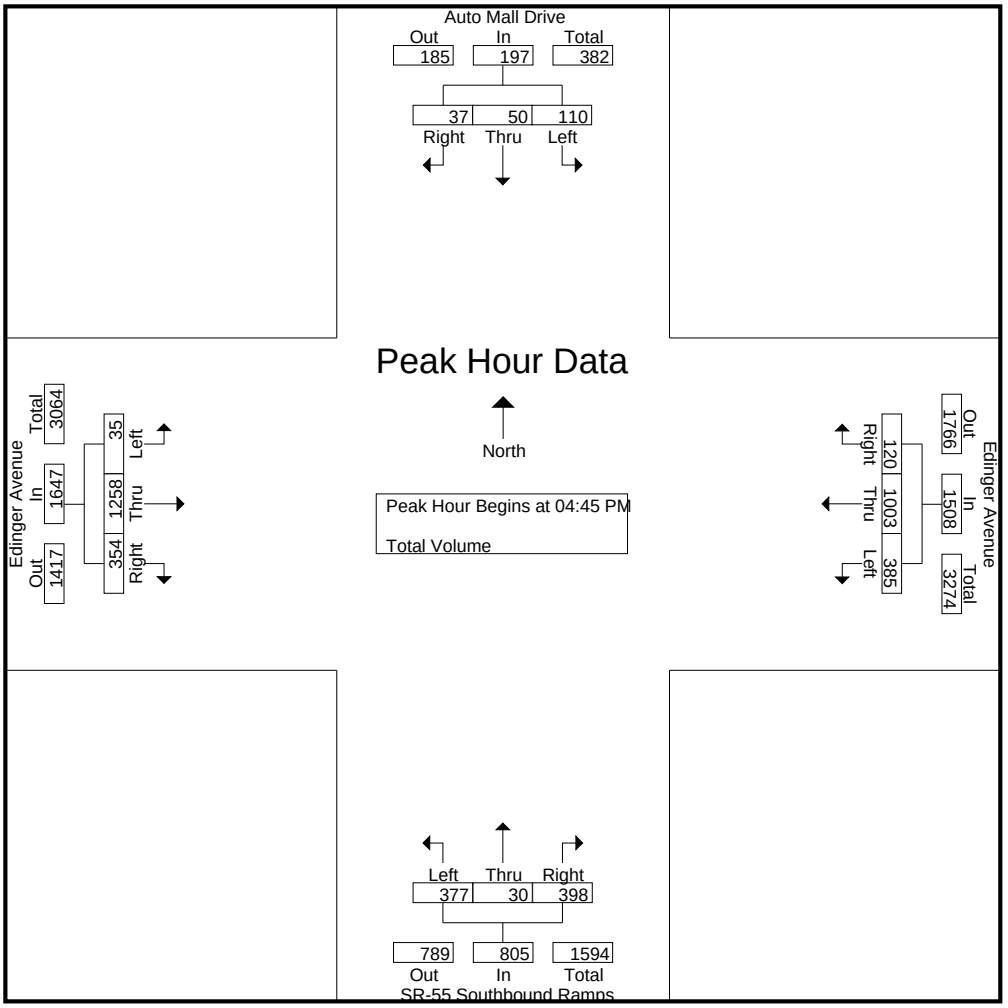
	Auto Mall Drive Southbound				Edinger Avenue Westbound				SR-55 Southbound Ramps Northbound				Edinger Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	24	15	8	47	82	265	29	376	76	7	64	147	7	290	78	375	945
04:15 PM	25	7	7	39	61	248	23	332	79	8	59	146	12	226	62	300	817
04:30 PM	14	11	6	31	85	233	22	340	97	11	72	180	7	251	80	338	889
04:45 PM	26	12	8	46	97	210	27	334	86	5	82	173	6	239	73	318	871
Total	89	45	29	163	325	956	101	1382	338	31	277	646	32	1006	293	1331	3522
05:00 PM	39	19	8	66	96	218	27	341	89	5	85	179	13	322	103	438	1024
05:15 PM	21	9	11	41	78	252	25	355	95	12	97	204	12	296	73	381	981
05:30 PM	24	10	10	44	114	323	41	478	107	8	134	249	4	401	105	510	1281
05:45 PM	14	8	5	27	34	110	12	156	49	5	67	121	4	121	43	168	472
Total	98	46	34	178	322	903	105	1330	340	30	383	753	33	1140	324	1497	3758
Grand Total	187	91	63	341	647	1859	206	2712	678	61	660	1399	65	2146	617	2828	7280
Apprch %	54.8	26.7	18.5		23.9	68.5	7.6		48.5	4.4	47.2		2.3	75.9	21.8		
Total %	2.6	1.2	0.9	4.7	8.9	25.5	2.8	37.3	9.3	0.8	9.1	19.2	0.9	29.5	8.5	38.8	

	Auto Mall Drive Southbound				Edinger Avenue Westbound				SR-55 Southbound Ramps Northbound				Edinger Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	26	12	8	46	97	210	27	334	86	5	82	173	6	239	73	318	871
05:00 PM	**39**	**19**	8	**66**	96	218	27	341	89	5	85	179	**13**	322	103	438	1024
05:15 PM	21	9	**11**	41	78	252	25	355	95	**12**	97	204	12	296	73	381	981
05:30 PM	24	10	10	44	**114**	**323**	**41**	**478**	**107**	8	**134**	**249**	4	**401**	**105**	**510**	**1281**
Total Volume	110	50	37	197	385	1003	120	1508	377	30	398	805	35	1258	354	1647	4157
% App. Total	55.8	25.4	18.8		25.5	66.5	8		46.8	3.7	49.4		2.1	76.4	21.5		
PHF	.705	.658	.841	.746	.844	.776	.732	.789	.881	.625	.743	.808	.673	.784	.843	.807	.811

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City of Santa Ana
N/S: Auto Mall Dr/SR-55 Southbound Ramps
E/W: Edinger Avenue
Weather: Clear

File Name : 95_SNA_55S_Edinger PM
Site Code : 20220171
Start Date : 3/12/2020
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	26	12	8	46	97	210	27	334	86	5	82	173	6	239	73	318
+15 mins.	**39**	**19**	8	**66**	96	218	27	341	89	5	85	179	**13**	322	103	438
+30 mins.	21	9	**11**	41	78	252	25	355	95	**12**	97	204	12	296	73	381
+45 mins.	24	10	10	44	**114**	**323**	**41**	**478**	**107**	8	**134**	**249**	4	**401**	**105**	**510**
Total Volume	110	50	37	197	385	1003	120	1508	377	30	398	805	35	1258	354	1647
% App. Total	55.8	25.4	18.8		25.5	66.5	8		46.8	3.7	49.4		2.1	76.4	21.5	
PHF	.705	.658	.841	.746	.844	.776	.732	.789	.881	.625	.743	.808	.673	.784	.843	.807

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City of Tustin
N/S: Newport Avenue
E/W: SR-55 NB Ramps/Del Amo Avenue
Weather: Clear

File Name : 96_TUS_Newport_55N AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

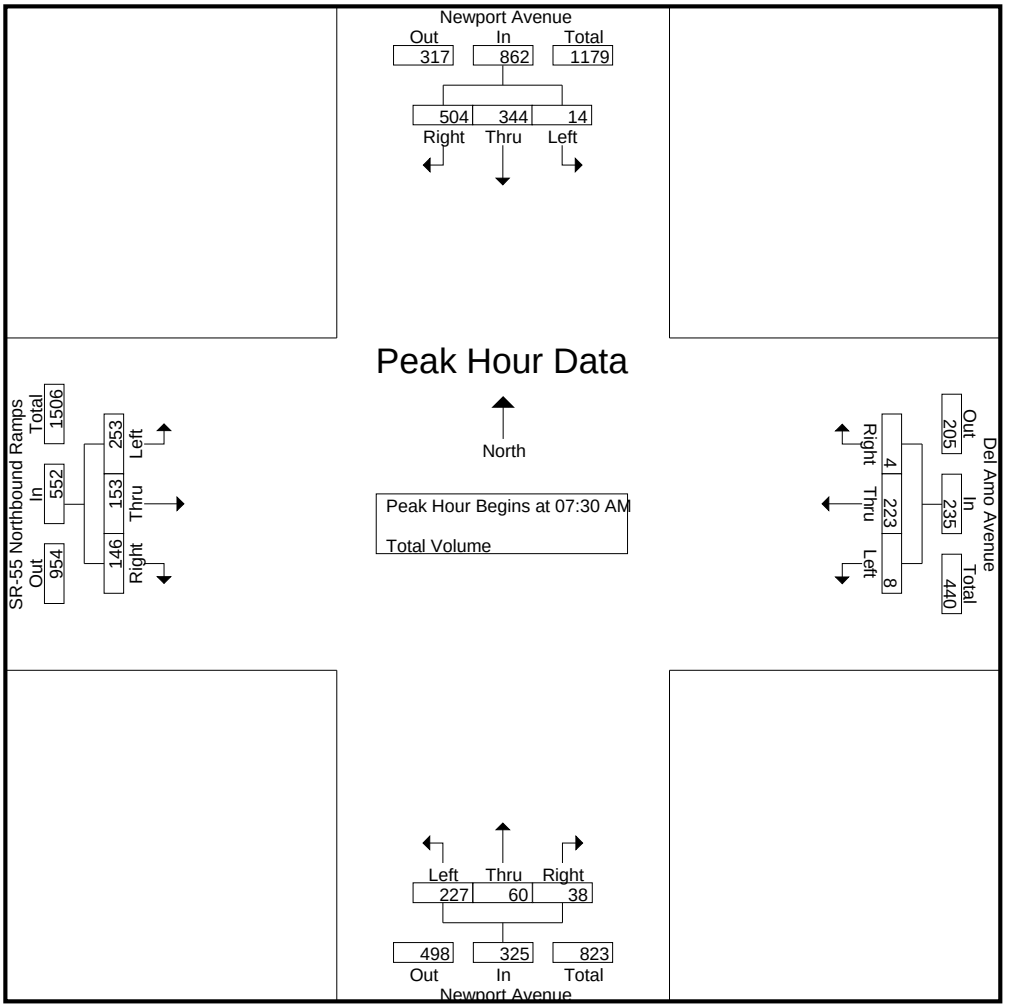
	Newport Avenue Southbound				Del Amo Avenue Westbound				Newport Avenue Northbound				SR-55 Northbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	63	114	182	4	35	1	40	49	19	3	71	20	8	10	38	331
07:15 AM	3	87	136	226	4	43	1	48	54	11	6	71	53	22	20	95	440
07:30 AM	3	100	143	246	2	48	3	53	56	14	2	72	52	35	30	117	488
07:45 AM	2	104	116	222	4	68	1	73	63	14	2	79	66	46	48	160	534
Total	13	354	509	876	14	194	6	214	222	58	13	293	191	111	108	410	1793
08:00 AM	2	73	114	189	0	46	0	46	50	16	6	72	77	29	35	141	448
08:15 AM	7	67	131	205	2	61	0	63	58	16	28	102	58	43	33	134	504
08:30 AM	8	49	103	160	3	34	1	38	57	20	13	90	48	47	33	128	416
08:45 AM	6	44	120	170	5	42	2	49	38	15	15	68	69	55	34	158	445
Total	23	233	468	724	10	183	3	196	203	67	62	332	252	174	135	561	1813
Grand Total	36	587	977	1600	24	377	9	410	425	125	75	625	443	285	243	971	3606
Apprch %	2.2	36.7	61.1		5.9	92	2.2		68	20	12		45.6	29.4	25		
Total %	1	16.3	27.1	44.4	0.7	10.5	0.2	11.4	11.8	3.5	2.1	17.3	12.3	7.9	6.7	26.9	

	Newport Avenue Southbound				Del Amo Avenue Westbound				Newport Avenue Northbound				SR-55 Northbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	3	100	**143**	**246**	2	48	**3**	53	56	14	2	72	52	35	30	117	488
07:45 AM	2	**104**	116	222	**4**	**68**	1	**73**	**63**	14	2	79	66	**46**	**48**	**160**	**534**
08:00 AM	2	73	114	189	0	46	0	46	50	**16**	6	72	**77**	29	35	141	448
08:15 AM	**7**	67	131	205	2	61	0	63	58	16	**28**	**102**	58	43	33	134	504
Total Volume	14	344	504	862	8	223	4	235	227	60	38	325	253	153	146	552	1974
% App. Total	1.6	39.9	58.5		3.4	94.9	1.7		69.8	18.5	11.7		45.8	27.7	26.4		
PHF	.500	.827	.881	.876	.500	.820	.333	.805	.901	.938	.339	.797	.821	.832	.760	.863	.924

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City of Tustin
N/S: Newport Avenue
E/W: SR-55 NB Ramps/Del Amo Avenue
Weather: Clear

File Name : 96_TUS_Newport_55N AM
Site Code : 20220171
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:45 AM				07:45 AM			
+0 mins.	**3**	87	136	226	2	48	**3**	53	**63**	14	2	79	66	46	**48**	**160**
+15 mins.	3	100	**143**	**246**	**4**	**68**	1	**73**	50	16	6	72	**77**	29	35	141
+30 mins.	2	**104**	116	222	0	46	0	46	58	16	**28**	**102**	58	43	33	134
+45 mins.	2	73	114	189	2	61	0	63	57	**20**	13	90	48	**47**	33	128
Total Volume	10	364	509	883	8	223	4	235	228	66	49	343	249	165	149	563
% App. Total	1.1	41.2	57.6		3.4	94.9	1.7		66.5	19.2	14.3		44.2	29.3	26.5	
PHF	.833	.875	.890	.897	.500	.820	.333	.805	.905	.825	.438	.841	.808	.878	.776	.880

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City of Tustin
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File Name : 96_TUS_Newport_55N PM
Site Code : 20220171
Start Date : 3/12/2020
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Groups Printed- Total Volume

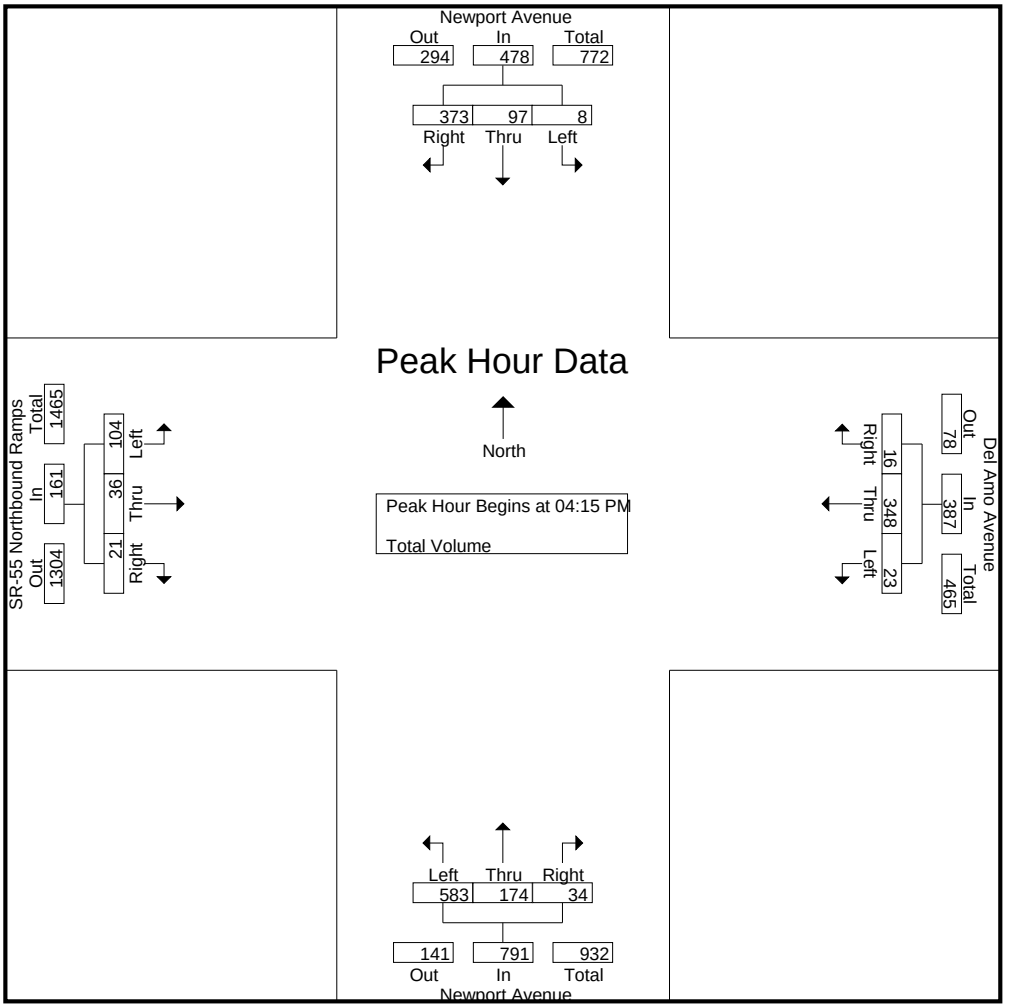
	Newport Avenue Southbound				Del Amo Avenue Westbound				Newport Avenue Northbound				SR-55 Northbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	25	86	112	10	121	2	133	130	58	12	200	28	8	7	43	488
04:15 PM	4	26	94	124	6	88	2	96	164	48	11	223	19	10	6	35	478
04:30 PM	0	27	92	119	4	88	3	95	151	51	6	208	26	3	7	36	458
04:45 PM	1	23	93	117	3	74	5	82	117	30	6	153	26	10	3	39	391
Total	6	101	365	472	23	371	12	406	562	187	35	784	99	31	23	153	1815
05:00 PM	3	21	94	118	10	98	6	114	151	45	11	207	33	13	5	51	490
05:15 PM	3	18	82	103	4	87	4	95	149	46	11	206	24	15	3	42	446
05:30 PM	0	14	71	85	4	90	2	96	147	45	8	200	15	17	2	34	415
05:45 PM	3	23	74	100	2	59	3	64	129	32	2	163	26	7	6	39	366
Total	9	76	321	406	20	334	15	369	576	168	32	776	98	52	16	166	1717
Grand Total	15	177	686	878	43	705	27	775	1138	355	67	1560	197	83	39	319	3532
Apprch %	1.7	20.2	78.1		5.5	91	3.5		72.9	22.8	4.3		61.8	26	12.2		
Total %	0.4	5	19.4	24.9	1.2	20	0.8	21.9	32.2	10.1	1.9	44.2	5.6	2.3	1.1	9	

	Newport Avenue Southbound				Del Amo Avenue Westbound				Newport Avenue Northbound				SR-55 Northbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**4**	26	**94**	**124**	6	88	2	96	**164**	48	**11**	**223**	19	10	6	35	478
04:30 PM	0	**27**	92	119	4	88	3	95	151	**51**	6	208	26	3	**7**	36	458
04:45 PM	1	23	93	117	3	74	5	82	117	30	6	153	26	10	3	39	391
05:00 PM	3	21	94	118	**10**	**98**	**6**	**114**	151	45	11	207	**33**	**13**	5	**51**	**490**
Total Volume	8	97	373	478	23	348	16	387	583	174	34	791	104	36	21	161	1817
% App. Total	1.7	20.3	78		5.9	89.9	4.1		73.7	22	4.3		64.6	22.4	13		
PHF	.500	.898	.992	.964	.575	.888	.667	.849	.889	.853	.773	.887	.788	.692	.750	.789	.927

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City of Tustin
N/S: Newport Avenue
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File Name : 96_TUS_Newport_55N PM
Site Code : 20220171
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				04:15 PM				04:30 PM			
+0 mins.	**4**	26	**94**	**124**	**10**	**121**	2	**133**	**164**	48	**11**	**223**	26	3	**7**	36
+15 mins.	0	**27**	92	119	6	88	2	96	151	**51**	6	208	26	10	3	39
+30 mins.	1	23	93	117	4	88	3	95	117	30	6	153	**33**	13	5	**51**
+45 mins.	3	21	94	118	3	74	**5**	82	151	45	11	207	24	**15**	3	42
Total Volume	8	97	373	478	23	371	12	406	583	174	34	791	109	41	18	168
% App. Total	1.7	20.3	78		5.7	91.4	3		73.7	22	4.3		64.9	24.4	10.7	
PHF	.500	.898	.992	.964	.575	.767	.600	.763	.889	.853	.773	.887	.826	.683	.643	.824

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City of Tustin
N/S: Red Hill Avenue
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Weather: Clear

File Name : 97_TUS_Red Hill_Edinger AM
Site Code : 20220171
Start Date : 3/12/2020
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Groups Printed- Total Volume

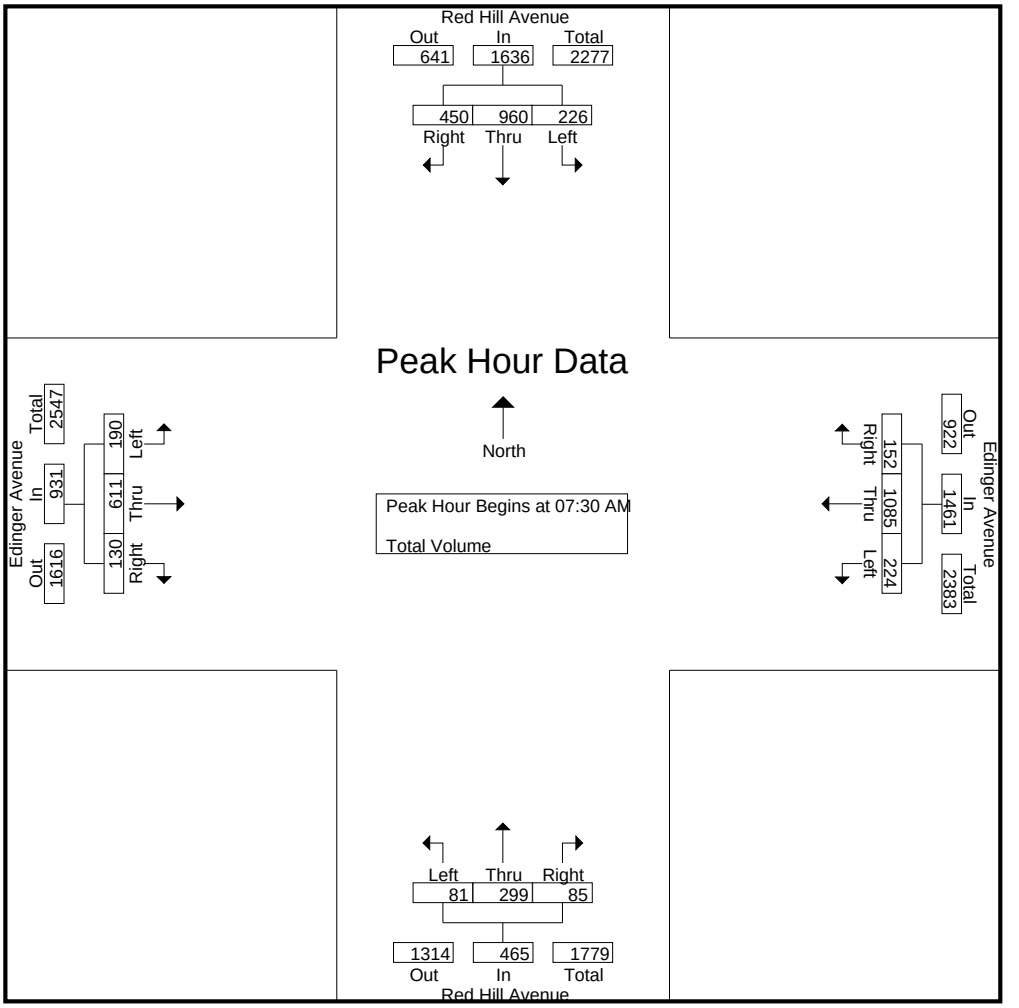
	Red Hill Avenue Southbound				Edinger Avenue Westbound				Red Hill Avenue Northbound				Edinger Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	40	183	74	297	15	123	19	157	32	53	15	100	44	129	38	211	765
07:15 AM	53	201	87	341	37	182	28	247	40	87	18	145	52	149	28	229	962
07:30 AM	57	243	109	409	47	233	42	322	14	80	9	103	64	174	33	271	1105
07:45 AM	68	225	116	409	60	287	35	382	20	89	37	146	49	183	30	262	1199
Total	218	852	386	1456	159	825	124	1108	106	309	79	494	209	635	129	973	4031
08:00 AM	54	264	126	444	56	292	34	382	22	69	22	113	35	117	31	183	1122
08:15 AM	47	228	99	374	61	273	41	375	25	61	17	103	42	137	36	215	1067
08:30 AM	52	200	97	349	68	258	42	368	18	68	7	93	47	133	29	209	1019
08:45 AM	61	220	107	388	45	218	34	297	20	48	15	83	32	146	34	212	980
Total	214	912	429	1555	230	1041	151	1422	85	246	61	392	156	533	130	819	4188
Grand Total	432	1764	815	3011	389	1866	275	2530	191	555	140	886	365	1168	259	1792	8219
Apprch %	14.3	58.6	27.1		15.4	73.8	10.9		21.6	62.6	15.8		20.4	65.2	14.5		
Total %	5.3	21.5	9.9	36.6	4.7	22.7	3.3	30.8	2.3	6.8	1.7	10.8	4.4	14.2	3.2	21.8	

	Red Hill Avenue Southbound				Edinger Avenue Westbound				Red Hill Avenue Northbound				Edinger Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	57	243	109	409	47	233	**42**	322	14	80	9	103	**64**	174	33	**271**	1105
07:45 AM	**68**	225	116	409	60	287	35	**382**	20	**89**	**37**	**146**	49	**183**	30	262	**1199**
08:00 AM	54	**264**	**126**	**444**	56	**292**	34	382	22	69	22	113	35	117	31	183	1122
08:15 AM	47	228	99	374	**61**	273	41	375	**25**	61	17	103	42	137	**36**	215	1067
Total Volume	226	960	450	1636	224	1085	152	1461	81	299	85	465	190	611	130	931	4493
% App. Total	13.8	58.7	27.5		15.3	74.3	10.4		17.4	64.3	18.3		20.4	65.6	14		
PHF	.831	.909	.893	.921	.918	.929	.905	.956	.810	.840	.574	.796	.742	.835	.903	.859	.937

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City of Tustin
N/S: Red Hill Avenue
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File Name : 97_TUS_Red Hill_Edinger AM
Site Code : 20220171
Start Date : 3/12/2020
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:15 AM				07:00 AM			
+0 mins.	57	243	109	409	60	287	35	**382**	**40**	87	18	145	44	129	**38**	211
+15 mins.	**68**	225	116	409	56	**292**	34	382	14	80	9	103	52	149	28	229
+30 mins.	54	**264**	**126**	**444**	61	273	41	375	20	**89**	**37**	**146**	**64**	174	33	**271**
+45 mins.	47	228	99	374	**68**	258	**42**	368	22	69	22	113	49	**183**	30	262
Total Volume	226	960	450	1636	245	1110	152	1507	96	325	86	507	209	635	129	973
% App. Total	13.8	58.7	27.5		16.3	73.7	10.1		18.9	64.1	17		21.5	65.3	13.3	
PHF	.831	.909	.893	.921	.901	.950	.905	.986	.600	.913	.581	.868	.816	.867	.849	.898

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City of Tustin
N/S: Red Hill Avenue
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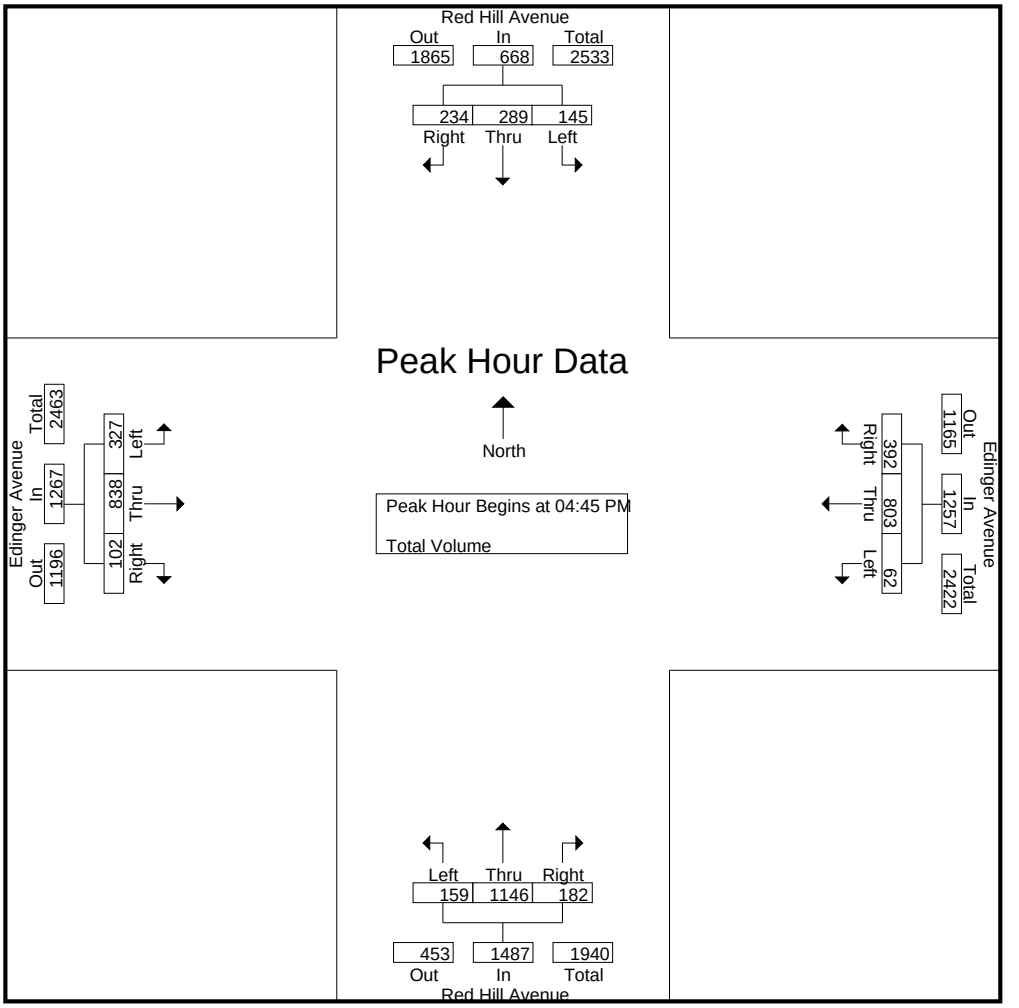
	Red Hill Avenue Southbound				Edinger Avenue Westbound				Red Hill Avenue Northbound				Edinger Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	36	69	60	165	13	210	108	331	31	237	42	310	67	153	30	250	1056
04:15 PM	28	73	55	156	17	231	105	353	34	260	41	335	66	145	26	237	1081
04:30 PM	36	72	50	158	14	219	95	328	37	282	34	353	70	145	25	240	1079
04:45 PM	39	76	58	173	15	172	85	272	48	251	46	345	80	147	26	253	1043
Total	139	290	223	652	59	832	393	1284	150	1030	163	1343	283	590	107	980	4259
05:00 PM	30	72	58	160	15	225	93	333	34	281	47	362	80	210	27	317	1172
05:15 PM	40	74	59	173	15	195	119	329	29	276	49	354	95	218	22	335	1191
05:30 PM	36	67	59	162	17	211	95	323	48	338	40	426	72	263	27	362	1273
05:45 PM	40	74	42	156	17	161	93	271	33	249	40	322	58	153	27	238	987
Total	146	287	218	651	64	792	400	1256	144	1144	176	1464	305	844	103	1252	4623
Grand Total	285	577	441	1303	123	1624	793	2540	294	2174	339	2807	588	1434	210	2232	8882
Apprch %	21.9	44.3	33.8		4.8	63.9	31.2		10.5	77.4	12.1		26.3	64.2	9.4		
Total %	3.2	6.5	5	14.7	1.4	18.3	8.9	28.6	3.3	24.5	3.8	31.6	6.6	16.1	2.4	25.1	

	Red Hill Avenue Southbound				Edinger Avenue Westbound				Red Hill Avenue Northbound				Edinger Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	39	**76**	58	**173**	15	172	85	272	**48**	251	46	345	80	147	26	253	1043
05:00 PM	30	72	58	160	15	**225**	93	**333**	34	281	47	362	80	210	**27**	317	1172
05:15 PM	**40**	74	**59**	173	15	195	**119**	329	29	276	**49**	354	**95**	218	22	335	1191
05:30 PM	36	67	59	162	**17**	211	95	323	48	**338**	40	**426**	72	**263**	27	**362**	**1273**
Total Volume	145	289	234	668	62	803	392	1257	159	1146	182	1487	327	838	102	1267	4679
% App. Total	21.7	43.3	35		4.9	63.9	31.2		10.7	77.1	12.2		25.8	66.1	8.1		
PHF	.906	.951	.992	.965	.912	.892	.824	.944	.828	.848	.929	.873	.861	.797	.944	.875	.919

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City of Tustin
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Weather: Clear

File Name : 97_TUS_Red Hill_Edinger PM
Site Code : 20220171
Start Date : 3/12/2020
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:15 PM				04:45 PM				04:45 PM			
+0 mins.	39	**76**	58	**173**	**17**	**231**	**105**	**353**	**48**	251	46	345	80	147	26	253
+15 mins.	30	72	58	160	14	219	95	328	34	281	47	362	80	210	**27**	317
+30 mins.	**40**	74	**59**	173	15	172	85	272	29	276	**49**	354	**95**	218	22	335
+45 mins.	36	67	59	162	15	225	93	333	48	**338**	40	**426**	72	**263**	27	**362**
Total Volume	145	289	234	668	61	847	378	1286	159	1146	182	1487	327	838	102	1267
% App. Total	21.7	43.3	35		4.7	65.9	29.4		10.7	77.1	12.2		25.8	66.1	8.1	
PHF	.906	.951	.992	.965	.897	.917	.900	.911	.828	.848	.929	.873	.861	.797	.944	.875

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City of Santa Ana
N/S: Red Hill Avenue
E/W: Warner Avenue
Weather: Clear

File Name : 98_TUS_Red Hill_Warner_AM
Site Code : 20220171
Start Date : 3/12/2020
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Groups Printed- Total Volume

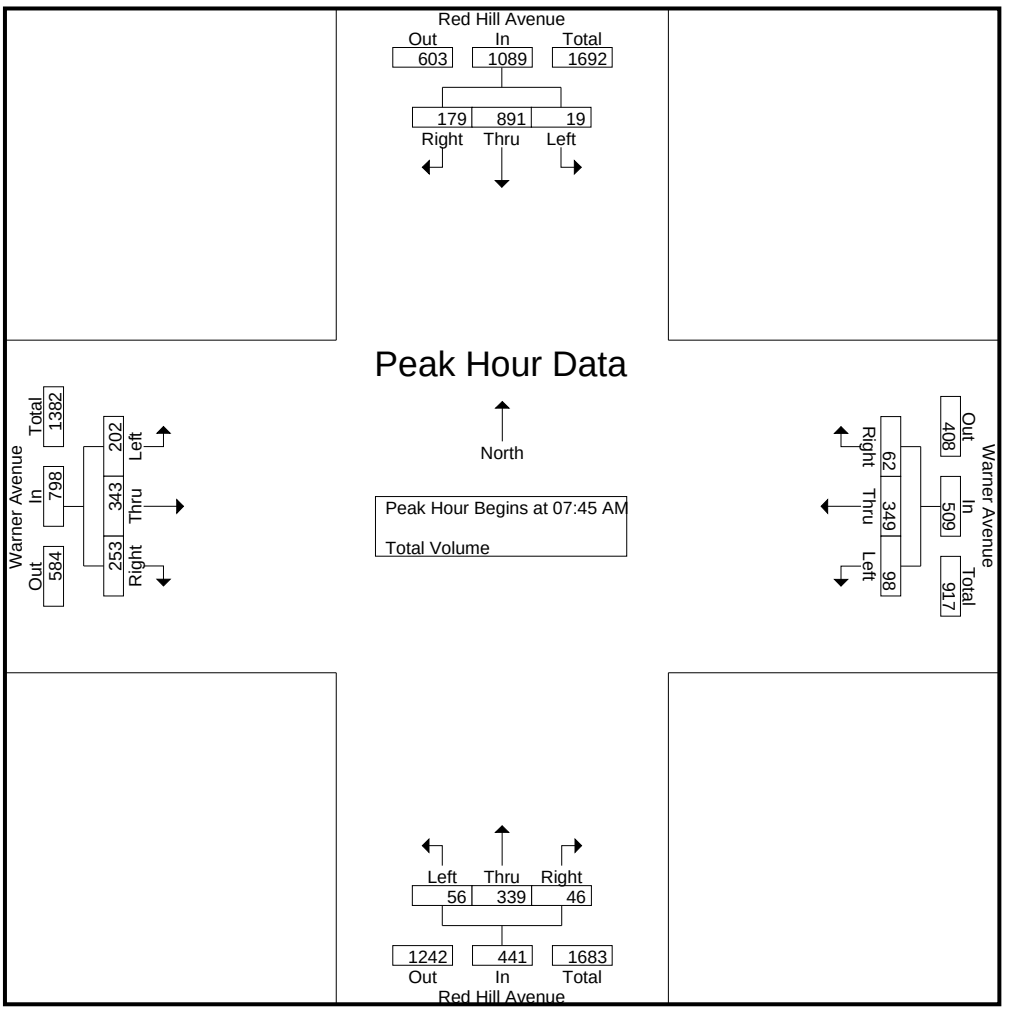
	Red Hill Avenue Southbound				Warner Avenue Westbound				Red Hill Avenue Northbound				Warner Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	183	31	217	11	41	6	58	24	181	8	213	41	44	38	123	611
07:15 AM	1	163	50	214	17	59	14	90	19	154	11	184	41	60	62	163	651
07:30 AM	3	231	41	275	22	75	12	109	16	94	10	120	49	70	69	188	692
07:45 AM	5	214	42	261	17	75	14	106	15	92	8	115	55	99	76	230	712
Total	12	791	164	967	67	250	46	363	74	521	37	632	186	273	245	704	2666
08:00 AM	4	255	43	302	25	92	19	136	17	89	10	116	47	72	61	180	734
08:15 AM	3	228	45	276	23	90	16	129	9	74	11	94	56	86	54	196	695
08:30 AM	7	194	49	250	33	92	13	138	15	84	17	116	44	86	62	192	696
08:45 AM	13	191	54	258	22	82	16	120	9	96	16	121	32	71	53	156	655
Total	27	868	191	1086	103	356	64	523	50	343	54	447	179	315	230	724	2780
Grand Total	39	1659	355	2053	170	606	110	886	124	864	91	1079	365	588	475	1428	5446
Apprch %	1.9	80.8	17.3		19.2	68.4	12.4		11.5	80.1	8.4		25.6	41.2	33.3		
Total %	0.7	30.5	6.5	37.7	3.1	11.1	2	16.3	2.3	15.9	1.7	19.8	6.7	10.8	8.7	26.2	

	Red Hill Avenue Southbound				Warner Avenue Westbound				Red Hill Avenue Northbound				Warner Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	5	214	42	261	17	75	14	106	15	**92**	8	115	55	**99**	**76**	**230**	712
08:00 AM	4	**255**	43	**302**	25	**92**	**19**	136	**17**	89	10	**116**	47	72	61	180	**734**
08:15 AM	3	228	45	276	23	90	16	129	9	74	11	94	**56**	86	54	196	695
08:30 AM	**7**	194	**49**	250	**33**	92	13	**138**	15	84	**17**	116	44	86	62	192	696
Total Volume	19	891	179	1089	98	349	62	509	56	339	46	441	202	343	253	798	2837
% App. Total	1.7	81.8	16.4		19.3	68.6	12.2		12.7	76.9	10.4		25.3	43	31.7		
PHF	.679	.874	.913	.901	.742	.948	.816	.922	.824	.921	.676	.950	.902	.866	.832	.867	.966

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N/S: Red Hill Avenue
E/W: Warner Avenue
Weather: Clear

File Name : 98_TUS_Red Hill_Warner_AM
Site Code : 20220171
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				08:00 AM				07:00 AM				07:45 AM			
+0 mins.	3	231	41	275	25	**92**	**19**	136	**24**	**181**	8	**213**	55	**99**	**76**	**230**
+15 mins.	**5**	214	42	261	23	90	16	129	19	154	**11**	184	47	72	61	180
+30 mins.	4	**255**	43	**302**	**33**	92	13	**138**	16	94	10	120	**56**	86	54	196
+45 mins.	3	228	**45**	276	22	82	16	120	15	92	8	115	44	86	62	192
Total Volume	15	928	171	1114	103	356	64	523	74	521	37	632	202	343	253	798
% App. Total	1.3	83.3	15.4		19.7	68.1	12.2		11.7	82.4	5.9		25.3	43	31.7	
PHF	.750	.910	.950	.922	.780	.967	.842	.947	.771	.720	.841	.742	.902	.866	.832	.867

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City of Santa Ana
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Weather: Clear

File Name : 98_TUS_Red Hill_Warner_PM
Site Code : 20220171
Start Date : 3/12/2020
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Groups Printed- Total Volume

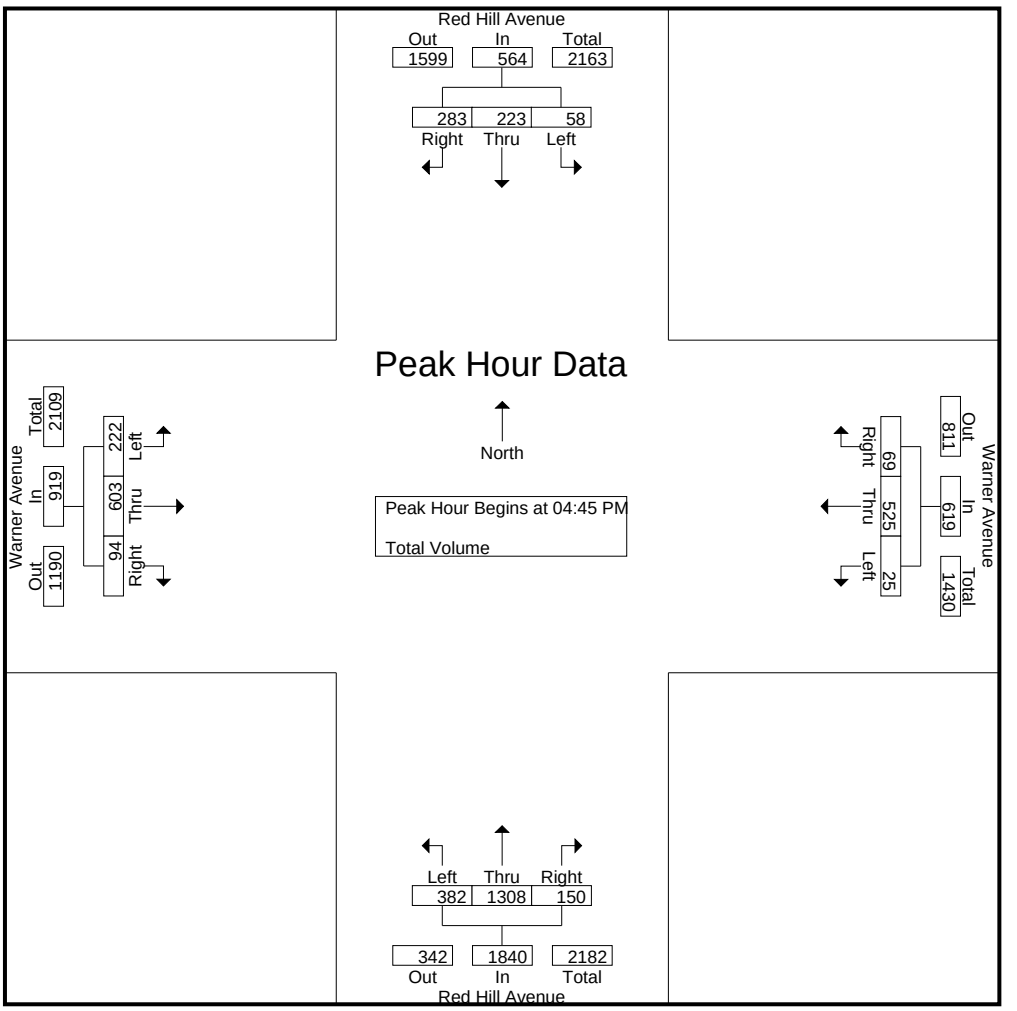
	Red Hill Avenue Southbound				Warner Avenue Westbound				Red Hill Avenue Northbound				Warner Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	12	48	60	120	4	77	11	92	69	254	32	355	41	108	36	185	752
04:15 PM	14	48	80	142	8	123	13	144	76	273	31	380	52	94	35	181	847
04:30 PM	11	35	66	112	14	124	14	152	82	264	42	388	49	125	28	202	854
04:45 PM	15	39	74	128	10	133	13	156	93	325	24	442	56	128	18	202	928
Total	52	170	280	502	36	457	51	544	320	1116	129	1565	198	455	117	770	3381
05:00 PM	14	51	73	138	3	120	20	143	85	373	39	497	61	156	24	241	1019
05:15 PM	11	71	60	142	8	169	20	197	108	254	41	403	59	155	25	239	981
05:30 PM	18	62	76	156	4	103	16	123	96	356	46	498	46	164	27	237	1014
05:45 PM	11	55	73	139	6	121	20	147	87	257	53	397	55	151	21	227	910
Total	54	239	282	575	21	513	76	610	376	1240	179	1795	221	626	97	944	3924
Grand Total	106	409	562	1077	57	970	127	1154	696	2356	308	3360	419	1081	214	1714	7305
Apprch %	9.8	38	52.2		4.9	84.1	11		20.7	70.1	9.2		24.4	63.1	12.5		
Total %	1.5	5.6	7.7	14.7	0.8	13.3	1.7	15.8	9.5	32.3	4.2	46	5.7	14.8	2.9	23.5	

	Red Hill Avenue Southbound				Warner Avenue Westbound				Red Hill Avenue Northbound				Warner Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	15	39	74	128	**10**	133	13	156	93	325	24	442	56	128	18	202	928
05:00 PM	14	51	73	138	3	120	**20**	143	85	**373**	39	497	**61**	156	24	**241**	**1019**
05:15 PM	11	**71**	60	142	8	**169**	20	**197**	**108**	254	41	403	59	155	25	239	981
05:30 PM	**18**	62	**76**	**156**	4	103	16	123	96	356	**46**	**498**	46	**164**	**27**	237	1014
Total Volume	58	223	283	564	25	525	69	619	382	1308	150	1840	222	603	94	919	3942
% App. Total	10.3	39.5	50.2		4	84.8	11.1		20.8	71.1	8.2		24.2	65.6	10.2		
PHF	.806	.785	.931	.904	.625	.777	.863	.786	.884	.877	.815	.924	.910	.919	.870	.953	.967

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City of Santa Ana
N/S: Red Hill Avenue
E/W: Warner Avenue
Weather: Clear

File Name : 98_TUS_Red Hill_Warner_PM
Site Code : 20220171
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:45 PM				05:00 PM			
+0 mins.	14	51	73	138	**14**	124	14	152	93	325	24	442	**61**	156	24	**241**
+15 mins.	11	**71**	60	142	10	133	13	156	85	**373**	39	497	59	155	25	239
+30 mins.	**18**	62	**76**	**156**	3	120	**20**	143	**108**	254	41	403	46	**164**	**27**	237
+45 mins.	11	55	73	139	8	**169**	20	**197**	96	356	**46**	**498**	55	151	21	227
Total Volume	54	239	282	575	35	546	67	648	382	1308	150	1840	221	626	97	944
% App. Total	9.4	41.6	49		5.4	84.3	10.3		20.8	71.1	8.2		23.4	66.3	10.3	
PHF	.750	.842	.928	.921	.625	.808	.838	.822	.884	.877	.815	.924	.906	.954	.898	.979

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City of Santa Ana
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Weather: Clear

File Name : 99_SNA_Red Hill_Barranca AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

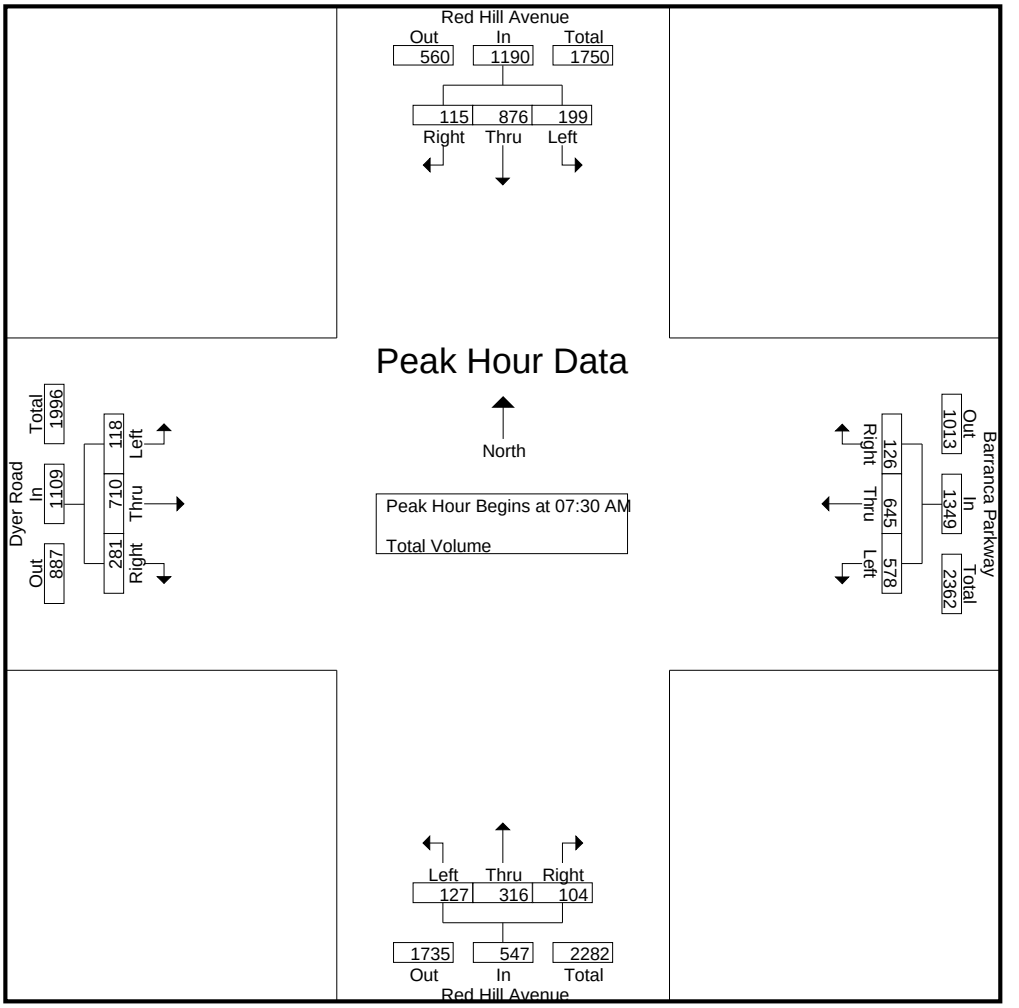
	Red Hill Avenue Southbound				Barranca Parkway Westbound				Red Hill Avenue Northbound				Dyer Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	41	134	25	200	51	114	27	192	119	178	24	321	41	103	45	189	902
07:15 AM	50	127	22	199	90	136	21	247	100	153	24	277	37	154	90	281	1004
07:30 AM	37	206	30	273	105	141	25	271	48	85	27	160	23	182	52	257	961
07:45 AM	64	175	30	269	187	174	38	399	24	74	27	125	32	190	109	331	1124
Total	192	642	107	941	433	565	111	1109	291	490	102	883	133	629	296	1058	3991
08:00 AM	45	266	24	335	167	163	32	362	26	76	26	128	31	141	66	238	1063
08:15 AM	53	229	31	313	119	167	31	317	29	81	24	134	32	197	54	283	1047
08:30 AM	43	200	18	261	149	149	42	340	22	63	16	101	26	172	49	247	949
08:45 AM	46	187	27	260	148	146	37	331	25	77	16	118	25	149	90	264	973
Total	187	882	100	1169	583	625	142	1350	102	297	82	481	114	659	259	1032	4032
Grand Total	379	1524	207	2110	1016	1190	253	2459	393	787	184	1364	247	1288	555	2090	8023
Apprch %	18	72.2	9.8		41.3	48.4	10.3		28.8	57.7	13.5		11.8	61.6	26.6		
Total %	4.7	19	2.6	26.3	12.7	14.8	3.2	30.6	4.9	9.8	2.3	17	3.1	16.1	6.9	26.1	

	Red Hill Avenue Southbound				Barranca Parkway Westbound				Red Hill Avenue Northbound				Dyer Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	37	206	30	273	105	141	25	271	**48**	**85**	**27**	**160**	23	182	52	257	961
07:45 AM	**64**	175	30	269	**187**	**174**	**38**	**399**	24	74	27	125	**32**	190	**109**	**331**	**1124**
08:00 AM	45	**266**	24	**335**	167	163	32	362	26	76	26	128	31	141	66	238	1063
08:15 AM	53	229	**31**	313	119	167	31	317	29	81	24	134	32	**197**	54	283	1047
Total Volume	199	876	115	1190	578	645	126	1349	127	316	104	547	118	710	281	1109	4195
% App. Total	16.7	73.6	9.7		42.8	47.8	9.3		23.2	57.8	19		10.6	64	25.3		
PHF	.777	.823	.927	.888	.773	.927	.829	.845	.661	.929	.963	.855	.922	.901	.644	.838	.933

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N/S: Red Hill Avenue
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File Name : 99_SNA_Red Hill_Barranca AM
Site Code : 20220171
Start Date : 3/12/2020
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:00 AM				07:30 AM			
+0 mins.	37	206	30	273	**187**	**174**	38	**399**	**119**	**178**	24	**321**	23	182	52	257
+15 mins.	**64**	175	30	269	167	163	32	362	100	153	24	277	**32**	190	**109**	**331**
+30 mins.	45	**266**	24	**335**	119	167	31	317	48	85	**27**	160	31	141	66	238
+45 mins.	53	229	**31**	313	149	149	**42**	340	24	74	27	125	32	**197**	54	283
Total Volume	199	876	115	1190	622	653	143	1418	291	490	102	883	118	710	281	1109
% App. Total	16.7	73.6	9.7		43.9	46.1	10.1		33	55.5	11.6		10.6	64	25.3	
PHF	.777	.823	.927	.888	.832	.938	.851	.888	.611	.688	.944	.688	.922	.901	.644	.838

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File Name : 99_SNA_Red Hill_Barranca PM
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Groups Printed- Total Volume

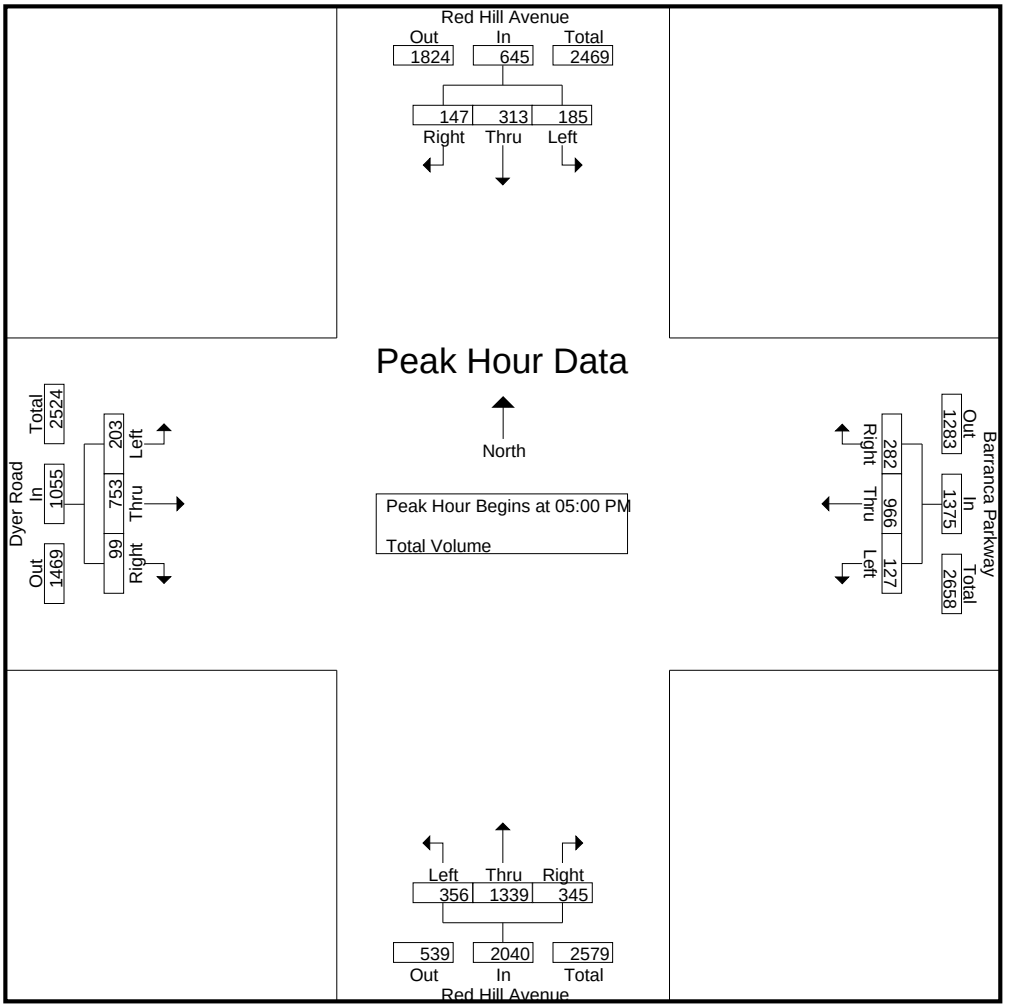
	Red Hill Avenue Southbound				Barranca Parkway Westbound				Red Hill Avenue Northbound				Dyer Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	33	69	32	134	36	206	71	313	59	258	84	401	35	124	27	186	1034
04:15 PM	34	76	32	142	33	169	70	272	69	292	64	425	37	128	23	188	1027
04:30 PM	27	64	26	117	26	266	80	372	55	266	82	403	51	158	27	236	1128
04:45 PM	49	86	27	162	39	164	64	267	65	350	79	494	38	148	32	218	1141
Total	143	295	117	555	134	805	285	1224	248	1166	309	1723	161	558	109	828	4330
05:00 PM	42	93	45	180	19	273	87	379	102	393	81	576	38	182	20	240	1375
05:15 PM	53	68	38	159	35	212	65	312	91	323	99	513	49	191	18	258	1242
05:30 PM	39	83	32	154	39	216	68	323	78	354	91	523	62	187	32	281	1281
05:45 PM	51	69	32	152	34	265	62	361	85	269	74	428	54	193	29	276	1217
Total	185	313	147	645	127	966	282	1375	356	1339	345	2040	203	753	99	1055	5115
Grand Total	328	608	264	1200	261	1771	567	2599	604	2505	654	3763	364	1311	208	1883	9445
Apprch %	27.3	50.7	22		10	68.1	21.8		16.1	66.6	17.4		19.3	69.6	11		
Total %	3.5	6.4	2.8	12.7	2.8	18.8	6	27.5	6.4	26.5	6.9	39.8	3.9	13.9	2.2	19.9	

	Red Hill Avenue Southbound				Barranca Parkway Westbound				Red Hill Avenue Northbound				Dyer Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	42	**93**	**45**	**180**	19	**273**	**87**	**379**	**102**	**393**	81	**576**	38	182	20	240	**1375**
05:15 PM	**53**	68	38	159	35	212	65	312	91	323	**99**	513	49	191	18	258	1242
05:30 PM	39	83	32	154	**39**	216	68	323	78	354	91	523	**62**	187	**32**	**281**	1281
05:45 PM	51	69	32	152	34	265	62	361	85	269	74	428	54	**193**	29	276	1217
Total Volume	185	313	147	645	127	966	282	1375	356	1339	345	2040	203	753	99	1055	5115
% App. Total	28.7	48.5	22.8		9.2	70.3	20.5		17.5	65.6	16.9		19.2	71.4	9.4		
PHF	.873	.841	.817	.896	.814	.885	.810	.907	.873	.852	.871	.885	.819	.975	.773	.939	.930

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City of Santa Ana
N/S: Red Hill Avenue
E/W: Dyer Road/Barranca Parkway
Weather: Clear

File Name : 99_SNA_Red Hill_Barranca PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	49	86	27	162	19	**273**	**87**	**379**	65	350	79	494	38	182	20	240
+15 mins.	42	**93**	**45**	**180**	35	212	65	312	**102**	**393**	81	**576**	49	191	18	258
+30 mins.	**53**	68	38	159	**39**	216	68	323	91	323	**99**	513	**62**	187	**32**	**281**
+45 mins.	39	83	32	154	34	265	62	361	78	354	91	523	54	**193**	29	276
Total Volume	183	330	142	655	127	966	282	1375	336	1420	350	2106	203	753	99	1055
% App. Total	27.9	50.4	21.7		9.2	70.3	20.5		16	67.4	16.6		19.2	71.4	9.4	
PHF	.863	.887	.789	.910	.814	.885	.810	.907	.824	.903	.884	.914	.819	.975	.773	.939

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City of Irvine
N/S: Red Hill Avenue
E/W: Alton Parkway
Weather: Clear

File Name : 100_IRV_Red Hill_Alton AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

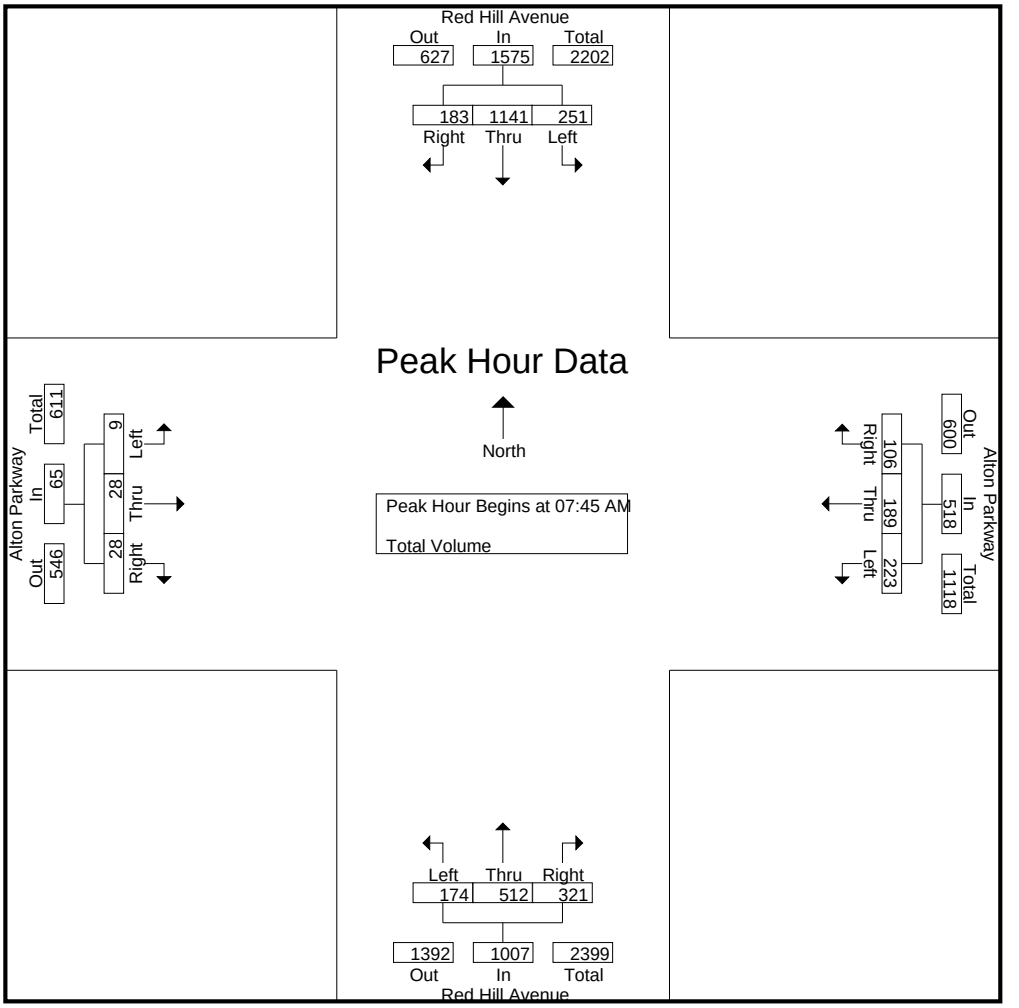
	Red Hill Avenue Southbound				Alton Parkway Westbound				Red Hill Avenue Northbound				Alton Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	47	153	15	215	24	15	15	54	31	312	62	405	2	4	4	10	684
07:15 AM	39	189	19	247	31	25	15	71	39	288	76	403	2	8	2	12	733
07:30 AM	60	241	29	330	43	27	27	97	39	153	63	255	3	8	7	18	700
07:45 AM	58	314	41	413	48	46	24	118	46	149	93	288	2	5	8	15	834
Total	204	897	104	1205	146	113	81	340	155	902	294	1351	9	25	21	55	2951
08:00 AM	83	302	55	440	53	50	27	130	53	133	76	262	3	4	9	16	848
08:15 AM	52	242	44	338	61	46	33	140	34	115	78	227	2	7	5	14	719
08:30 AM	58	283	43	384	61	47	22	130	41	115	74	230	2	12	6	20	764
08:45 AM	43	281	48	372	71	47	20	138	26	109	80	215	3	11	5	19	744
Total	236	1108	190	1534	246	190	102	538	154	472	308	934	10	34	25	69	3075
Grand Total	440	2005	294	2739	392	303	183	878	309	1374	602	2285	19	59	46	124	6026
Apprch %	16.1	73.2	10.7		44.6	34.5	20.8		13.5	60.1	26.3		15.3	47.6	37.1		
Total %	7.3	33.3	4.9	45.5	6.5	5	3	14.6	5.1	22.8	10	37.9	0.3	1	0.8	2.1	

	Red Hill Avenue Southbound				Alton Parkway Westbound				Red Hill Avenue Northbound				Alton Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	58	**314**	41	413	48	46	24	118	46	**149**	**93**	**288**	2	5	8	15	834
08:00 AM	**83**	302	**55**	**440**	53	**50**	27	130	**53**	133	76	262	**3**	4	**9**	16	**848**
08:15 AM	52	242	44	338	**61**	46	**33**	**140**	34	115	78	227	2	7	5	14	719
08:30 AM	58	283	43	384	61	47	22	130	41	115	74	230	2	**12**	6	**20**	764
Total Volume	251	1141	183	1575	223	189	106	518	174	512	321	1007	9	28	28	65	3165
% App. Total	15.9	72.4	11.6		43.1	36.5	20.5		17.3	50.8	31.9		13.8	43.1	43.1		
PHF	.756	.908	.832	.895	.914	.945	.803	.925	.821	.859	.863	.874	.750	.583	.778	.813	.933

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City of Irvine
N/S: Red Hill Avenue
E/W: Alton Parkway
Weather: Clear

File Name : 100_IRV_Red Hill_Alton AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				08:00 AM				07:00 AM				08:00 AM			
+0 mins.	58	**314**	41	413	53	**50**	27	130	31	**312**	62	**405**	**3**	4	**9**	16
+15 mins.	**83**	302	**55**	**440**	61	46	**33**	**140**	39	288	76	403	2	7	5	14
+30 mins.	52	242	44	338	61	47	22	130	39	153	63	255	2	**12**	6	**20**
+45 mins.	58	283	43	384	**71**	47	20	138	**46**	149	**93**	288	3	11	5	19
Total Volume	251	1141	183	1575	246	190	102	538	155	902	294	1351	10	34	25	69
% App. Total	15.9	72.4	11.6		45.7	35.3	19		11.5	66.8	21.8		14.5	49.3	36.2	
PHF	.756	.908	.832	.895	.866	.950	.773	.961	.842	.723	.790	.834	.833	.708	.694	.863

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City of Irvine
N/S: Red Hill Avenue
E/W: Alton Parkway
Weather: Clear

File Name : 100_IRV_Red Hill_Alton PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

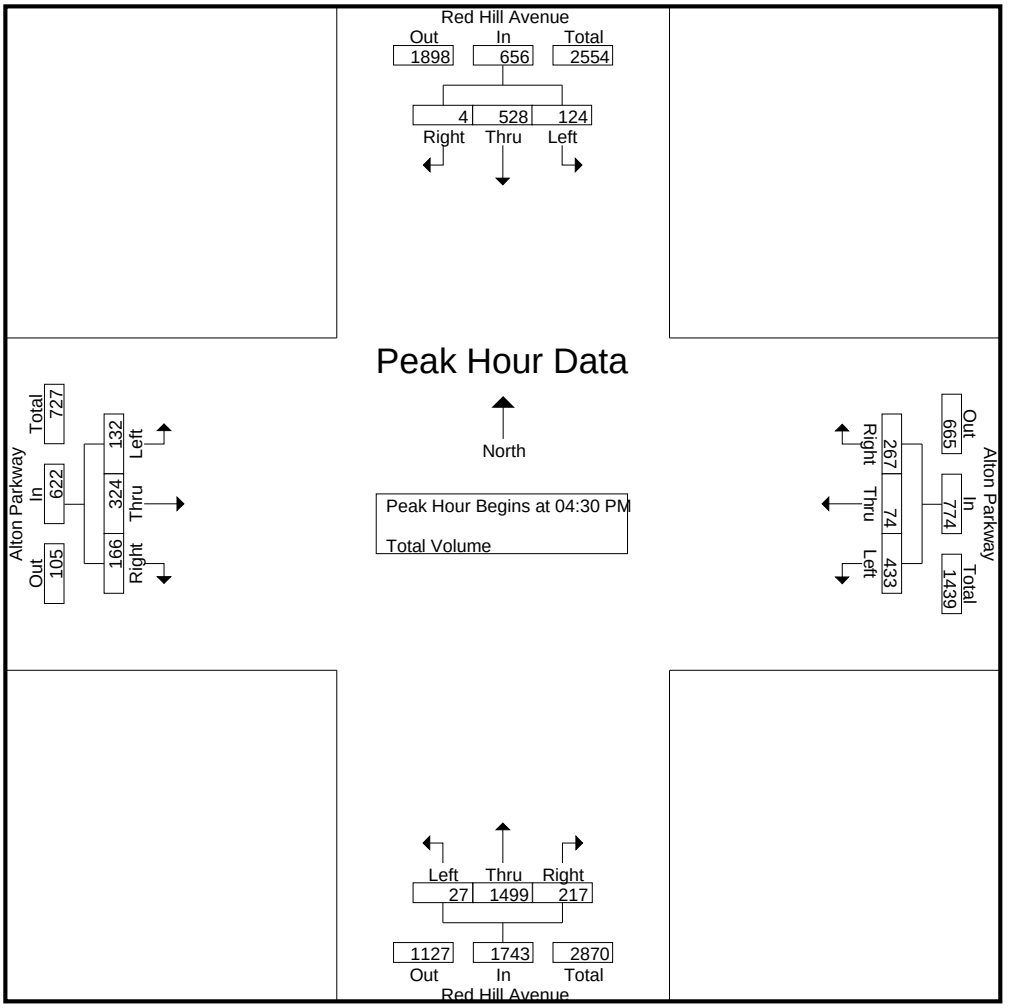
	Red Hill Avenue Southbound				Alton Parkway Westbound				Red Hill Avenue Northbound				Alton Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	23	132	1	156	99	18	64	181	6	282	42	330	21	41	36	98	765
04:15 PM	34	117	5	156	72	18	40	130	7	331	44	382	19	42	41	102	770
04:30 PM	31	128	1	160	128	21	60	209	5	367	61	433	25	68	34	127	929
04:45 PM	30	138	0	168	81	22	58	161	6	358	40	404	28	73	36	137	870
Total	118	515	7	640	380	79	222	681	24	1338	187	1549	93	224	147	464	3334
05:00 PM	36	131	0	167	139	19	97	255	4	345	63	412	46	105	50	201	1035
05:15 PM	27	131	3	161	85	12	52	149	12	429	53	494	33	78	46	157	961
05:30 PM	29	123	0	152	110	20	66	196	4	406	47	457	19	60	33	112	917
05:45 PM	36	114	2	152	88	24	55	167	4	316	73	393	25	55	28	108	820
Total	128	499	5	632	422	75	270	767	24	1496	236	1756	123	298	157	578	3733
Grand Total	246	1014	12	1272	802	154	492	1448	48	2834	423	3305	216	522	304	1042	7067
Apprch %	19.3	79.7	0.9		55.4	10.6	34		1.5	85.7	12.8		20.7	50.1	29.2		
Total %	3.5	14.3	0.2	18	11.3	2.2	7	20.5	0.7	40.1	6	46.8	3.1	7.4	4.3	14.7	

	Red Hill Avenue Southbound				Alton Parkway Westbound				Red Hill Avenue Northbound				Alton Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	31	128	1	160	128	21	60	209	5	367	61	433	25	68	34	127	929
04:45 PM	30	**138**	0	**168**	81	**22**	58	161	6	358	40	404	28	73	36	137	870
05:00 PM	**36**	131	0	167	**139**	19	**97**	**255**	4	345	**63**	412	**46**	**105**	**50**	**201**	**1035**
05:15 PM	27	131	**3**	161	85	12	52	149	**12**	**429**	53	**494**	33	78	46	157	961
Total Volume	124	528	4	656	433	74	267	774	27	1499	217	1743	132	324	166	622	3795
% App. Total	18.9	80.5	0.6		55.9	9.6	34.5		1.5	86	12.4		21.2	52.1	26.7		
PHF	.861	.957	.333	.976	.779	.841	.688	.759	.563	.874	.861	.882	.717	.771	.830	.774	.917

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City of Irvine
N/S: Red Hill Avenue
E/W: Alton Parkway
Weather: Clear

File Name : 100_IRV_Red Hill_Alton PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:45 PM				04:30 PM			
+0 mins.	31	128	1	160	128	21	60	209	6	358	40	404	25	68	34	127
+15 mins.	30	**138**	0	**168**	81	**22**	58	161	4	345	**63**	412	28	73	36	137
+30 mins.	**36**	131	0	167	**139**	19	**97**	**255**	**12**	**429**	53	**494**	**46**	**105**	**50**	**201**
+45 mins.	27	131	**3**	161	85	12	52	149	4	406	47	457	33	78	46	157
Total Volume	124	528	4	656	433	74	267	774	26	1538	203	1767	132	324	166	622
% App. Total	18.9	80.5	0.6		55.9	9.6	34.5		1.5	87	11.5		21.2	52.1	26.7	
PHF	.861	.957	.333	.976	.779	.841	.688	.759	.542	.896	.806	.894	.717	.771	.830	.774

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City of Irvine
N/S: Red Hill Avenue
E/W: MacArthur Boulevard
Weather: Clear

File Name : 101_IRV_Red Hill_MacArthur AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

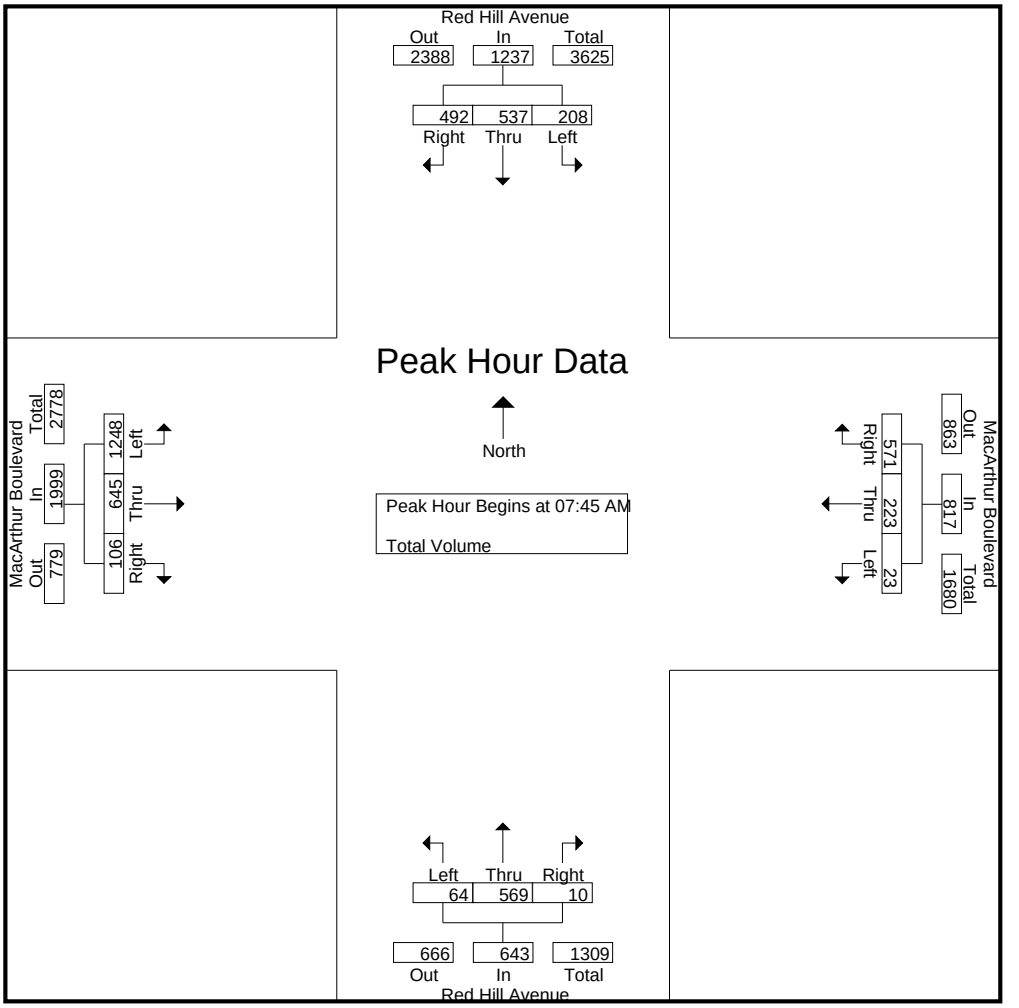
	Red Hill Avenue Southbound				MacArthur Boulevard Westbound				Red Hill Avenue Northbound				MacArthur Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	21	60	62	143	14	69	251	334	10	89	3	102	350	142	15	507	1086
07:15 AM	40	90	68	198	7	77	228	312	28	137	1	166	271	147	19	437	1113
07:30 AM	58	117	84	259	11	77	172	260	21	122	1	144	295	151	13	459	1122
07:45 AM	37	129	117	283	6	57	187	250	17	156	3	176	331	150	32	513	1222
Total	156	396	331	883	38	280	838	1156	76	504	8	588	1247	590	79	1916	4543
08:00 AM	67	158	119	344	4	52	140	196	14	174	2	190	299	159	22	480	1210
08:15 AM	51	118	127	296	7	59	109	175	16	145	2	163	300	173	22	495	1129
08:30 AM	53	132	129	314	6	55	135	196	17	94	3	114	318	163	30	511	1135
08:45 AM	67	132	133	332	3	88	102	193	16	101	3	120	282	150	24	456	1101
Total	238	540	508	1286	20	254	486	760	63	514	10	587	1199	645	98	1942	4575
Grand Total	394	936	839	2169	58	534	1324	1916	139	1018	18	1175	2446	1235	177	3858	9118
Apprch %	18.2	43.2	38.7		3	27.9	69.1		11.8	86.6	1.5		63.4	32	4.6		
Total %	4.3	10.3	9.2	23.8	0.6	5.9	14.5	21	1.5	11.2	0.2	12.9	26.8	13.5	1.9	42.3	

	Red Hill Avenue Southbound				MacArthur Boulevard Westbound				Red Hill Avenue Northbound				MacArthur Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	37	129	117	283	6	57	**187**	**250**	**17**	156	**3**	176	**331**	150	**32**	**513**	**1222**
08:00 AM	**67**	**158**	119	**344**	4	52	140	196	14	**174**	2	**190**	299	159	22	480	1210
08:15 AM	51	118	127	296	**7**	**59**	109	175	16	145	2	163	300	**173**	22	495	1129
08:30 AM	53	132	**129**	314	6	55	135	196	17	94	3	114	318	163	30	511	1135
Total Volume	208	537	492	1237	23	223	571	817	64	569	10	643	1248	645	106	1999	4696
% App. Total	16.8	43.4	39.8		2.8	27.3	69.9		10	88.5	1.6		62.4	32.3	5.3		
PHF	.776	.850	.953	.899	.821	.945	.763	.817	.941	.818	.833	.846	.943	.932	.828	.974	.961

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City of Irvine
N/S: Red Hill Avenue
E/W: MacArthur Boulevard
Weather: Clear

File Name : 101_IRV_Red Hill_MacArthur AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:15 AM				07:45 AM			
+0 mins.	**67**	**158**	119	**344**	**14**	69	**251**	**334**	**28**	137	1	166	**331**	150	**32**	**513**
+15 mins.	51	118	127	296	7	**77**	228	312	21	122	1	144	299	159	22	480
+30 mins.	53	132	129	314	11	77	172	260	17	156	**3**	176	300	**173**	22	495
+45 mins.	67	132	**133**	332	6	57	187	250	14	**174**	2	**190**	318	163	30	511
Total Volume	238	540	508	1286	38	280	838	1156	80	589	7	676	1248	645	106	1999
% App. Total	18.5	42	39.5		3.3	24.2	72.5		11.8	87.1	1		62.4	32.3	5.3	
PHF	.888	.854	.955	.935	.679	.909	.835	.865	.714	.846	.583	.889	.943	.932	.828	.974

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City of Irvine
N/S: Red Hill Avenue
E/W: MacArthur Boulevard
Weather: Clear

File Name : 101_IRV_Red Hill_MacArthur PM
Site Code : 20220171
Start Date : 3/12/2020
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Groups Printed- Total Volume

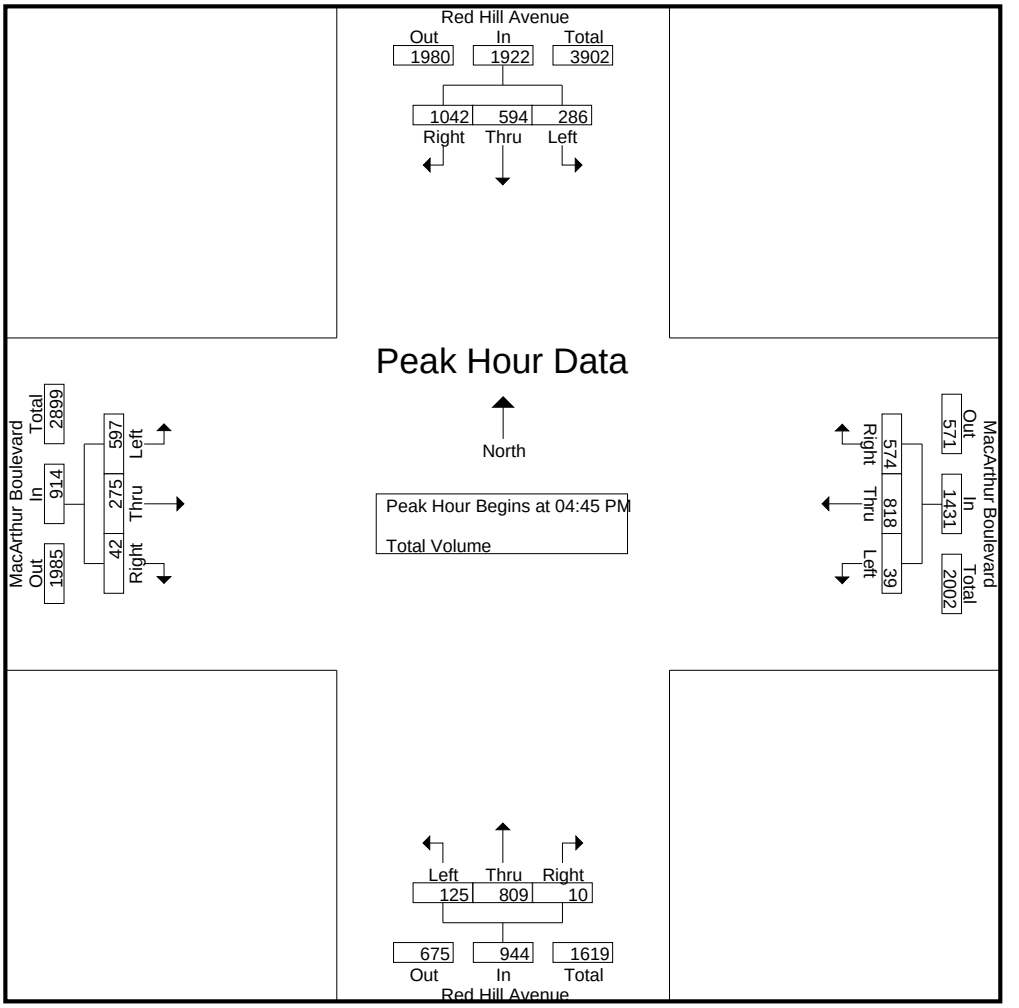
	Red Hill Avenue Southbound				MacArthur Boulevard Westbound				Red Hill Avenue Northbound				MacArthur Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	49	122	331	502	9	173	97	279	40	184	1	225	129	60	7	196	1202
04:15 PM	68	104	232	404	10	163	90	263	21	168	2	191	124	50	11	185	1043
04:30 PM	57	138	345	540	7	186	101	294	24	172	1	197	153	74	11	238	1269
04:45 PM	72	145	241	458	8	166	116	290	30	190	4	224	139	67	7	213	1185
Total	246	509	1149	1904	34	688	404	1126	115	714	8	837	545	251	36	832	4699
05:00 PM	69	166	308	543	14	231	153	398	34	208	1	243	135	76	13	224	1408
05:15 PM	78	146	254	478	11	248	163	422	27	221	2	250	117	65	12	194	1344
05:30 PM	67	137	239	443	6	173	142	321	34	190	3	227	206	67	10	283	1274
05:45 PM	39	106	193	338	4	216	118	338	22	160	4	186	181	74	10	265	1127
Total	253	555	994	1802	35	868	576	1479	117	779	10	906	639	282	45	966	5153
Grand Total	499	1064	2143	3706	69	1556	980	2605	232	1493	18	1743	1184	533	81	1798	9852
Apprch %	13.5	28.7	57.8		2.6	59.7	37.6		13.3	85.7	1		65.9	29.6	4.5		
Total %	5.1	10.8	21.8	37.6	0.7	15.8	9.9	26.4	2.4	15.2	0.2	17.7	12	5.4	0.8	18.3	

	Red Hill Avenue Southbound				MacArthur Boulevard Westbound				Red Hill Avenue Northbound				MacArthur Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	72	145	241	458	8	166	116	290	30	190	**4**	224	139	67	7	213	1185
05:00 PM	69	**166**	**308**	**543**	**14**	231	153	398	**34**	208	1	243	135	**76**	**13**	224	**1408**
05:15 PM	**78**	146	254	478	11	**248**	**163**	**422**	27	**221**	2	**250**	117	65	12	194	1344
05:30 PM	67	137	239	443	6	173	142	321	34	190	3	227	**206**	67	10	**283**	1274
Total Volume	286	594	1042	1922	39	818	574	1431	125	809	10	944	597	275	42	914	5211
% App. Total	14.9	30.9	54.2		2.7	57.2	40.1		13.2	85.7	1.1		65.3	30.1	4.6		
PHF	.917	.895	.846	.885	.696	.825	.880	.848	.919	.915	.625	.944	.725	.905	.808	.807	.925

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City of Irvine
N/S: Red Hill Avenue
E/W: MacArthur Boulevard
Weather: Clear

File Name : 101_IRV_Red Hill_MacArthur PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	57	138	**345**	540	**14**	231	153	398	30	190	**4**	224	135	**76**	**13**	224
+15 mins.	72	145	241	458	11	**248**	**163**	**422**	**34**	208	1	243	117	65	12	194
+30 mins.	69	**166**	308	**543**	6	173	142	321	27	**221**	2	**250**	**206**	67	10	**283**
+45 mins.	**78**	146	254	478	4	216	118	338	34	190	3	227	181	74	10	265
Total Volume	276	595	1148	2019	35	868	576	1479	125	809	10	944	639	282	45	966
% App. Total	13.7	29.5	56.9		2.4	58.7	38.9		13.2	85.7	1.1		66.1	29.2	4.7	
PHF	.885	.896	.832	.930	.625	.875	.883	.876	.919	.915	.625	.944	.775	.928	.865	.853

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City of Irvine
N/S: Red Hill Avenue
E/W: Main Street
Weather: Clear

File Name : 102_IRV_Red Hill_Main_AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

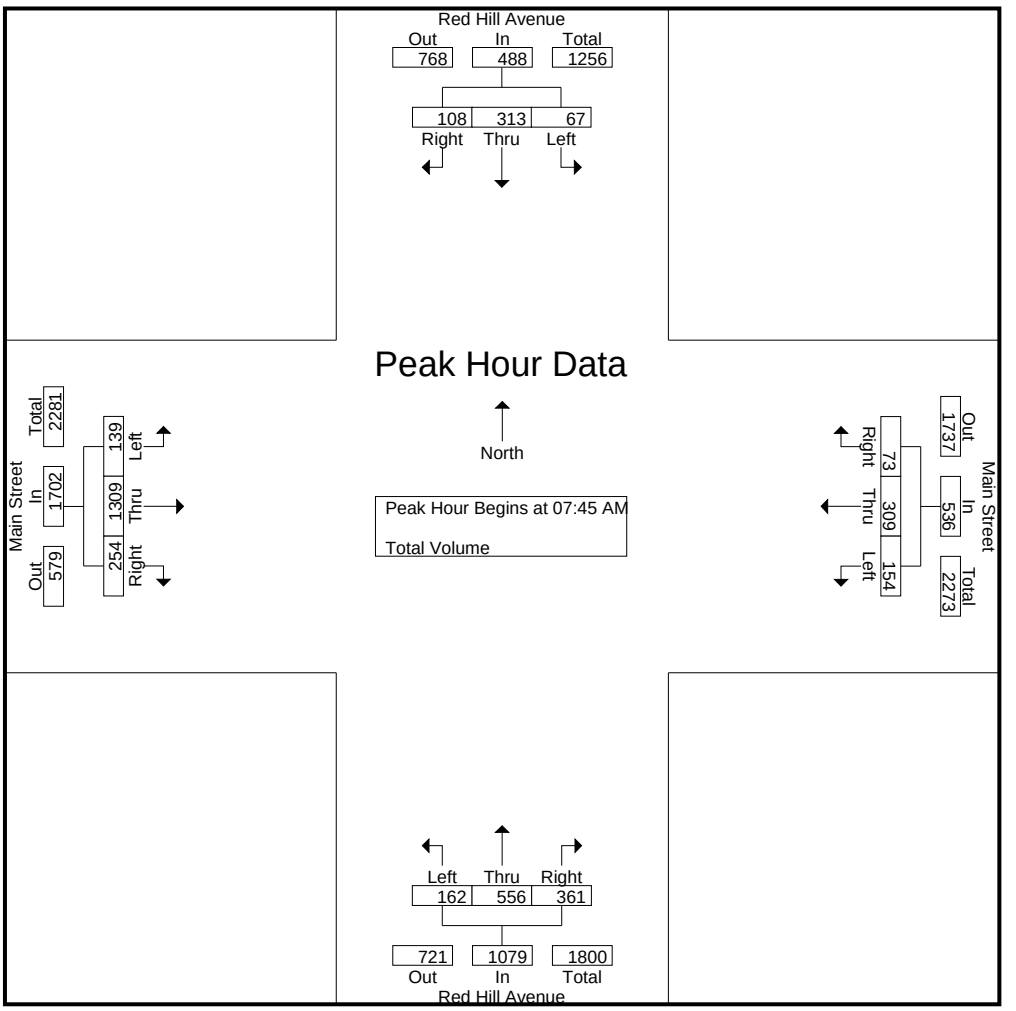
	Red Hill Avenue Southbound				Main Street Westbound				Red Hill Avenue Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	15	44	4	63	18	51	12	81	12	73	46	131	13	157	38	208	483
07:15 AM	11	40	12	63	26	54	19	99	25	113	55	193	25	234	51	310	665
07:30 AM	10	53	20	83	30	60	15	105	30	140	80	250	20	325	53	398	836
07:45 AM	19	76	26	121	41	67	20	128	35	151	82	268	30	374	76	480	997
Total	55	213	62	330	115	232	66	413	102	477	263	842	88	1090	218	1396	2981
08:00 AM	16	86	25	127	37	79	24	140	37	166	97	300	49	358	56	463	1030
08:15 AM	13	71	32	116	48	74	16	138	49	120	92	261	27	306	67	400	915
08:30 AM	19	80	25	124	28	89	13	130	41	119	90	250	33	271	55	359	863
08:45 AM	14	75	37	126	29	77	14	120	38	134	82	254	27	255	61	343	843
Total	62	312	119	493	142	319	67	528	165	539	361	1065	136	1190	239	1565	3651
Grand Total	117	525	181	823	257	551	133	941	267	1016	624	1907	224	2280	457	2961	6632
Apprch %	14.2	63.8	22		27.3	58.6	14.1		14	53.3	32.7		7.6	77	15.4		
Total %	1.8	7.9	2.7	12.4	3.9	8.3	2	14.2	4	15.3	9.4	28.8	3.4	34.4	6.9	44.6	

	Red Hill Avenue Southbound				Main Street Westbound				Red Hill Avenue Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**19**	76	26	121	41	67	20	128	35	151	82	268	30	**374**	**76**	**480**	997
08:00 AM	16	**86**	25	**127**	37	79	**24**	**140**	37	**166**	**97**	**300**	**49**	358	56	463	**1030**
08:15 AM	13	71	**32**	116	**48**	74	16	138	**49**	120	92	261	27	306	67	400	915
08:30 AM	19	80	25	124	28	**89**	13	130	41	119	90	250	33	271	55	359	863
Total Volume	67	313	108	488	154	309	73	536	162	556	361	1079	139	1309	254	1702	3805
% App. Total	13.7	64.1	22.1		28.7	57.6	13.6		15	51.5	33.5		8.2	76.9	14.9		
PHF	.882	.910	.844	.961	.802	.868	.760	.957	.827	.837	.930	.899	.709	.875	.836	.886	.924

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City of Irvine
N/S: Red Hill Avenue
E/W: Main Street
Weather: Clear

File Name : 102_IRV_Red Hill_Main_AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:30 AM				07:30 AM			
+0 mins.	16	**86**	25	**127**	41	67	20	128	30	140	80	250	20	325	53	398
+15 mins.	13	71	32	116	37	79	**24**	**140**	35	151	82	268	30	**374**	**76**	**480**
+30 mins.	**19**	80	25	124	**48**	74	16	138	37	**166**	**97**	**300**	**49**	358	56	463
+45 mins.	14	75	**37**	126	28	**89**	13	130	**49**	120	92	261	27	306	67	400
Total Volume	62	312	119	493	154	309	73	536	151	577	351	1079	126	1363	252	1741
% App. Total	12.6	63.3	24.1		28.7	57.6	13.6		14	53.5	32.5		7.2	78.3	14.5	
PHF	.816	.907	.804	.970	.802	.868	.760	.957	.770	.869	.905	.899	.643	.911	.829	.907

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City of Irvine
N/S: Red Hill Avenue
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Weather: Clear

File Name : 102_IRV_Red Hill_Main_PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

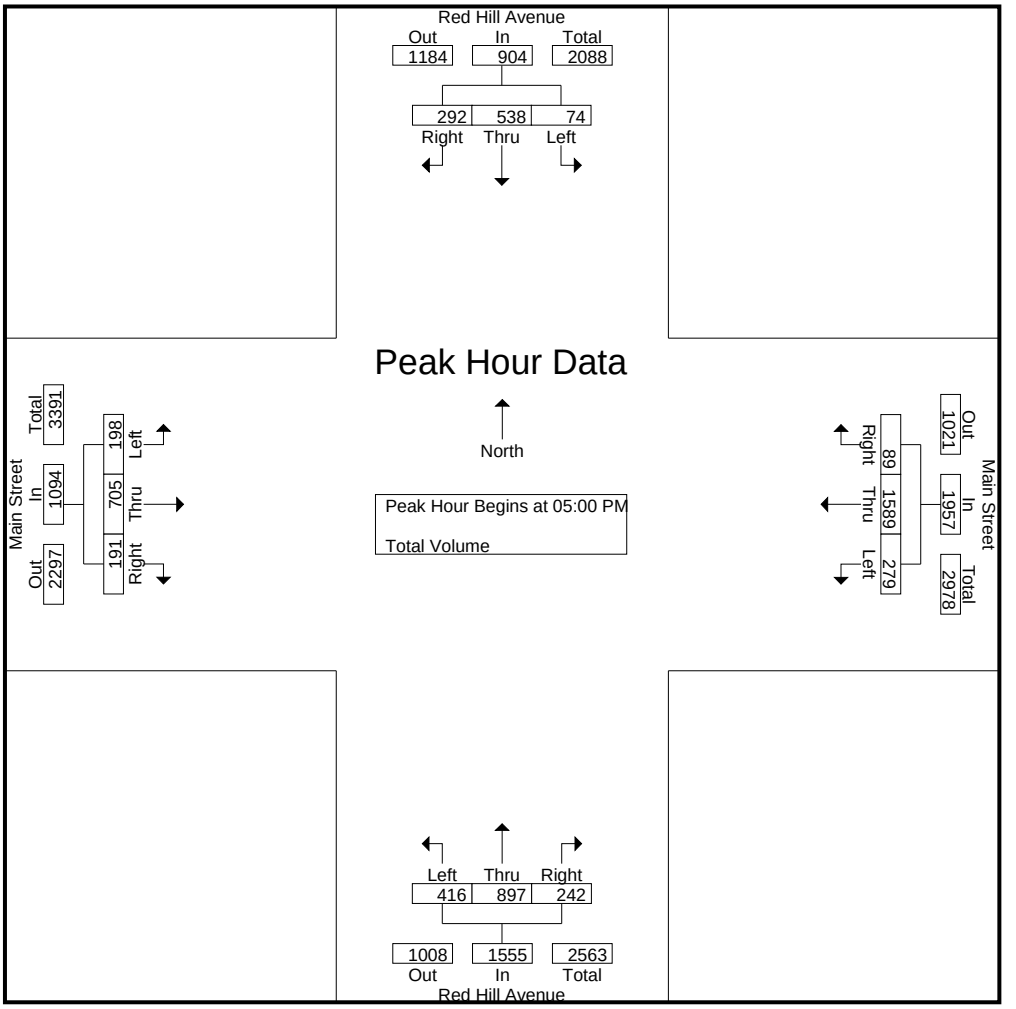
	Red Hill Avenue Southbound				Main Street Westbound				Red Hill Avenue Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	12	88	33	133	58	294	20	372	56	164	57	277	26	141	27	194	976
04:15 PM	23	90	47	160	53	364	17	434	81	220	45	346	39	126	26	191	1131
04:30 PM	26	124	53	203	60	267	16	343	91	236	60	387	44	138	46	228	1161
04:45 PM	26	133	61	220	63	362	27	452	85	232	62	379	45	136	37	218	1269
Total	87	435	194	716	234	1287	80	1601	313	852	224	1389	154	541	136	831	4537
05:00 PM	22	135	75	232	81	382	18	481	93	238	75	406	49	145	42	236	1355
05:15 PM	24	133	86	243	74	468	22	564	109	243	63	415	55	183	53	291	1513
05:30 PM	13	142	71	226	58	377	24	459	118	223	51	392	44	206	45	295	1372
05:45 PM	15	128	60	203	66	362	25	453	96	193	53	342	50	171	51	272	1270
Total	74	538	292	904	279	1589	89	1957	416	897	242	1555	198	705	191	1094	5510
Grand Total	161	973	486	1620	513	2876	169	3558	729	1749	466	2944	352	1246	327	1925	10047
Apprch %	9.9	60.1	30		14.4	80.8	4.7		24.8	59.4	15.8		18.3	64.7	17		
Total %	1.6	9.7	4.8	16.1	5.1	28.6	1.7	35.4	7.3	17.4	4.6	29.3	3.5	12.4	3.3	19.2	

	Red Hill Avenue Southbound				Main Street Westbound				Red Hill Avenue Northbound				Main Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	22	135	75	232	**81**	382	18	481	93	238	**75**	406	49	145	42	236	1355
05:15 PM	**24**	133	**86**	**243**	74	**468**	22	**564**	109	**243**	63	**415**	**55**	183	**53**	291	**1513**
05:30 PM	13	**142**	71	226	58	377	24	459	**118**	223	51	392	44	**206**	45	**295**	1372
05:45 PM	15	128	60	203	66	362	**25**	453	96	193	53	342	50	171	51	272	1270
Total Volume	74	538	292	904	279	1589	89	1957	416	897	242	1555	198	705	191	1094	5510
% App. Total	8.2	59.5	32.3		14.3	81.2	4.5		26.8	57.7	15.6		18.1	64.4	17.5		
PHF	.771	.947	.849	.930	.861	.849	.890	.867	.881	.923	.807	.937	.900	.856	.901	.927	.910

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City of Irvine
N/S: Red Hill Avenue
E/W: Main Street
Weather: Clear

File Name : 102_IRV_Red Hill_Main_PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	**26**	133	61	220	**81**	382	18	481	85	232	62	379	49	145	42	236
+15 mins.	22	135	75	232	74	**468**	22	**564**	93	238	**75**	406	**55**	183	**53**	291
+30 mins.	24	133	**86**	**243**	58	377	24	459	109	**243**	63	**415**	44	**206**	45	**295**
+45 mins.	13	**142**	71	226	66	362	**25**	453	**118**	223	51	392	50	171	51	272
Total Volume	85	543	293	921	279	1589	89	1957	405	936	251	1592	198	705	191	1094
% App. Total	9.2	59	31.8		14.3	81.2	4.5		25.4	58.8	15.8		18.1	64.4	17.5	
PHF	.817	.956	.852	.948	.861	.849	.890	.867	.858	.963	.837	.959	.900	.856	.901	.927

INTERSECTION TURNING MOVEMENT COUNTS

T816

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Feb 16, 17

LOCATION: Santa Ana
NORTH & SOUTH: I-5 SB Ramps
EAST & WEST: Santa Ana

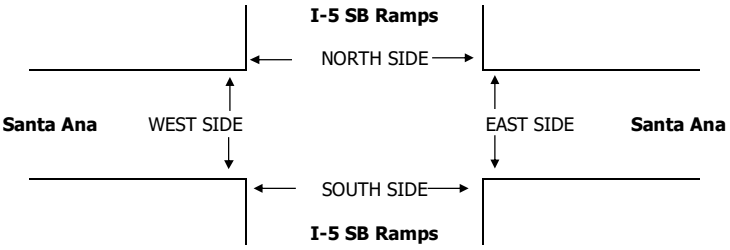
PROJECT #: SC1220
LOCATION #: 1
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

Add U-Turns to Left Turns

		NORTHBOUND (I-5 SB Ramps)			SOUTHBOUND (I-5 SB Ramps)			EASTBOUND (Santa Ana)			WESTBOUND (Santa Ana)				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 2	ST X	SR 1	EL 2	ET 3	ER X	WL X	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	76	0	7	50	100	0	0	190	81	504	0	0	0	0	0
	7:15 AM	0	0	0	87	0	8	65	145	0	0	226	79	610	0	0	0	0	0
	7:30 AM	0	0	0	79	0	10	85	138	0	0	327	60	699	0	0	1	0	1
	7:45 AM	0	0	0	101	0	7	84	123	0	0	329	88	732	0	0	0	0	0
	8:00 AM	0	0	0	89	0	9	79	131	0	0	214	93	615	0	0	0	0	0
	8:15 AM	0	0	0	67	0	12	39	114	0	0	188	79	499	0	0	0	0	0
	8:30 AM	0	0	0	66	0	14	43	75	0	0	174	54	426	0	0	0	0	0
	8:45 AM	0	0	0	105	0	10	27	81	0	0	203	46	472	0	0	0	0	0
	VOLUMES	0	0	0	670	0	77	472	907	0	0	1,851	580	4,557	0	0	1	0	1
	APPROACH %	0%	0%	0%	90%	0%	10%	34%	66%	0%	0%	76%	24%						
	APP/DEPART	0	/	1,051	747	/	0	1,379	/	1,577	2,431	/	1,929	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	0	0	0	356	0	34	313	537	0	0	1,096	320	2,656					
	APPROACH %	0%	0%	0%	91%	0%	9%	37%	63%	0%	0%	77%	23%						
	PEAK HR FACTOR		0.000			0.903			0.953			0.849		0.907					
	APP/DEPART	0	/	632	390	/	0	850	/	893	1,416	/	1,131	0					
PM	4:00 PM	0	0	0	54	0	27	123	138	0	0	128	33	503	0	0	0	0	0
	4:15 PM	0	0	0	67	0	24	78	100	0	0	159	28	456	0	0	0	0	0
	4:30 PM	0	0	0	76	0	14	140	152	0	0	167	39	588	0	0	0	0	0
	4:45 PM	0	0	0	72	0	15	121	147	0	0	156	49	560	0	0	0	0	0
	5:00 PM	0	0	0	66	0	8	146	190	0	0	150	54	614	0	0	0	0	0
	5:15 PM	0	0	0	55	0	22	137	126	0	0	175	35	550	0	0	1	0	1
	5:30 PM	0	0	0	64	0	16	122	131	0	0	141	41	515	0	0	0	0	0
	5:45 PM	0	0	0	63	0	20	102	112	0	0	135	33	465	0	0	0	0	0
	VOLUMES	0	0	0	517	0	146	969	1,096	0	0	1,211	312	4,251	0	0	1	0	1
	APPROACH %	0%	0%	0%	78%	0%	22%	47%	53%	0%	0%	80%	20%						
	APP/DEPART	0	/	1,280	663	/	0	2,065	/	1,613	1,523	/	1,358	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	0	0	0	269	0	59	544	615	0	0	648	177	2,312					
	APPROACH %	0%	0%	0%	82%	0%	18%	47%	53%	0%	0%	79%	21%						
	PEAK HR FACTOR		0.000			0.911			0.862			0.982		0.941					
	APP/DEPART	0	/	720	328	/	0	1,159	/	884	825	/	708	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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City of Tustin
N/S: Tustin Ranch Road
E/W: Warner Avenue
Weather: Clear

File Name : 104_TUS_Tustin Ranch_Warner AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

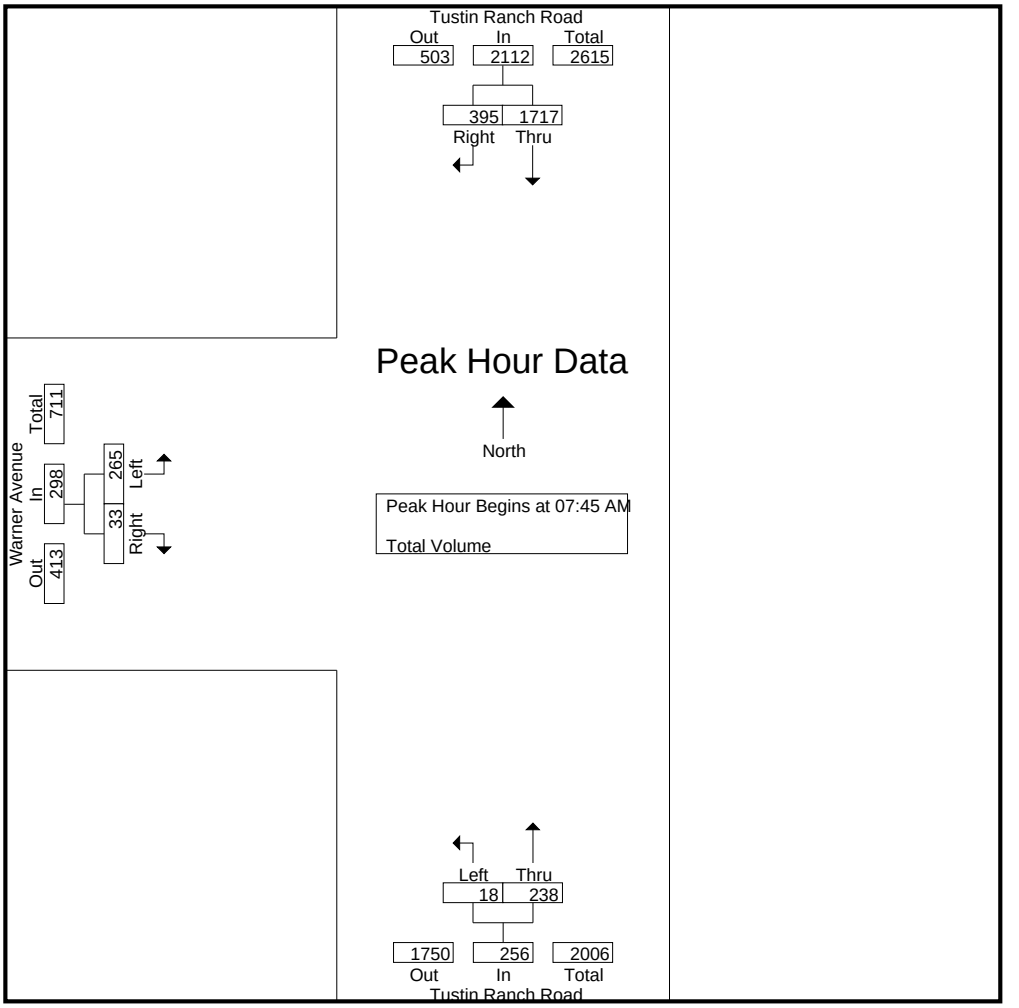
	Tustin Ranch Road Southbound			Tustin Ranch Road Northbound			Warner Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	140	44	184	2	46	48	57	6	63	295
07:15 AM	285	70	355	1	43	44	59	6	65	464
07:30 AM	308	80	388	4	56	60	80	5	85	533
07:45 AM	443	116	559	2	49	51	67	12	79	689
Total	1176	310	1486	9	194	203	263	29	292	1981
08:00 AM	396	82	478	2	58	60	83	14	97	635
08:15 AM	453	106	559	9	66	75	57	1	58	692
08:30 AM	425	91	516	5	65	70	58	6	64	650
08:45 AM	389	99	488	1	74	75	52	4	56	619
Total	1663	378	2041	17	263	280	250	25	275	2596
Grand Total	2839	688	3527	26	457	483	513	54	567	4577
Apprch %	80.5	19.5		5.4	94.6		90.5	9.5		
Total %	62	15	77.1	0.6	10	10.6	11.2	1.2	12.4	

	Tustin Ranch Road Southbound			Tustin Ranch Road Northbound			Warner Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	443	**116**	**559**	2	49	51	67	12	79	689
08:00 AM	396	82	478	2	58	60	**83**	**14**	**97**	635
08:15 AM	**453**	106	559	**9**	**66**	**75**	57	1	58	**692**
08:30 AM	425	91	516	5	65	70	58	6	64	650
Total Volume	1717	395	2112	18	238	256	265	33	298	2666
% App. Total	81.3	18.7		7	93		88.9	11.1		
PHF	.948	.851	.945	.500	.902	.853	.798	.589	.768	.963

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City of Tustin
N/S: Tustin Ranch Road
E/W: Warner Avenue
Weather: Clear

File Name : 104_TUS_Tustin Ranch_Warner AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			08:00 AM			07:15 AM		
+0 mins.	443	**116**	**559**	2	58	60	59	6	65
+15 mins.	396	82	478	**9**	66	**75**	80	5	85
+30 mins.	**453**	106	559	5	65	70	67	12	79
+45 mins.	425	91	516	1	**74**	75	**83**	**14**	**97**
Total Volume	1717	395	2112	17	263	280	289	37	326
% App. Total	81.3	18.7		6.1	93.9		88.7	11.3	
PHF	.948	.851	.945	.472	.889	.933	.870	.661	.840

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City of Tustin
N/S: Tustin Ranch Road
E/W: Warner Avenue
Weather: Clear

File Name : 104_TUS_Tustin Ranch_Warner PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

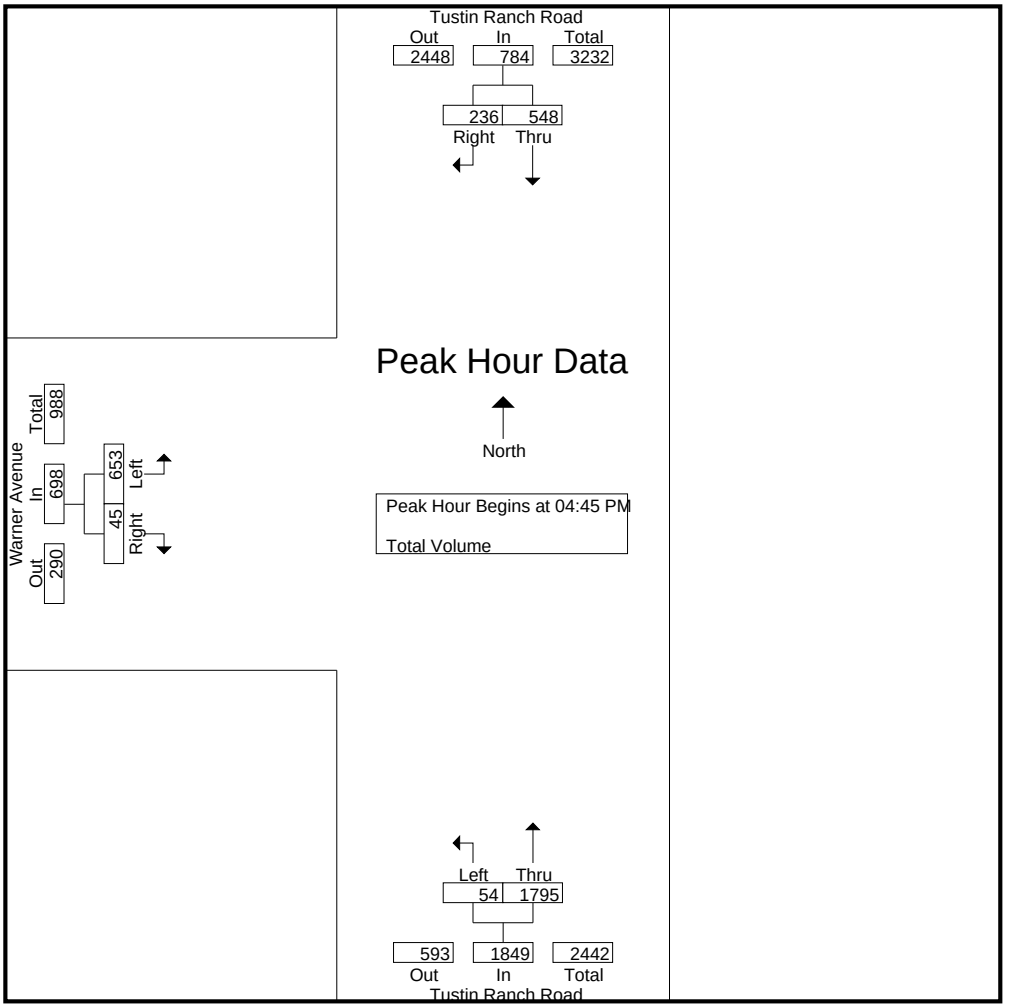
	Tustin Ranch Road Southbound			Tustin Ranch Road Northbound			Warner Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	99	49	148	11	351	362	100	7	107	617
04:15 PM	104	52	156	10	369	379	107	10	117	652
04:30 PM	117	55	172	18	376	394	106	9	115	681
04:45 PM	121	50	171	8	401	409	135	10	145	725
Total	441	206	647	47	1497	1544	448	36	484	2675
05:00 PM	141	63	204	19	466	485	166	12	178	867
05:15 PM	145	67	212	15	450	465	178	16	194	871
05:30 PM	141	56	197	12	478	490	174	7	181	868
05:45 PM	113	49	162	11	384	395	141	11	152	709
Total	540	235	775	57	1778	1835	659	46	705	3315
Grand Total	981	441	1422	104	3275	3379	1107	82	1189	5990
Apprch %	69	31		3.1	96.9		93.1	6.9		
Total %	16.4	7.4	23.7	1.7	54.7	56.4	18.5	1.4	19.8	

	Tustin Ranch Road Southbound			Tustin Ranch Road Northbound			Warner Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	121	50	171	8	401	409	135	10	145	725
05:00 PM	141	63	204	**19**	466	485	166	12	178	867
05:15 PM	**145**	**67**	**212**	15	450	465	**178**	**16**	**194**	**871**
05:30 PM	141	56	197	12	**478**	**490**	174	7	181	868
Total Volume	548	236	784	54	1795	1849	653	45	698	3331
% App. Total	69.9	30.1		2.9	97.1		93.6	6.4		
PHF	.945	.881	.925	.711	.939	.943	.917	.703	.899	.956

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City of Tustin
N/S: Tustin Ranch Road
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Weather: Clear

File Name : 104_TUS_Tustin Ranch_Warner PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			05:00 PM		
+0 mins.	121	50	171	8	401	409	166	12	178
+15 mins.	141	63	204	**19**	466	485	**178**	**16**	**194**
+30 mins.	**145**	**67**	**212**	15	450	465	174	7	181
+45 mins.	141	56	197	12	**478**	**490**	141	11	152
Total Volume	548	236	784	54	1795	1849	659	46	705
% App. Total	69.9	30.1		2.9	97.1		93.5	6.5	
PHF	.945	.881	.925	.711	.939	.943	.926	.719	.909

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City of Irvine
N/S: Tustin Ranch Rd/Von Karman Ave
E/W: Barranca Parkway
Weather: Clear

File Name : 105_IRV_Von Karman_Barranca AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

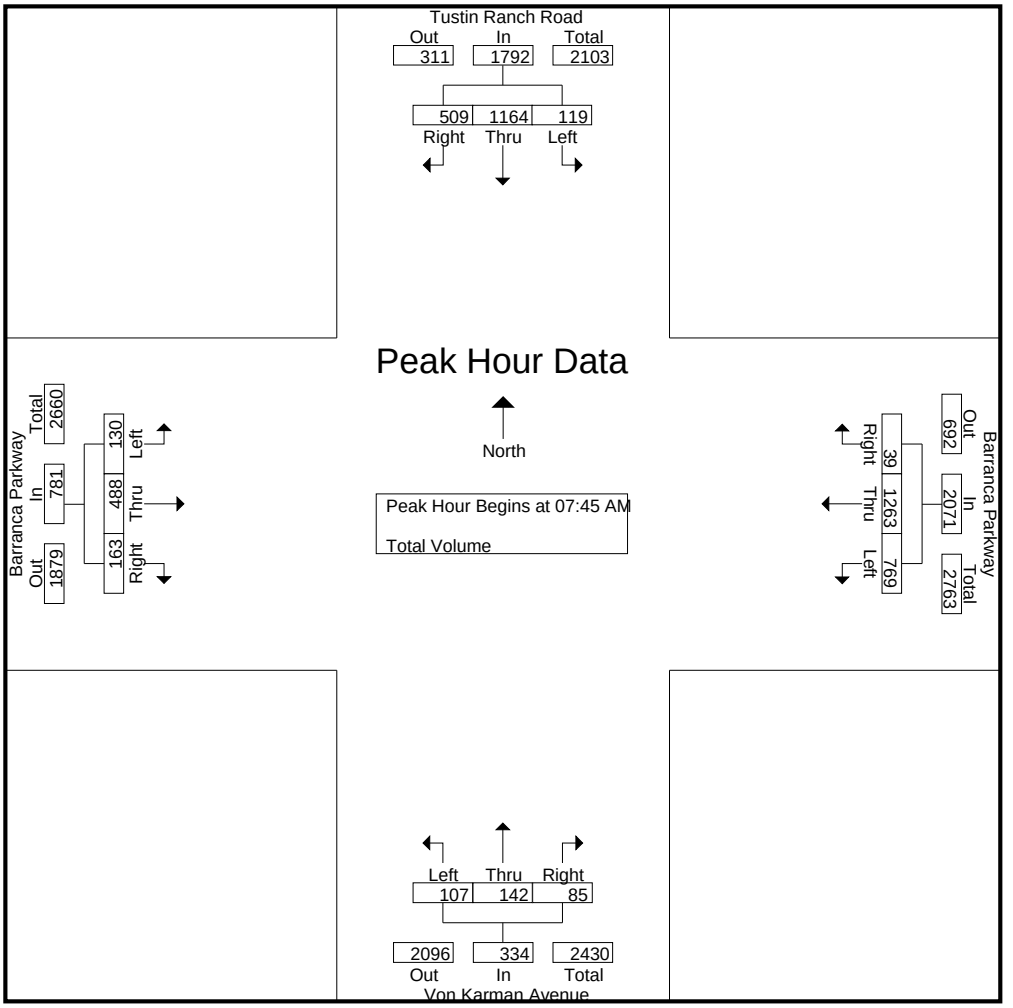
	Tustin Ranch Road Southbound				Barranca Parkway Westbound				Von Karman Avenue Northbound				Barranca Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	117	38	160	81	170	11	262	17	26	17	60	17	103	35	155	637
07:15 AM	13	212	80	305	134	202	11	347	22	19	9	50	19	119	37	175	877
07:30 AM	38	258	99	395	140	264	13	417	26	29	18	73	25	101	45	171	1056
07:45 AM	30	280	118	428	186	361	8	555	21	29	16	66	30	120	51	201	1250
Total	86	867	335	1288	541	997	43	1581	86	103	60	249	91	443	168	702	3820
08:00 AM	23	301	119	443	175	290	12	477	24	36	28	88	38	115	31	184	1192
08:15 AM	44	294	141	479	192	312	10	514	34	36	22	92	32	127	35	194	1279
08:30 AM	22	289	131	442	216	300	9	525	28	41	19	88	30	126	46	202	1257
08:45 AM	30	269	134	433	156	291	17	464	28	44	23	95	49	90	44	183	1175
Total	119	1153	525	1797	739	1193	48	1980	114	157	92	363	149	458	156	763	4903
Grand Total	205	2020	860	3085	1280	2190	91	3561	200	260	152	612	240	901	324	1465	8723
Apprch %	6.6	65.5	27.9		35.9	61.5	2.6		32.7	42.5	24.8		16.4	61.5	22.1		
Total %	2.4	23.2	9.9	35.4	14.7	25.1	1	40.8	2.3	3	1.7	7	2.8	10.3	3.7	16.8	

	Tustin Ranch Road Southbound				Barranca Parkway Westbound				Von Karman Avenue Northbound				Barranca Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	30	280	118	428	186	**361**	8	**555**	21	29	16	66	30	120	**51**	201	1250
08:00 AM	23	**301**	119	443	175	290	**12**	477	24	36	**28**	88	**38**	115	31	184	1192
08:15 AM	**44**	294	**141**	**479**	192	312	10	514	**34**	36	22	**92**	32	**127**	35	194	**1279**
08:30 AM	22	289	131	442	**216**	300	9	525	28	**41**	19	88	30	126	46	**202**	1257
Total Volume	119	1164	509	1792	769	1263	39	2071	107	142	85	334	130	488	163	781	4978
% App. Total	6.6	65	28.4		37.1	61	1.9		32	42.5	25.4		16.6	62.5	20.9		
PHF	.676	.967	.902	.935	.890	.875	.813	.933	.787	.866	.759	.908	.855	.961	.799	.967	.973

Counts Unlimited
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City of Irvine
N/S: Tustin Ranch Rd/Von Karman Ave
E/W: Barranca Parkway
Weather: Clear

File Name : 105_IRV_Von Karman_Barranca AM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				08:00 AM				07:45 AM			
+0 mins.	23	**301**	119	443	186	**361**	8	**555**	24	36	**28**	88	30	120	**51**	201
+15 mins.	**44**	294	**141**	**479**	175	290	**12**	477	**34**	36	22	92	**38**	115	31	184
+30 mins.	22	289	131	442	192	312	10	514	28	41	19	88	32	**127**	35	194
+45 mins.	30	269	134	433	**216**	300	9	525	28	**44**	23	**95**	30	126	46	**202**
Total Volume	119	1153	525	1797	769	1263	39	2071	114	157	92	363	130	488	163	781
% App. Total	6.6	64.2	29.2		37.1	61	1.9		31.4	43.3	25.3		16.6	62.5	20.9	
PHF	.676	.958	.931	.938	.890	.875	.813	.933	.838	.892	.821	.955	.855	.961	.799	.967

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City of Irvine
N/S: Tustin Ranch Rd/Von Karman Ave
E/W: Barranca Parkway
Weather: Clear

File Name : 105_IRV_Von Karman_Barranca PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 1

Groups Printed- Total Volume

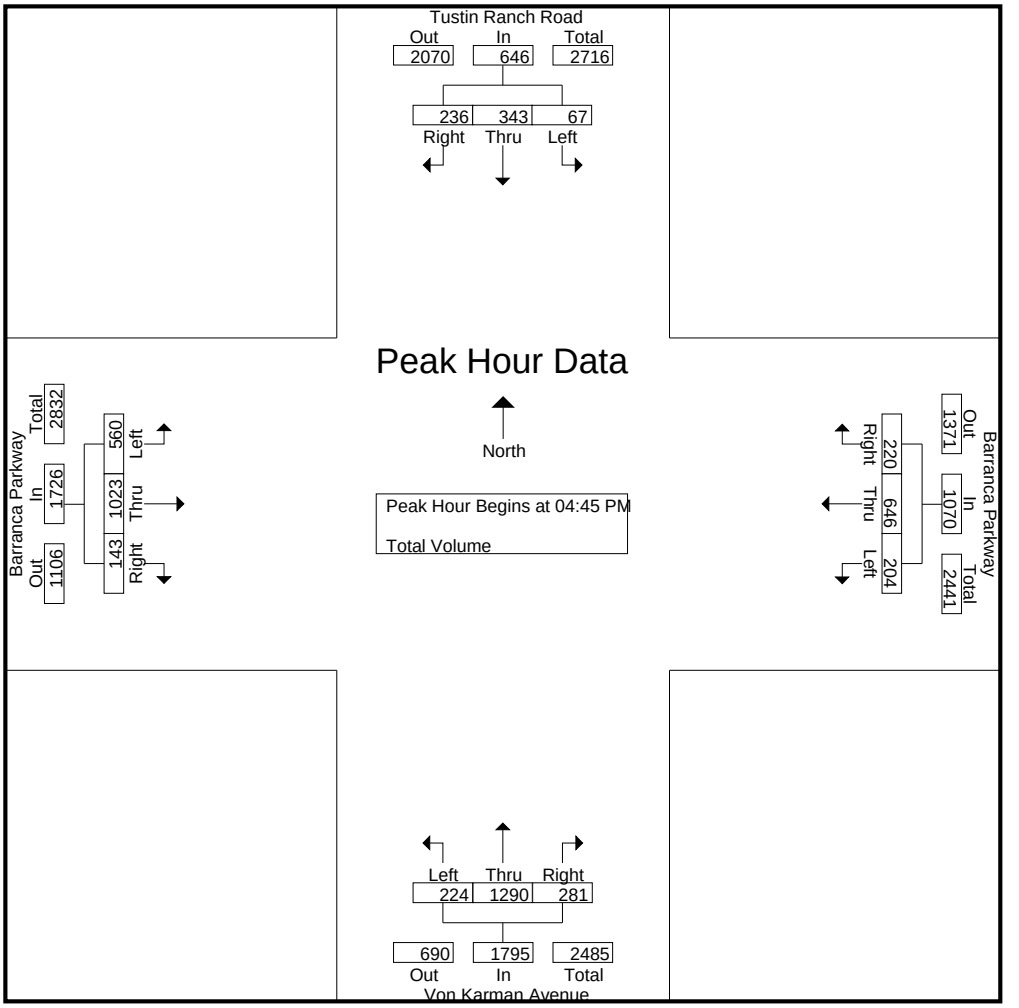
	Tustin Ranch Road Southbound				Barranca Parkway Westbound				Von Karman Avenue Northbound				Barranca Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	13	71	53	137	67	171	56	294	71	229	53	353	85	197	19	301	1085
04:15 PM	9	77	62	148	36	125	41	202	38	277	63	378	137	214	27	378	1106
04:30 PM	14	59	48	121	53	157	59	269	83	257	68	408	99	207	23	329	1127
04:45 PM	14	88	59	161	37	149	47	233	48	328	78	454	119	221	30	370	1218
Total	50	295	222	567	193	602	203	998	240	1091	262	1593	440	839	99	1378	4536
05:00 PM	17	74	51	142	53	168	58	279	71	311	81	463	123	284	29	436	1320
05:15 PM	16	103	64	183	54	136	53	243	43	332	64	439	168	285	50	503	1368
05:30 PM	20	78	62	160	60	193	62	315	62	319	58	439	150	233	34	417	1331
05:45 PM	15	96	55	166	56	147	41	244	47	294	50	391	115	243	33	391	1192
Total	68	351	232	651	223	644	214	1081	223	1256	253	1732	556	1045	146	1747	5211
Grand Total	118	646	454	1218	416	1246	417	2079	463	2347	515	3325	996	1884	245	3125	9747
Apprch %	9.7	53	37.3		20	59.9	20.1		13.9	70.6	15.5		31.9	60.3	7.8		
Total %	1.2	6.6	4.7	12.5	4.3	12.8	4.3	21.3	4.8	24.1	5.3	34.1	10.2	19.3	2.5	32.1	

	Tustin Ranch Road Southbound				Barranca Parkway Westbound				Von Karman Avenue Northbound				Barranca Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	14	88	59	161	37	149	47	233	48	328	78	454	119	221	30	370	1218
05:00 PM	17	74	51	142	53	168	58	279	**71**	311	**81**	**463**	123	284	29	436	1320
05:15 PM	16	**103**	**64**	**183**	54	136	53	243	43	**332**	64	439	**168**	**285**	**50**	**503**	**1368**
05:30 PM	**20**	78	62	160	**60**	**193**	**62**	**315**	62	319	58	439	150	233	34	417	1331
Total Volume	67	343	236	646	204	646	220	1070	224	1290	281	1795	560	1023	143	1726	5237
% App. Total	10.4	53.1	36.5		19.1	60.4	20.6		12.5	71.9	15.7		32.4	59.3	8.3		
PHF	.838	.833	.922	.883	.850	.837	.887	.849	.789	.971	.867	.969	.833	.897	.715	.858	.957

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City of Irvine
N/S: Tustin Ranch Rd/Von Karman Ave
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File Name : 105_IRV_Von Karman_Barranca PM
Site Code : 20220171
Start Date : 3/12/2020
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	17	74	51	142	53	168	58	279	48	328	78	454	123	284	29	436
+15 mins.	16	**103**	**64**	**183**	54	136	53	243	**71**	311	**81**	**463**	**168**	**285**	**50**	**503**
+30 mins.	**20**	78	62	160	**60**	**193**	**62**	**315**	43	**332**	64	439	150	233	34	417
+45 mins.	15	96	55	166	56	147	41	244	62	319	58	439	115	243	33	391
Total Volume	68	351	232	651	223	644	214	1081	224	1290	281	1795	556	1045	146	1747
% App. Total	10.4	53.9	35.6		20.6	59.6	19.8		12.5	71.9	15.7		31.8	59.8	8.4	
PHF	.850	.852	.906	.889	.929	.834	.863	.858	.789	.971	.867	.969	.827	.917	.730	.868

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 21, 19

LOCATION: Tustin
NORTH & SOUTH: Red Hill
EAST & WEST: El Camino Real

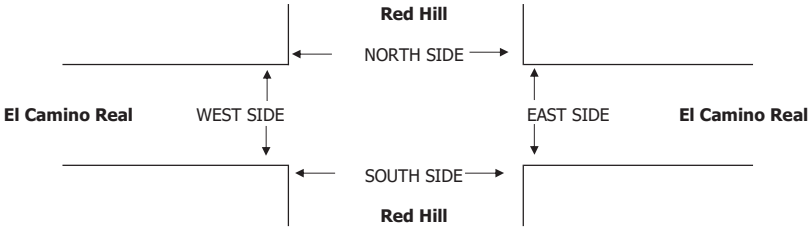
PROJECT #: SC2143
LOCATION #: 7
CONTROL: SIGNAL

NOTES: Queue AM SB, PM NB/SB

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☒ Add U-Turns to Left Turns

		NORTHBOUND Red Hill			SOUTHBOUND Red Hill			EASTBOUND El Camino Real			WESTBOUND El Camino Real				U-TURNS				
	LANES:	NL 2	NT 3	NR 1	SL 1	ST 3	SR 0	EL 1	ET 1	ER 1	WL 1	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	55	107	23	4	208	10	16	20	43	54	18	1	559	0	1	0	0	1
	7:15 AM	85	195	51	1	287	20	15	30	44	67	32	2	829	0	0	0	0	0
	7:30 AM	108	203	98	8	294	30	29	50	40	70	83	2	1,015	0	1	0	0	1
	7:45 AM	70	197	69	5	388	11	17	46	45	69	70	5	992	2	0	0	0	2
	8:00 AM	39	182	32	3	321	18	7	28	33	62	34	6	765	0	0	0	0	0
	8:15 AM	47	135	29	5	313	15	7	26	43	56	31	2	709	0	0	0	0	0
	8:30 AM	43	126	11	4	269	8	5	17	41	47	19	2	592	0	0	0	0	0
	8:45 AM	52	123	20	4	220	15	5	15	38	37	24	2	555	0	0	0	0	0
	VOLUMES	499	1,268	333	34	2,300	127	101	232	327	462	311	22	6,016	2	2	0	0	4
	APPROACH %	24%	60%	16%	1%	93%	5%	15%	35%	50%	58%	39%	3%						
	APP/DEPART	2,100	/	1,393	2,461	/	3,091	660	/	597	795	/	935	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	302	777	250	17	1,290	79	68	154	162	268	219	15	3,601					
	APPROACH %	23%	58%	19%	1%	93%	6%	18%	40%	42%	53%	44%	3%						
	PEAK HR FACTOR		0.812			0.858			0.807			0.810		0.887					
	APP/DEPART	1,329	/	861	1,386	/	1,722	384	/	420	502	/	598	0					
PM	4:00 PM	77	251	66	2	149	29	17	37	51	71	72	10	832	0	1	0	0	1
	4:15 PM	66	277	53	7	174	22	14	26	45	57	92	2	835	0	1	0	0	1
	4:30 PM	98	281	52	5	173	34	17	31	39	40	91	10	871	1	0	0	0	1
	4:45 PM	79	292	54	4	155	28	19	23	42	50	100	7	853	0	0	0	0	0
	5:00 PM	93	299	59	8	169	14	13	37	50	46	91	12	891	1	0	0	0	1
	5:15 PM	99	327	52	5	207	29	25	34	50	56	69	7	960	1	0	0	0	1
	5:30 PM	107	337	65	2	178	17	14	45	52	45	82	10	954	0	1	0	0	1
	5:45 PM	111	338	63	4	166	35	17	35	47	50	83	8	957	1	0	0	0	1
	VOLUMES	730	2,402	464	37	1,371	208	136	268	376	415	680	66	7,153	4	3	0	0	7
	APPROACH %	20%	67%	13%	2%	85%	13%	17%	34%	48%	36%	59%	6%						
	APP/DEPART	3,596	/	2,607	1,616	/	2,166	780	/	766	1,161	/	1,614	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	410	1,301	239	19	720	95	69	151	199	197	325	37	3,762					
	APPROACH %	21%	67%	12%	2%	86%	11%	16%	36%	47%	35%	58%	7%						
	PEAK HR FACTOR		0.952			0.865			0.944			0.938		0.980					
	APP/DEPART	1,950	/	1,408	834	/	1,119	419	/	408	559	/	827	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	3	0	7	6	16	3	0	7	4	14	0	0	0	2	2
	7:15 AM	29	0	35	13	77	29	0	34	13	76	0	0	1	0	1
	7:30 AM	67	0	30	25	122	64	0	30	24	118	3	0	0	1	4
	7:45 AM	16	0	7	6	29	16	0	7	6	29	0	0	0	0	0
	8:00 AM	6	0	2	3	11	5	0	2	2	9	1	0	0	1	2
	8:15 AM	1	0	2	2	5	1	0	1	1	3	0	0	1	1	2
	8:30 AM	7	0	2	3	12	7	0	2	3	12	0	0	0	0	0
	8:45 AM	3	0	2	3	8	2	0	1	2	5	1	0	1	1	3
	TOTAL	132	0	87	61	280	127	0	84	55	266	5	0	3	6	14
	AM BEGIN PEAK HR			7:15 AM			114	0	73	45	232					
PM	4:00 PM	21	0	16	4	41	18	0	16	4	38	3	0	0	0	3
	4:15 PM	14	0	14	12	40	14	0	13	12	39	0	0	1	0	1
	4:30 PM	12	0	10	9	31	10	0	10	8	28	2	0	0	1	3
	4:45 PM	6	0	4	9	19	4	0	4	8	16	2	0	0	1	3
	5:00 PM	6	0	4	7	17	4	0	4	5	13	2	0	0	2	4
	5:15 PM	12	0	8	1	21	10	0	8	1	19	2	0	0	0	2
	5:30 PM	13	0	6	7	26	13	0	6	7	26	0	0	0	0	0
	5:45 PM	4	0	8	5	17	1	0	5	3	9	3	0	3	2	8
	TOTAL	88	0	70	54	212	74	0	66	48	188	14	0	4	6	24
	PM BEGIN PEAK HR			5:00 PM			28	0	23	16	67					

T218

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 21, 19

LOCATION: Tustin
NORTH & SOUTH: Red Hill
EAST & WEST: I-5 NB Ramps

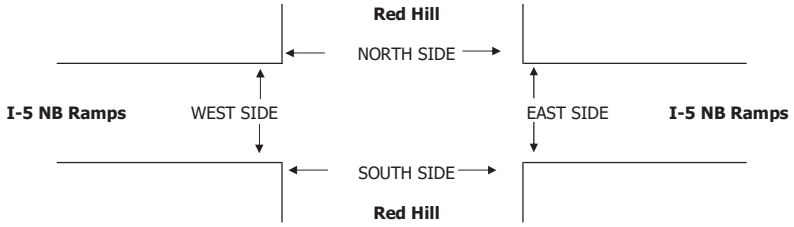
PROJECT #: SC2143
LOCATION #: 6
CONTROL: SIGNAL

NOTES:
Queue AM NB, PM NB/SB

AM / PM / MD / OTHER / OTHER — N / W / E / S

Add U-Turns to Left Turns

		NORTHBOUND Red Hill			SOUTHBOUND Red Hill			EASTBOUND I-5 NB Ramps			WESTBOUND I-5 NB Ramps				U-TURNS				
	LANES:	NL 1	NT 3	NR X	SL X	ST 3	SR 1	EL X	ET X	ER X	WL 1.5	WT 0.5	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	47	118	0	0	193	112	0	0	0	49	0	59	578	0	0	0	0	0
	7:15 AM	71	267	0	0	266	124	0	0	0	59	0	74	861	0	0	0	0	0
	7:30 AM	73	351	0	0	315	94	0	0	0	57	0	58	948	0	0	0	0	0
	7:45 AM	91	273	0	0	359	144	0	0	0	66	0	64	997	0	0	0	0	0
	8:00 AM	88	182	0	0	310	108	0	0	0	43	0	62	793	0	0	0	0	0
	8:15 AM	63	127	0	0	290	117	0	0	0	50	0	79	726	0	0	0	0	0
	8:30 AM	65	117	0	0	260	94	0	0	0	77	1	76	690	0	0	0	0	0
	8:45 AM	49	104	0	0	221	86	0	0	0	83	1	94	638	0	0	0	0	0
	VOLUMES	547	1,539	0	0	2,214	879	0	0	0	484	2	566	6,231	0	0	0	0	0
	APPROACH %	26%	74%	0%	0%	72%	28%	0%	0%	0%	46%	0%	54%						
	APP/DEPART	2,086	/	2,105	3,093	/	2,698	0	/	0	1,052	/	1,428	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	323	1,073	0	0	1,250	470	0	0	0	225	0	258	3,599					
	APPROACH %	23%	77%	0%	0%	73%	27%	0%	0%	0%	47%	0%	53%						
	PEAK HR FACTOR		0.823			0.855			0.000			0.908		0.902					
	APP/DEPART	1,396	/	1,331	1,720	/	1,475	0	/	0	483	/	793	0					
PM	4:00 PM	75	321	0	0	209	67	0	0	0	59	11	53	795	0	0	0	0	0
	4:15 PM	101	329	0	0	214	64	0	0	0	42	11	58	819	0	0	0	0	0
	4:30 PM	68	342	0	0	192	58	0	0	0	58	19	107	844	0	0	0	0	0
	4:45 PM	85	354	0	0	198	50	0	0	0	35	25	85	832	0	0	0	0	0
	5:00 PM	69	368	0	0	219	48	0	0	0	57	21	85	867	0	0	0	0	0
	5:15 PM	73	378	0	0	253	48	0	0	0	65	30	98	945	0	0	0	0	0
	5:30 PM	60	409	0	0	244	46	0	0	0	65	25	113	962	0	0	0	0	0
	5:45 PM	67	386	0	0	213	46	0	0	0	66	19	114	911	0	0	0	0	0
	VOLUMES	598	2,887	0	0	1,742	427	0	0	0	447	161	713	6,975	0	0	0	0	0
	APPROACH %	17%	83%	0%	0%	80%	20%	0%	0%	0%	34%	12%	54%						
	APP/DEPART	3,485	/	3,600	2,169	/	2,189	0	/	0	1,321	/	1,186	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	269	1,541	0	0	929	188	0	0	0	253	95	410	3,685					
	APPROACH %	15%	85%	0%	0%	83%	17%	0%	0%	0%	33%	13%	54%						
	PEAK HR FACTOR		0.965			0.928			0.000			0.933		0.958					
	APP/DEPART	1,810	/	1,951	1,117	/	1,182	0	/	0	758	/	552	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	10	4	14	0	0	10	3	13	0	0	0	1	1
	7:15 AM	0	0	33	3	36	0	0	29	3	32	0	0	4	0	4
	7:30 AM	0	0	29	24	53	0	0	26	23	49	0	0	3	1	4
	7:45 AM	0	0	7	6	13	0	0	7	6	13	0	0	0	0	0
	8:00 AM	0	0	3	5	8	0	0	3	3	6	0	0	0	2	2
	8:15 AM	0	0	4	1	5	0	0	2	0	2	0	0	2	1	3
	8:30 AM	0	0	5	0	5	0	0	4	0	4	0	0	1	0	1
	8:45 AM	0	0	2	3	5	0	0	1	2	3	0	0	1	1	2
	TOTAL	0	0	93	46	139	0	0	82	40	122	0	0	11	6	17
	AM BEGIN PEAK HR			7:15 AM			0	0	65	35	100					
PM	4:00 PM	0	0	16	3	19	0	0	15	3	18	0	0	1	0	1
	4:15 PM	0	0	10	14	24	0	0	9	14	23	0	0	1	0	1
	4:30 PM	0	0	6	1	7	0	0	6	0	6	0	0	0	1	1
	4:45 PM	0	0	7	5	12	0	0	7	3	10	0	0	0	2	2
	5:00 PM	0	0	5	12	17	0	0	5	9	14	0	0	0	3	3
	5:15 PM	0	0	4	3	7	0	0	4	3	7	0	0	0	0	0
	5:30 PM	0	0	3	4	7	0	0	3	4	7	0	0	0	0	0
	5:45 PM	0	0	10	3	13	0	0	6	1	7	0	0	4	2	6
	TOTAL	0	0	61	45	106	0	0	55	37	92	0	0	6	8	14
	PM BEGIN PEAK HR			5:00 PM			0	0	18	17	35					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 21, 19

LOCATION: Tustin
NORTH & SOUTH: Red Hill
EAST & WEST: I-5 SB Ramps

PROJECT #: SC2143
LOCATION #: 5
CONTROL: SIGNAL

NOTES:
Queue AM WB/EB, PM EB.

AM
PM
MD
OTHER
OTHER

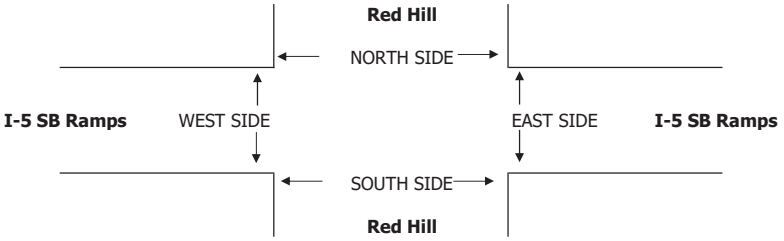
N ▲ S ▼ W ◄ E ►

Add U-Turns to Left Turns

		NORTHBOUND Red Hill			SOUTHBOUND Red Hill			EASTBOUND I-5 SB Ramps			WESTBOUND I-5 SB Ramps			
	LANES:	NL X	NT 4	NR 1	SL 1	ST 3	SR X	EL 0.5	ET 0.5	ER 1	WL X	WT X	WR X	TOTAL
AM	7:00 AM	0	136	124	81	161	0	29	0	53	0	0	0	584
	7:15 AM	0	305	137	89	236	0	33	0	59	0	0	0	859
	7:30 AM	0	378	133	101	271	0	46	0	81	0	0	0	1,010
	7:45 AM	0	314	154	99	326	0	50	1	90	0	0	0	1,034
	8:00 AM	0	233	120	92	261	0	37	2	75	0	0	0	820
	8:15 AM	0	160	105	91	249	0	31	1	57	0	0	0	694
	8:30 AM	0	155	92	103	234	0	27	0	62	0	0	0	673
	8:45 AM	0	127	105	87	217	0	26	0	72	0	0	0	634
	VOLUMES	0	1,808	970	743	1,955	0	279	4	549	0	0	0	6,308
	APPROACH %	0%	65%	35%	28%	72%	0%	34%	0%	66%	0%	0%	0%	
	APP/DEPART	2,778	/	2,087	2,698	/	2,504	832	/	1,717	0	/	0	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	0	1,230	544	381	1,094	0	166	3	305	0	0	0	3,723
	APPROACH %	0%	69%	31%	26%	74%	0%	35%	1%	64%	0%	0%	0%	
	PEAK HR FACTOR		0.868			0.868			0.840			0.000		0.900
	APP/DEPART	1,774	/	1,396	1,475	/	1,399	474	/	928	0	/	0	0
PM	4:00 PM	0	324	127	75	193	0	69	1	63	0	0	0	852
	4:15 PM	0	357	105	89	167	0	73	0	66	0	0	0	857
	4:30 PM	0	335	94	77	173	0	75	0	76	0	0	0	830
	4:45 PM	0	372	119	72	161	0	67	0	69	0	0	0	860
	5:00 PM	0	367	125	82	194	0	70	1	62	0	0	0	901
	5:15 PM	0	370	113	103	218	0	81	0	69	0	0	0	954
	5:30 PM	0	387	119	89	220	0	82	1	78	0	0	0	976
	5:45 PM	0	381	121	74	205	0	72	0	65	0	0	0	918
	VOLUMES	0	2,893	923	661	1,531	0	589	3	548	0	0	0	7,148
	APPROACH %	0%	76%	24%	30%	70%	0%	52%	0%	48%	0%	0%	0%	
	APP/DEPART	3,816	/	3,482	2,192	/	2,079	1,140	/	1,587	0	/	0	0
	BEGIN PEAK HR		5:00 PM											
	VOLUMES	0	1,505	478	348	837	0	305	2	274	0	0	0	3,749
	APPROACH %	0%	76%	24%	29%	71%	0%	52%	0%	47%	0%	0%	0%	
	PEAK HR FACTOR		0.980			0.923			0.902			0.000		0.960
	APP/DEPART	1,983	/	1,810	1,185	/	1,111	581	/	828	0	/	0	0

U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0



		PEDESTRIAN + BIKE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM	0	0	17	4	21
	7:15 AM	0	0	33	3	36
	7:30 AM	0	0	26	25	51
	7:45 AM	0	0	7	4	11
	8:00 AM	0	0	1	4	5
	8:15 AM	0	0	5	2	7
	8:30 AM	0	0	5	0	5
	8:45 AM	0	0	2	3	5
	TOTAL	0	0	96	45	141
	AM BEGIN PEAK HR			7:15 AM		
PM	4:00 PM	0	0	14	3	17
	4:15 PM	0	0	6	9	15
	4:30 PM	0	0	7	2	9
	4:45 PM	0	0	8	6	14
	5:00 PM	0	0	5	7	12
	5:15 PM	0	0	6	6	12
	5:30 PM	0	0	3	4	7
	5:45 PM	0	0	11	3	14
	TOTAL	0	0	60	40	100
	PM BEGIN PEAK HR			5:00 PM		

		PEDESTRIAN CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM	0	0	17	3	20
	7:15 AM	0	0	30	3	33
	7:30 AM	0	0	25	24	49
	7:45 AM	0	0	7	4	11
	8:00 AM	0	0	1	3	4
	8:15 AM	0	0	3	0	3
	8:30 AM	0	0	3	0	3
	8:45 AM	0	0	0	2	2
	TOTAL	0	0	86	39	125
	AM BEGIN PEAK HR	0	0	63	34	97
PM	4:00 PM	0	0	12	3	15
	4:15 PM	0	0	5	9	14
	4:30 PM	0	0	7	1	8
	4:45 PM	0	0	8	4	12
	5:00 PM	0	0	3	5	8
	5:15 PM	0	0	5	6	11
	5:30 PM	0	0	3	4	7
	5:45 PM	0	0	7	0	7
	TOTAL	0	0	50	32	82
	PM BEGIN PEAK HR	0	0	18	15	33

		BICYCLE CROSSINGS				
		NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	1	1
	7:15 AM	0	0	3	0	3
	7:30 AM	0	0	1	1	2
	7:45 AM	0	0	0	0	0
	8:00 AM	0	0	0	1	1
	8:15 AM	0	0	2	2	4
	8:30 AM	0	0	2	0	2
	8:45 AM	0	0	2	1	3
	TOTAL	0	0	10	6	16
	AM BEGIN PEAK HR					
PM	4:00 PM	0	0	2	0	2
	4:15 PM	0	0	1	0	1
	4:30 PM	0	0	0	1	1
	4:45 PM	0	0	0	2	2
	5:00 PM	0	0	2	2	4
	5:15 PM	0	0	1	0	1
	5:30 PM	0	0	0	0	0
	5:45 PM	0	0	4	3	7
	TOTAL	0	0	10	8	18

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Tustin	PROJECT #:	SC2143
Tue, May 21, 19	NORTH & SOUTH:	Red Hill	LOCATION #:	4
	EAST & WEST:	Nisson	CONTROL:	SIGNAL

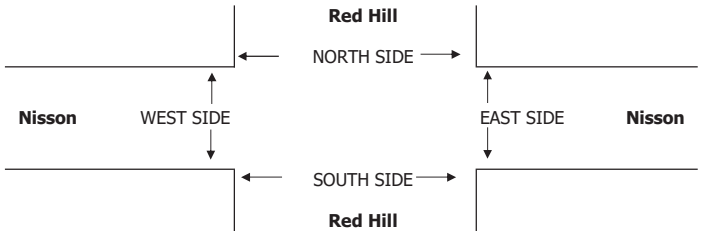
NOTES:

Queue AM/PM NB/SB

AM PM MD OTHER OTHER — ▲ N, ◄ W, E ►, S ▼

☐ Add U-Turns to Left Turns

		NORTHBOUND Red Hill			SOUTHBOUND Red Hill			EASTBOUND Nisson			WESTBOUND Nisson				U-TURNS				
	LANES:	NL 1	NT 3.5	NR 0.5	SL 1	ST 3	SR 0	EL 1	ET 1	ER 0	WL 1	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	1	191	3	13	182	10	41	5	5	9	5	35	500	0	0	0	0	0
	7:15 AM	2	329	4	29	250	19	61	14	11	11	6	51	787	0	0	0	0	0
	7:30 AM	5	387	5	35	292	22	63	11	8	16	9	55	908	0	0	0	0	0
	7:45 AM	5	334	7	55	306	53	61	23	14	9	6	54	927	1	0	0	0	1
	8:00 AM	4	235	7	31	284	24	54	10	14	12	4	52	731	0	0	0	0	0
	8:15 AM	0	175	1	17	272	13	48	8	4	6	8	35	587	0	0	0	0	0
	8:30 AM	6	190	4	21	266	16	37	5	1	9	5	25	585	0	0	0	0	0
	8:45 AM	0	157	5	17	253	16	48	6	9	7	2	23	543	0	1	0	0	1
	VOLUMES	23	1,998	36	218	2,105	173	413	82	66	79	45	330	5,568	1	1	0	0	2
	APPROACH %	1%	97%	2%	9%	84%	7%	74%	15%	12%	17%	10%	73%						
	APP/DEPART	2,057	/	2,742	2,496	/	2,251	561	/	335	454	/	240	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	16	1,285	23	150	1,132	118	239	58	47	48	25	212	3,353					
	APPROACH %	1%	97%	2%	11%	81%	8%	69%	17%	14%	17%	9%	74%						
	PEAK HR FACTOR		0.834			0.845			0.878			0.891		0.904					
	APP/DEPART	1,324	/	1,736	1,400	/	1,228	344	/	231	285	/	158	0					
PM	4:00 PM	7	376	8	48	200	20	44	19	4	9	16	26	777	0	0	0	0	0
	4:15 PM	5	377	6	40	162	22	51	17	4	15	23	31	753	1	2	0	0	3
	4:30 PM	5	342	5	41	203	15	46	19	4	7	15	36	738	0	0	0	0	0
	4:45 PM	2	396	7	32	168	16	59	20	6	19	23	28	776	0	2	0	0	2
	5:00 PM	10	386	4	39	213	17	60	23	8	12	19	38	829	0	0	0	0	0
	5:15 PM	7	390	11	42	223	21	55	22	4	8	19	39	841	0	0	0	0	0
	5:30 PM	8	391	8	42	229	27	65	26	14	7	15	33	865	0	0	0	0	0
	5:45 PM	4	400	8	43	191	21	64	18	13	20	29	29	840	0	0	0	0	0
	VOLUMES	48	3,058	57	327	1,589	159	444	164	57	97	159	260	6,419	1	4	0	0	5
	APPROACH %	2%	97%	2%	16%	77%	8%	67%	25%	9%	19%	31%	50%						
	APP/DEPART	3,163	/	3,766	2,075	/	1,744	665	/	544	516	/	365	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	29	1,567	31	166	856	86	244	89	39	47	82	139	3,375					
	APPROACH %	2%	96%	2%	15%	77%	8%	66%	24%	10%	18%	31%	52%						
	PEAK HR FACTOR		0.987			0.930			0.886			0.859		0.975					
	APP/DEPART	1,627	/	1,950	1,108	/	942	372	/	286	268	/	197	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	1	6	3	10	0	1	6	2	9	0	0	0	1	1
	7:15 AM	0	5	16	1	22	0	5	13	1	19	0	0	3	0	3
	7:30 AM	0	3	18	1	22	0	3	17	1	21	0	0	1	0	1
	7:45 AM	0	7	4	5	16	0	6	2	5	13	0	1	2	0	3
	8:00 AM	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1
	8:15 AM	0	2	1	2	5	0	1	1	0	2	0	1	0	2	3
	8:30 AM	1	5	3	1	10	0	4	2	1	7	1	1	1	0	3
	8:45 AM	0	2	4	2	8	0	2	4	1	7	0	0	0	1	1
	TOTAL	1	25	52	18	96	0	22	45	13	80	1	3	7	5	16
	AM BEGIN PEAK HR			7:15 AM			0	14	32	9	55					
PM	4:00 PM	0	11	10	2	23	0	11	9	2	22	0	0	1	0	1
	4:15 PM	0	7	6	9	22	0	7	5	9	21	0	0	1	0	1
	4:30 PM	0	2	4	1	7	0	2	4	0	6	0	0	0	1	1
	4:45 PM	0	13	9	4	26	0	12	9	2	23	0	1	0	2	3
	5:00 PM	0	3	5	8	16	0	3	5	5	13	0	0	0	3	3
	5:15 PM	0	6	5	6	17	0	4	5	6	15	0	2	0	0	2
	5:30 PM	0	12	2	3	17	0	12	2	3	17	0	0	0	0	0
	5:45 PM	0	22	10	2	34	0	22	6	0	28	0	0	4	2	6
	TOTAL	0	76	51	35	162	0	73	45	27	145	0	3	6	8	17
	PM BEGIN PEAK HR			5:00 PM			0	41	18	14	73					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 21, 19

LOCATION: Tustin
NORTH & SOUTH: Red Hill
EAST & WEST: Walnut

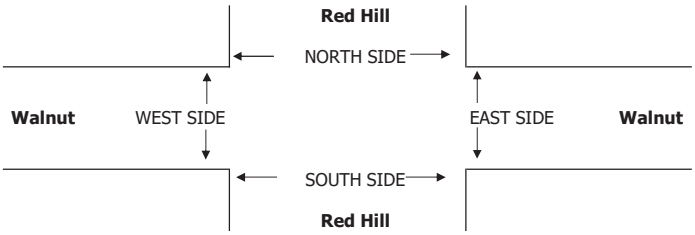
PROJECT #: SC2143
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☒ Add U-Turns to Left Turns

		NORTHBOUND Red Hill			SOUTHBOUND Red Hill			EASTBOUND Walnut			WESTBOUND Walnut				U-TURNS				
	LANES:	NL 1	NT 3	NR 0	SL 1	ST 3	SR 0	EL 1	ET 2	ER 0	WL 2	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	8	89	27	18	159	13	23	75	50	31	38	15	546	4	0	0	0	4
	7:15 AM	17	112	14	24	211	22	42	92	92	38	66	30	760	2	0	0	0	2
	7:30 AM	27	139	35	23	303	24	44	99	113	57	59	36	959	2	0	0	0	2
	7:45 AM	52	156	26	30	261	38	44	127	101	48	69	33	985	4	0	0	0	4
	8:00 AM	37	112	23	25	260	31	28	76	82	47	57	20	798	6	0	0	0	6
	8:15 AM	12	69	26	25	239	26	24	89	74	43	55	24	706	2	0	0	0	2
	8:30 AM	17	110	25	30	236	17	21	83	59	40	46	24	708	4	0	0	0	4
	8:45 AM	24	89	15	19	243	13	14	76	56	34	43	24	650	2	1	0	0	3
	VOLUMES	194	876	191	194	1,912	184	240	717	627	338	433	206	6,112	26	1	0	0	27
	APPROACH %	15%	69%	15%	8%	83%	8%	15%	45%	40%	35%	44%	21%						
	APP/DEPART	1,261	/	1,323	2,290	/	2,903	1,584	/	1,101	977	/	785	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	133	519	98	102	1,035	115	158	394	388	190	251	119	3,502					
	APPROACH %	18%	69%	13%	8%	83%	9%	17%	42%	41%	34%	45%	21%						
	PEAK HR FACTOR		0.801			0.894			0.864			0.921		0.889					
	APP/DEPART	750	/	796	1,252	/	1,627	940	/	594	560	/	485	0					
PM	4:00 PM	71	342	26	30	133	24	38	50	30	53	210	33	1,040	3	1	0	0	4
	4:15 PM	59	305	27	25	104	27	19	76	21	54	176	38	931	2	1	0	0	3
	4:30 PM	82	326	19	30	94	34	32	68	20	42	152	43	942	5	0	0	0	5
	4:45 PM	69	338	14	31	89	29	27	74	24	51	162	47	955	5	0	0	0	5
	5:00 PM	55	375	20	22	97	41	24	70	30	53	164	39	990	3	0	0	0	3
	5:15 PM	67	311	15	39	125	37	26	68	25	53	186	59	1,011	4	0	0	0	4
	5:30 PM	87	361	30	37	96	50	28	62	28	55	164	44	1,042	0	0	0	0	0
	5:45 PM	75	334	34	36	99	46	32	66	26	41	161	34	984	3	0	0	0	3
	VOLUMES	565	2,692	185	250	837	288	226	534	204	402	1,375	337	7,895	25	2	0	0	27
	APPROACH %	16%	78%	5%	18%	61%	21%	23%	55%	21%	19%	65%	16%						
	APP/DEPART	3,442	/	3,257	1,375	/	1,468	964	/	967	2,114	/	2,203	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	284	1,381	99	134	417	174	110	266	109	202	675	176	4,027					
	APPROACH %	16%	78%	6%	18%	58%	24%	23%	55%	22%	19%	64%	17%						
	PEAK HR FACTOR		0.923			0.902			0.978			0.883		0.966					
	APP/DEPART	1,764	/	1,667	725	/	738	485	/	499	1,053	/	1,123	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	2	3	0	10	15	0	3	0	6	9	2	0	0	4	6
	7:15 AM	1	1	1	12	15	1	1	1	11	14	0	0	0	1	1
	7:30 AM	2	4	4	8	18	2	4	4	8	18	0	0	0	0	0
	7:45 AM	1	1	1	6	9	1	1	1	6	9	0	0	0	0	0
	8:00 AM	1	3	2	2	8	1	3	0	2	6	0	0	2	0	2
	8:15 AM	0	3	4	5	12	0	1	2	4	7	0	2	2	1	5
	8:30 AM	0	3	1	1	5	0	2	0	1	3	0	1	1	0	2
	8:45 AM	2	2	0	5	9	2	2	0	3	7	0	0	0	2	2
	TOTAL	9	20	13	49	91	7	17	8	41	73	2	3	5	8	18
	AM BEGIN PEAK HR			7:15 AM			5	9	6	27	47					
PM	4:00 PM	0	3	1	0	4	0	3	0	0	3	0	0	1	0	1
	4:15 PM	0	4	6	3	13	0	3	4	2	9	0	1	2	1	4
	4:30 PM	1	9	1	1	12	0	8	1	1	10	1	1	0	0	2
	4:45 PM	1	4	4	8	17	1	3	4	7	15	0	1	0	1	2
	5:00 PM	0	4	2	2	8	0	3	1	2	6	0	1	1	0	2
	5:15 PM	0	2	1	10	13	0	2	0	7	9	0	0	1	3	4
	5:30 PM	0	4	5	9	18	0	3	4	5	12	0	1	1	4	6
	5:45 PM	1	5	2	9	17	1	4	2	7	14	0	1	0	2	3
	TOTAL	3	35	22	42	102	2	29	16	31	78	1	6	6	11	24
	PM BEGIN PEAK HR			5:00 PM			1	12	7	21	41					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Apr 16, 19

LOCATION: Tustin
NORTH & SOUTH: Red Hill
EAST & WEST: Valencia

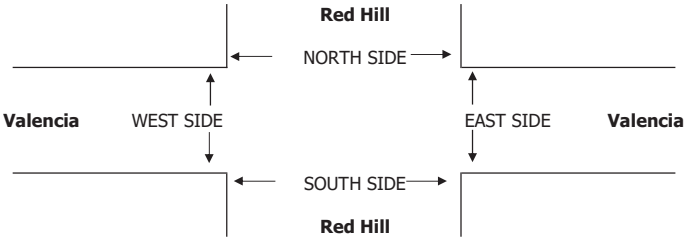
PROJECT #: SC2143
LOCATION #: 6
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

Add U-Turns to Left Turns

		NORTHBOUND Red Hill			SOUTHBOUND Red Hill			EASTBOUND Valencia			WESTBOUND Valencia				U-TURNS				
	LANES:	NL 1	NT 4	NR 0	SL 1	ST 3	SR 0	EL 1	ET 1	ER 1	WL 2	WT 1	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	7	50	14	12	169	16	8	14	15	38	72	10	425	0	0	0	0	0
	7:15 AM	14	68	10	18	224	12	1	18	13	28	53	14	473	1	0	0	0	1
	7:30 AM	17	76	28	29	222	16	4	28	18	48	78	21	585	0	0	0	0	0
	7:45 AM	20	86	30	46	262	14	2	46	17	71	95	49	738	0	1	0	1	2
	8:00 AM	17	78	22	20	286	14	6	34	14	64	90	32	677	1	0	0	0	1
	8:15 AM	22	70	26	36	239	19	5	28	11	63	76	18	613	0	1	0	1	2
	8:30 AM	17	87	25	16	234	21	6	29	11	51	81	21	599	1	0	0	0	1
	8:45 AM	26	56	24	17	259	24	4	23	14	56	59	19	581	0	0	0	0	0
	VOLUMES	140	571	179	194	1,895	136	36	220	113	419	604	184	4,691	3	2	0	2	7
	APPROACH %	16%	64%	20%	9%	85%	6%	10%	60%	31%	35%	50%	15%						
	APP/DEPART	890	/	793	2,225	/	2,428	369	/	593	1,207	/	877	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	76	321	103	118	1,021	68	19	137	53	249	342	120	2,627					
	APPROACH %	15%	64%	21%	10%	85%	6%	9%	66%	25%	35%	48%	17%						
	PEAK HR FACTOR		0.919			0.937			0.804			0.827		0.890					
	APP/DEPART	500	/	462	1,207	/	1,323	209	/	358	711	/	484	0					
PM	4:00 PM	47	341	54	17	106	16	11	44	13	33	40	25	747	1	0	0	0	1
	4:15 PM	83	378	36	18	106	18	12	31	10	20	50	32	794	0	0	0	0	0
	4:30 PM	51	384	44	39	99	18	23	42	28	35	49	32	844	0	1	0	0	1
	4:45 PM	35	365	66	29	122	17	16	39	19	20	42	35	805	0	1	0	0	1
	5:00 PM	52	425	69	24	105	7	19	78	18	28	36	28	889	0	0	0	0	0
	5:15 PM	79	446	88	15	107	6	11	28	17	33	42	16	888	1	0	0	0	1
	5:30 PM	56	370	83	17	117	19	13	31	19	32	41	17	815	0	0	0	0	0
	5:45 PM	73	407	68	30	108	8	9	27	9	18	53	19	829	1	0	0	0	1
	VOLUMES	476	3,116	508	189	870	109	114	320	133	219	353	204	6,611	3	2	0	0	5
	APPROACH %	12%	76%	12%	16%	74%	9%	20%	56%	23%	28%	45%	26%						
	APP/DEPART	4,100	/	3,436	1,168	/	1,225	567	/	1,015	776	/	935	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	217	1,620	267	107	433	48	69	187	82	116	169	111	3,426					
	APPROACH %	10%	77%	13%	18%	74%	8%	20%	55%	24%	29%	43%	28%						
	PEAK HR FACTOR		0.858			0.875			0.735			0.853		0.963					
	APP/DEPART	2,104	/	1,802	588	/	632	338	/	559	396	/	433	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	0	1	0	2	1	0	0	0	1	0	0	1	0	1
	7:15 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	7:30 AM	0	1	0	1	2	0	1	0	0	1	0	0	0	1	1
	7:45 AM	0	1	0	1	2	0	0	0	1	1	0	1	0	0	1
	8:00 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	8:15 AM	1	0	0	2	3	0	0	0	2	2	1	0	0	0	1
	8:30 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	8:45 AM	0	2	0	2	4	0	1	0	2	3	0	1	0	0	1
	TOTAL	2	4	3	7	16	1	2	2	6	11	1	2	1	1	5
	AM BEGIN PEAK HR			7:45 AM			0	0	2	3	5					
PM	4:00 PM	2	0	3	0	5	1	0	0	0	1	1	0	3	0	4
	4:15 PM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	4:30 PM	1	0	2	1	4	0	0	0	0	0	1	0	2	1	4
	4:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	5:00 PM	1	1	0	1	3	0	1	0	0	1	1	0	0	1	2
	5:15 PM	0	0	1	1	2	0	0	1	0	1	0	0	0	1	1
	5:30 PM	0	0	2	1	3	0	0	2	1	3	0	0	0	0	0
	5:45 PM	0	2	0	2	4	0	0	0	1	1	0	2	0	1	3
	TOTAL	4	4	8	8	24	1	1	3	4	9	3	3	5	4	15
	PM BEGIN PEAK HR			4:30 PM			0	1	1	0	2					

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, May 23, 19

LOCATION: Tustin
NORTH & SOUTH: Tustin Ranch
EAST & WEST: Warner North

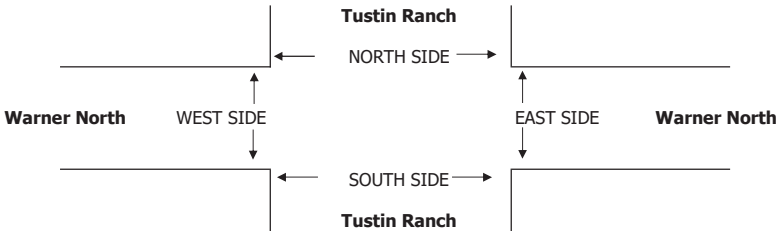
PROJECT #: SC2143
LOCATION #: 10
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — N / W / E / S

☐ Add U-Turns to Left Turns

		NORTHBOUND Tustin Ranch			SOUTHBOUND Tustin Ranch			EASTBOUND Warner North			WESTBOUND Warner North				U-TURNS				
	LANES:	NL X	NT 3	NR 1	SL 2	ST 3	SR X	EL X	ET X	ER X	WL 3	WT X	WR 2	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	51	40	75	177	0	0	0	0	53	0	59	455	0	0	0	0	0
	7:15 AM	0	52	46	65	226	0	0	0	0	73	0	40	502	0	0	0	0	0
	7:30 AM	0	70	59	58	284	0	0	0	0	97	0	30	598	0	0	0	0	0
	7:45 AM	0	71	66	134	342	0	0	0	0	163	0	44	820	0	0	0	0	0
	8:00 AM	0	67	62	118	322	0	0	0	0	138	0	30	737	0	0	0	0	0
	8:15 AM	0	82	65	100	327	0	0	0	0	148	0	51	773	0	0	0	0	0
	8:30 AM	0	49	67	99	285	0	0	0	0	136	0	47	683	0	0	0	0	0
	8:45 AM	0	62	55	90	271	0	0	0	0	143	0	46	667	0	0	0	0	0
	VOLUMES	0	504	460	739	2,234	0	0	0	0	951	0	347	5,235	0	0	0	0	0
	APPROACH %	0%	52%	48%	25%	75%	0%	0%	0%	0%	73%	0%	27%						
	APP/DEPART	964	/	851	2,973	/	3,185	0	/	1,199	1,298	/	0	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	0	269	260	451	1,276	0	0	0	0	585	0	172	3,013					
	APPROACH %	0%	51%	49%	26%	74%	0%	0%	0%	0%	77%	0%	23%						
	PEAK HR FACTOR		0.900			0.907			0.000			0.914		0.919					
	APP/DEPART	529	/	441	1,727	/	1,861	0	/	711	757	/	0	0					
PM	4:00 PM	0	342	151	73	104	0	0	0	0	86	0	99	855	0	0	0	0	0
	4:15 PM	0	337	174	74	107	0	0	0	0	98	0	95	885	1	0	0	0	1
	4:30 PM	0	369	169	83	102	0	0	0	0	98	0	105	926	2	0	0	0	2
	4:45 PM	0	355	170	73	115	0	0	0	0	98	0	113	924	0	0	0	0	0
	5:00 PM	0	429	228	82	126	0	0	0	0	112	0	120	1,097	0	0	0	0	0
	5:15 PM	0	346	222	97	136	0	0	0	0	108	0	111	1,020	0	0	0	0	0
	5:30 PM	0	407	248	87	121	0	0	0	0	142	0	96	1,101	0	0	0	0	0
	5:45 PM	0	424	248	81	127	0	0	0	0	112	0	101	1,093	0	0	0	0	0
	VOLUMES	0	3,009	1,610	650	938	0	0	0	0	854	0	840	7,904	3	0	0	0	3
	APPROACH %	0%	65%	35%	41%	59%	0%	0%	0%	0%	50%	0%	50%						
	APP/DEPART	4,622	/	3,849	1,588	/	1,795	0	/	2,260	1,694	/	0	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	0	1,606	946	347	510	0	0	0	0	474	0	428	4,311					
	APPROACH %	0%	63%	37%	40%	60%	0%	0%	0%	0%	53%	0%	47%						
	PEAK HR FACTOR		0.949			0.920			0.000			0.947		0.979					
	APP/DEPART	2,552	/	2,034	857	/	984	0	/	1,293	902	/	0	0					



		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	1	2	2	2	7	0	0	1	0	1	1	2	1	2	6
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	1	0	0	1	2	0	0	0	0	0	1	0	0	1	2
	8:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
	8:15 AM	0	1	2	0	3	0	0	2	0	2	0	1	0	0	1
	8:30 AM	0	1	1	1	3	0	0	1	0	1	0	1	0	1	2
	8:45 AM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	TOTAL	2	4	6	5	17	0	0	5	0	5	2	4	1	5	12
	AM BEGIN PEAK HR			7:45 AM			0	0	3	0	3					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	1	1	0	0	2	0	1	0	0	1	1	0	0	0	1
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
	5:15 PM	0	1	1	0	2	0	0	0	0	0	0	1	1	0	2
	5:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1
	5:45 PM	1	1	1	2	5	0	0	0	0	0	1	1	1	2	5
	TOTAL	2	3	4	2	11	0	1	1	0	2	2	2	3	2	9
	PM BEGIN PEAK HR			5:00 PM			0	0	1	0	1					

National Data & Surveying Services

Intersection Turning Movement Count

Location: Walnut Ave & Tustin Ranch Rd
City: Tustin
Control: Signalized

Project ID: 19-01171-001
Date: 8/27/2019

Total

NS/EW Streets:	Walnut Ave				Walnut Ave				Tustin Ranch Rd				Tustin Ranch Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	0 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
7:00 AM	14	26	41	0	78	87	55	0	19	91	39	0	151	239	35	0	875
7:15 AM	16	30	35	0	133	123	46	0	8	93	27	0	116	266	40	0	933
7:30 AM	31	52	15	0	125	122	94	0	17	94	43	0	133	383	63	0	1172
7:45 AM	31	33	36	0	115	133	100	0	15	125	72	0	103	383	93	0	1239
8:00 AM	35	40	35	0	71	110	67	0	15	99	56	0	117	392	44	0	1081
8:15 AM	47	53	47	0	58	97	68	0	15	78	43	0	130	447	43	1	1127
8:30 AM	24	41	34	0	57	115	59	0	15	83	42	0	131	437	43	0	1081
8:45 AM	30	62	42	0	58	120	59	0	17	85	51	0	152	345	24	0	1045
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	228	337	285	0	695	907	548	0	121	748	373	0	1033	2892	385	1	8553
APPROACH %'s :	26.82%	39.65%	33.53%	0.00%	32.33%	42.19%	25.49%	0.00%	9.74%	60.23%	30.03%	0.00%	23.96%	67.08%	8.93%	0.02%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	144	178	133	0	369	462	329	0	62	396	214	0	483	1605	243	1	4619
PEAK HR FACTOR :	0.766	0.840	0.707	0.000	0.738	0.868	0.823	0.000	0.912	0.792	0.743	0.000	0.908	0.898	0.653	0.250	0.932
	0.774				0.833				0.792				0.939				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	0 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
4:00 PM	33	234	203	0	33	51	27	0	70	326	42	0	47	138	78	0	1282
4:15 PM	37	154	128	0	45	45	28	0	107	381	46	2	63	159	98	1	1294
4:30 PM	31	185	178	0	48	59	26	1	79	429	41	1	49	147	88	2	1364
4:45 PM	27	192	144	0	46	56	26	0	86	442	28	0	46	150	90	0	1333
5:00 PM	42	204	174	1	50	55	35	0	105	439	44	1	61	157	111	0	1479
5:15 PM	44	224	169	0	47	69	34	0	104	424	41	2	51	143	101	1	1454
5:30 PM	37	222	166	0	39	48	35	0	104	448	44	1	60	151	113	0	1468
5:45 PM	32	214	129	0	52	59	41	0	92	397	59	0	68	149	95	0	1387
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	283	1629	1291	1	360	442	252	1	747	3286	345	7	445	1194	774	4	11061
APPROACH %'s :	8.83%	50.84%	40.29%	0.03%	34.12%	41.90%	23.89%	0.09%	17.04%	74.94%	7.87%	0.16%	18.41%	49.40%	32.02%	0.17%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	155	864	638	1	188	231	145	0	405	1708	188	4	240	600	420	1	5788
PEAK HR FACTOR :	0.881	0.964	0.917	0.250	0.904	0.837	0.884	0.000	0.964	0.953	0.797	0.500	0.882	0.955	0.929	0.250	0.978
	0.949				0.928				0.965				0.958				

INTERSECTION TURNING MOVEMENT COUNTS AVERAGE SHEET

T319

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: AVERAGE FOR THREE DAYS

LOCATION: Santa Ana
NORTH & SOUTH: SB SR-55 Ramps
EAST & WEST: Irvine

PROJECT #: CMP2019
LOCATION #: 194
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

Add U-Turns to Left Turns

		NORTHBOUND (SB SR-55 Ramps)			SOUTHBOUND (SB SR-55 Ramps)			EASTBOUND (Irvine)			WESTBOUND (Irvine)				U-TURNS					Right-turn Overlap			
	LANES:	NL X	NT X	NR X	SL 1.5	ST X	SR 1.5	EL X	ET 3	ER 0	WL 1	WT 3	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL	NRR X	SRR X	ERR X	WRR X
AM	6:00 AM	0	0	0	38	0	37	0	70	45	38	41	0	269	0	0	0	0	0	0	0	0	0
	6:15 AM	0	0	0	43	0	37	0	76	70	56	64	0	346	0	0	0	0	0	0	0	0	0
	6:30 AM	0	0	0	29	0	28	0	86	123	83	85	0	434	0	0	0	0	0	0	0	0	0
	6:45 AM	0	0	0	17	0	20	0	96	171	94	119	0	517	0	0	0	0	0	0	0	0	0
	7:00 AM	0	0	0	12	0	21	0	97	215	116	131	0	592	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	14	0	10	0	115	247	125	156	0	667	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	10	0	15	0	136	259	117	207	0	744	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	11	0	13	0	153	273	110	261	0	821	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	12	0	13	0	148	256	101	254	0	784	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	18	0	17	0	138	259	105	277	0	814	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	20	0	24	0	130	233	104	260	0	771	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	27	0	41	0	116	199	98	262	0	743	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	251	0	276	0	1,361	2,350	1,147	2,117	0	7,502	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	48%	0%	52%	0%	37%	63%	35%	65%	0%										
	APP/DEPART	0	/	0	527	/	3,497	3,711	/	1,612	3,264	/	2,393										
	BEGIN PEAK HR		7:45 AM																				
	VOLUMES	0	0	0	61	0	67	0	569	1,021	420	1,052	0	3,190						0	0	0	0
	APPROACH %	0%	0%	0%	48%	0%	52%	0%	36%	64%	29%	71%	0%										
	PEAK HR FACTOR		0.000			0.727			0.933			0.963		0.971									
	APP/DEPART	0	/	0	128	/	1,441	1,590	/	630	1,472	/	1,119										
PM	03:00 PM	0	0	0	88	0	84	0	185	101	77	229	0	764	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	80	0	81	0	183	105	82	233	0	764	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	93	0	80	0	176	111	72	266	0	798	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	94	0	84	0	183	108	71	269	0	809	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	89	0	76	0	185	120	81	249	0	800	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	98	0	84	0	187	107	89	284	0	849	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	97	0	90	0	192	125	88	271	0	863	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	99	0	76	0	214	142	81	259	0	871	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	116	0	58	0	219	168	103	255	0	919	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	106	0	63	0	221	130	89	261	0	870	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	108	0	59	0	199	135	95	283	0	879	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	130	0	64	0	175	116	83	281	0	849	0	0	0	0	0	0	0	0	0
	6:00 PM	0	0	0	110	1	62	0	172	115	89	272	0	821	0	0	0	0	0	0	0	0	0
	6:15 PM	0	0	0	107	0	63	0	141	93	79	250	0	733	0	0	0	0	0	0	0	0	0
	6:30 PM	0	0	0	99	1	59	0	136	87	74	220	0	676	0	0	0	0	0	0	0	0	0
	6:45 PM	0	0	0	74	1	58	0	138	73	74	222	0	640	0	0	0	0	0	0	0	0	0
	VOLUMES	0	0	0	1,588	3	1,141	0	2,906	1,836	1,327	4,104	0	12,905	0	0	0	0	0	0	0	0	0
	APPROACH %	0%	0%	0%	58%	0%	42%	0%	61%	39%	24%	76%	0%										
	APP/DEPART	0	/	0	2,732	/	3,166	4,742	/	4,494	5,431	/	5,245										
	BEGIN PEAK HR		4:45 PM																				
	VOLUMES	0	0	0	429	0	256	0	853	575	368	1,058	0	3,539						0	0	0	0
	APPROACH %	0%	0%	0%	63%	0%	37%	0%	60%	40%	26%	74%	0%										
	PEAK HR FACTOR		0.000			0.979			0.922			0.943		0.963									
	APP/DEPART	0	/	0	685	/	943	1,428	/	1,282	1,426	/	1,314										

SB SR-55 Ramps
NORTH SIDE

Irvine WEST SIDE EAST SIDE **Irvine**

SOUTH SIDE
SB SR-55 Ramps

		ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:30 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	7:15 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	7:30 AM	3	0	0	0	3	2	0	0	0	2	1	0	0	0	1
	7:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:00 AM	2	1	0	0	3	2	0	0	0	2	0	1	0	0	1
	8:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:30 AM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
	8:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	TOTAL	11	3	0	0	14	10	2	0	0	12	1	1	0	0	2
	AM BEGIN PEAK HR			7:45 AM			5	1	0	0	6	0	1	0	0	1
PM	3:00 PM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
	3:15 PM	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2
	3:30 PM	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1
	3:45 PM	1	2	0	0	3	1	2	0	0	3	0	0	0	0	0
	4:00 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	2	0	0	0	2	1	0	0	0	1	1	0	0	0	1
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
	5:15 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	6:00 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
	6:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	TOTAL	11	8	0	0	19	8	6	0	0	14	3	2	0	0	5
	PM BEGIN PEAK HR			4:45 PM			2	1	0	0	3	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS AVERAGE SHEET

T319

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: AVERAGE FOR THREE DAYS

LOCATION: Tustin
NORTH & SOUTH: NB SR-55 Ramps
EAST & WEST: Irvine

PROJECT #: CMP2019
LOCATION #: 232
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ / ◄ W / E ► / S ▼

Add U-Turns to Left Turns

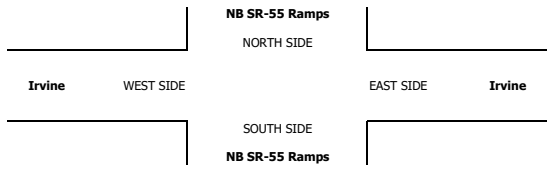
	NORTHBOUND (NB SR-55 Ramps)			SOUTHBOUND (NB SR-55 Ramps)			EASTBOUND (Irvine)			WESTBOUND (Irvine)			
LANES:	NL 1.5	NT X	NR 1.5	SL X	ST X	SR X	EL 1	ET 3	ER X	WL X	WT 3	WR 0	TOTAL
AM 6:00 AM	23	0	25	0	0	0	32	75	0	0	55	44	254
6:15 AM	39	0	18	0	0	0	34	82	0	0	80	54	307
6:30 AM	45	0	30	0	0	0	38	76	0	0	123	64	376
6:45 AM	65	0	59	0	0	0	37	75	0	0	149	92	477
7:00 AM	56	0	48	0	0	0	38	70	0	0	191	113	516
7:15 AM	59	0	72	0	0	0	48	80	0	0	223	126	608
7:30 AM	65	0	73	0	0	0	38	108	0	0	259	177	720
7:45 AM	93	0	110	0	0	0	51	113	0	0	278	175	820
8:00 AM	89	0	87	0	0	0	48	110	0	0	267	195	796
8:15 AM	105	0	93	0	0	0	48	106	0	0	277	185	814
8:30 AM	118	0	100	0	0	0	38	110	0	0	246	187	799
8:45 AM	122	0	110	0	0	0	41	100	0	0	238	145	756
VOLUMES	879	0	825	0	0	0	491	1,105	0	0	2,386	1,557	7,247
APPROACH %	52%	0%	48%	0%	0%	0%	31%	69%	0%	0%	61%	39%	
APP/DEPART	1,704	/	2,048	0	/	0	1,600	/	1,930	3,943	/	3,269	
BEGIN PEAK HR		7:45 AM											
VOLUMES	405	0	390	0	0	0	185	439	0	0	1,068	742	3,232
APPROACH %	51%	0%	49%	0%	0%	0%	30%	70%	0%	0%	59%	41%	
PEAK HR FACTOR		0.912			0.000			0.956			0.979		0.985
APP/DEPART	795	/	927	0	/	0	627	/	829	1,810	/	1,476	
PM 03:00 PM	65	2	80	0	0	0	84	186	0	0	238	176	831
3:15 PM	66	1	61	0	0	0	65	194	0	0	245	193	825
3:30 PM	67	1	56	0	0	0	74	192	0	0	268	224	882
3:45 PM	58	1	63	0	0	0	76	198	0	0	282	191	869
4:00 PM	65	2	61	0	0	0	78	191	0	0	261	188	846
4:15 PM	77	1	49	0	0	0	73	209	0	0	294	198	901
4:30 PM	60	2	55	0	0	0	71	215	0	0	297	179	879
4:45 PM	63	3	66	0	0	0	70	240	0	0	274	173	889
5:00 PM	60	5	69	0	0	0	67	263	0	0	293	189	946
5:15 PM	77	2	66	0	0	0	60	266	0	0	273	176	920
5:30 PM	102	4	82	0	0	0	50	255	0	0	275	181	949
5:45 PM	85	4	78	0	0	0	49	253	0	0	279	162	910
6:00 PM	83	3	72	0	0	0	57	223	0	0	277	169	884
6:15 PM	72	4	59	0	0	0	53	194	0	0	256	171	809
6:30 PM	72	1	65	0	0	0	58	175	0	0	221	172	764
6:45 PM	77	1	74	0	0	0	59	151	0	0	218	168	748
VOLUMES	1,149	37	1,056	0	0	0	1,044	3,405	0	0	4,251	2,910	13,892
APPROACH %	51%	2%	47%	0%	0%	0%	23%	76%	0%	0%	59%	41%	
APP/DEPART	2,242	/	3,991	0	/	0	4,489	/	4,461	7,161	/	5,440	
BEGIN PEAK HR		5:00 PM											
VOLUMES	324	15	295	0	0	0	226	1,037	0	0	1,120	708	3,734
APPROACH %	51%	2%	47%	0%	0%	0%	18%	82%	0%	0%	61%	39%	
PEAK HR FACTOR		0.843			0.000			0.952			0.948		0.982
APP/DEPART	634	/	949	0	/	0	1,272	/	1,332	1,828	/	1,453	

U-TURNS

NB 0	SB 0	EB 0	WB 0	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	1	0	1
0	0	1	0	1
0	0	1	0	1
0	0	4	0	4
0	0	4	0	4
0	0	4	0	4
0	0	3	0	3
0	0	2	0	2
0	0	3	0	3
0	0	2	0	2
0	0	3	0	3
0	0	3	0	3
0	0	4	0	4
0	0	1	0	1
0	0	2	0	2
0	0	2	0	2
0	0	2	0	2
0	0	2	0	2
0	0	1	0	1
0	0	2	0	2
0	0	40	0	40

Right-turn Overlap

NRR X	SRR X	ERR X	WRR X
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0



	ALL PED AND BIKE					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
7:15 AM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
7:30 AM	3	0	0	0	3	2	0	0	0	2	1	0	0	0	1
7:45 AM	2	1	0	0	3	1	1	0	0	2	1	0	0	0	1
8:00 AM	1	1	0	0	2	1	0	0	0	1	0	1	0	0	1
8:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
8:30 AM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
8:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
TOTAL	11	4	0	0	15	9	3	0	0	12	2	1	0	0	3
AM BEGIN PEAK HR			7:45 AM			4	2	0	0	6	1	1	0	0	2
PM 3:00 PM	2	1	0	0	3	2	1	0	0	3	0	0	0	0	0
3:15 PM	2	0	0	0	2	1	0	0	0	1	1	0	0	0	1
3:30 PM	1	2	0	0	3	0	1	0	0	1	1	1	0	0	2
3:45 PM	1	2	0	0	3	1	2	0	0	3	0	0	0	0	0
4:00 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
4:15 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
4:30 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1
5:15 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	11	8	0	0	19	9	5	0	0	14	2	3	0	0	5
PM BEGIN PEAK HR			5:00 PM			2	1	0	0	3	0	1	0	0	1

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FIRST STREET
Segment : WEST CITY LIMIT TO EUCLID ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/11/19
Day: Wednesday

Interval	WB				EB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	36	94	196	738	30	110	167	710	66	204	363	1,448
12:15	18		198		22		170		40		368	
12:30	20		178		28		187		48		365	
12:45	20		166		30		186		50		352	
01:00	18	62	170	710	12	41	163	702	30	103	333	1,412
01:15	17		172		10		172		27		344	
01:30	17		180		10		172		27		352	
01:45	10		188		9		195		19		383	
02:00	17	48	148	771	8	20	194	781	25	68	342	1,552
02:15	8		197		4		188		12		385	
02:30	10		212		3		176		13		388	
02:45	13		214		5		223		18		437	
03:00	8	38	224	860	8	53	210	848	16	91	434	1,708
03:15	8		208		12		220		20		428	
03:30	10		226		17		218		27		444	
03:45	12		202		16		200		28		402	
04:00	14	101	208	1,014	9	85	190	798	23	186	398	1,812
04:15	20		243		17		196		37		439	
04:30	36		280		25		196		61		476	
04:45	31		283		34		216		65		499	
05:00	26	184	276	1,178	47	194	260	950	73	378	536	2,128
05:15	37		303		31		252		68		555	
05:30	71		320		51		226		122		546	
05:45	50		279		65		212		115		491	
06:00	55	331	278	978	68	397	252	844	123	728	530	1,822
06:15	84		252		89		211		173		463	
06:30	78		246		98		197		176		443	
06:45	114		202		142		184		256		386	
07:00	118	685	214	743	182	865	170	576	300	1,550	384	1,319
07:15	136		151		204		138		340		289	
07:30	197		192		237		134		434		326	
07:45	234		186		242		134		476		320	
08:00	256	806	142	514	255	985	134	437	511	1,791	276	951
08:15	170		174		269		109		439		283	
08:30	182		102		233		92		415		194	
08:45	198		96		228		102		426		198	
09:00	175	737	110	414	152	641	101	351	327	1,378	211	765
09:15	188		108		188		100		376		208	
09:30	203		88		158		84		361		172	
09:45	171		108		143		66		314		174	
10:00	176	730	77	272	160	559	74	260	336	1,289	151	532
10:15	176		76		123		71		299		147	
10:30	201		53		138		56		339		109	
10:45	177		66		138		59		315		125	
11:00	176	709	51	203	178	696	58	160	354	1,405	109	363
11:15	146		50		168		33		314		83	
11:30	172		64		182		44		354		108	
11:45	215		38		168		25		383		63	
Totals	4,525		8,395		4,646		7,417		9,171		15,812	
Split%	49.3		53.1		50.7		46.9					
Day Totals		12,920				12,063				24,983		
Day Splits		51.7				48.3						
Peak Hour	07:30		04:45		07:30		04:45		07:30		04:45	
Volume	857		1,182		1,003		954		1,860		2,136	
Factor	0.84		0.92		0.93		0.92		0.91		0.96	

* Data File : D1909085

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : EUCLID STREET
Segment : NCFADDEN AVE TO FIRST ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/09/19
Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	58	202	246	964	44	131	224	983	102	333	470	1,947
12:15	52		242		34		258		86		500	
12:30	49		230		36		264		85		494	
12:45	43		246		17		237		60		483	
01:00	56	121	210	968	14	76	226	1,049	70	197	436	2,017
01:15	28		222		18		259		46		481	
01:30	18		266		26		280		44		546	
01:45	19		270		18		284		37		554	
02:00	20	72	316	1,292	12	68	266	1,194	32	140	582	2,486
02:15	15		288		23		284		38		572	
02:30	19		340		17		322		36		662	
02:45	18		348		16		322		34		670	
03:00	12	72	369	1,577	15	129	284	1,135	27	201	653	2,712
03:15	22		377		27		277		49		654	
03:30	20		424		40		322		60		746	
03:45	18		407		47		252		65		659	
04:00	26	126	396	1,693	46	347	302	1,177	72	473	698	2,870
04:15	30		418		60		278		90		696	
04:30	26		451		113		296		139		747	
04:45	44		428		128		301		172		729	
05:00	49	305	434	1,783	114	724	328	1,282	163	1,029	762	3,065
05:15	74		457		154		318		228		775	
05:30	82		446		198		312		280		758	
05:45	100		446		258		324		358		770	
06:00	88	576	411	1,520	197	1,327	337	1,167	285	1,903	748	2,687
06:15	123		393		288		294		411		687	
06:30	179		360		363		274		542		634	
06:45	186		356		479		262		665		618	
07:00	228	1,179	346	1,268	462	2,083	215	762	690	3,262	561	2,030
07:15	275		323		552		186		827		509	
07:30	299		326		593		201		892		527	
07:45	377		273		476		160		853		433	
08:00	314	1,212	206	759	474	1,930	171	613	788	3,142	377	1,372
08:15	352		211		521		164		873		375	
08:30	292		182		494		142		786		324	
08:45	254		160		441		136		695		296	
09:00	258	935	188	664	359	1,319	142	510	617	2,254	330	1,174
09:15	220		144		362		134		582		278	
09:30	240		148		310		127		550		275	
09:45	217		184		288		107		505		291	
10:00	213	829	172	547	234	965	100	356	447	1,794	272	903
10:15	208		158		252		100		460		258	
10:30	224		112		224		86		448		198	
10:45	184		105		255		70		439		175	
11:00	214	908	94	324	200	862	66	243	414	1,770	160	567
11:15	248		77		200		66		448		143	
11:30	226		92		232		60		458		152	
11:45	220		61		230		51		450		112	
Totals	6,537		13,359		9,961		10,471		16,498		23,830	
Split%	39.6		56.1		60.4		43.9					
Day Totals		19,896				20,432				40,328		
Day Splits		49.3				50.7						
Peak Hour	07:30		05:00		07:15		05:15		07:30		05:00	
Volume	1,342		1,783		2,095		1,291		3,406		3,065	
Factor	0.89		0.98		0.88		0.96		0.95		0.99	

* Data File : D1909059

Thursday, October 03, 2019 Location: Santa Ana PROJECT:

ADT227 SEVENTEENTH ST from HARBOR BL to CLINTON ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			23		18			12:00			189		248		
0:15			24		19			12:15			191		232		
0:30			21		20			12:30			192		214		
0:45			16	84	14	71	155	12:45			182	754	223	917	1671
1:00			15		15			13:00			213		204		
1:15			27		11			13:15			194		230		
1:30			19		14			13:30			184		265		
1:45			15	76	9	49	125	13:45			220	811	245	944	1755
2:00			12		9			14:00			255		241		
2:15			11		7			14:15			258		234		
2:30			8		10			14:30			292		253		
2:45			9	40	11	37	77	14:45			277	1082	271	999	2081
3:00			10		9			15:00			229		256		
3:15			11		13			15:15			242		270		
3:30			9		8			15:30			275		263		
3:45			8	38	15	45	83	15:45			232	978	291	1080	2058
4:00			12		17			16:00			256		304		
4:15			20		23			16:15			262		289		
4:30			16		26			16:30			294		293		
4:45			24	72	32	98	170	16:45			307	1119	303	1189	2308
5:00			32		49			17:00			302		313		
5:15			59		57			17:15			321		235		
5:30			68		65			17:30			276		241		
5:45			83	242	76	247	489	17:45			312	1211	285	1074	2285
6:00			103		85			18:00			300		274		
6:15			100		95			18:15			311		245		
6:30			167		112			18:30			268		231		
6:45			209	579	146	438	1017	18:45			238	1117	234	984	2101
7:00			285		159			19:00			215		203		
7:15			307		193			19:15			182		214		
7:30			366		256			19:30			152		201		
7:45			407	1365	283	891	2256	19:45			143	692	184	802	1494
8:00			393		274			20:00			117		174		
8:15			332		242			20:15			132		170		
8:30			319		249			20:30			114		182		
8:45			267	1311	232	997	2308	20:45			125	488	167	693	1181
9:00			196		195			21:00			103		142		
9:15			217		185			21:15			95		132		
9:30			204		174			21:30			115		95		
9:45			234	851	177	731	1582	21:45			94	407	112	481	888
10:00			222		184			22:00			88		76		
10:15			187		204			22:15			58		81		
10:30			199		213			22:30			53		53		
10:45			212	820	206	807	1627	22:45			60	259	58	268	527
11:00			189		201			23:00			46		43		
11:15			203		204			23:15			40		26		
11:30			199		216			23:30			32		31		
11:45			217	808	224	845	1653	23:45			28	146	20	120	266
Total Vol.				6286		5256	**11542**					9064		9551	**18615**

Daily Totals

NB	SB	EB	WB	Combined
		15350	14807	**30157**

			AM				PM		
Split %			54.5%	45.5%	**38.3%**		48.7%	51.3%	**61.7%**
Peak Hour	0:30	0:30	7:30	7:30	**7:30**		16:30	16:15	**16:30**
Volume			1498	1055	**2553**		1224	1198	**2368**
P.H.F.			0.92	0.93	**0.93**		0.95	0.96	**0.96**

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : HARBOR BOULEVARD
Segment : HAZARD AVE TO WESTMINSTER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/03/19
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	92	310	350	1,400	85	314	390	1,421	177	624	740	2,821
12:15	72		382		72		334		144		716	
12:30	84		316		84		361		168		677	
12:45	62		352		73		336		135		688	
01:00	68	206	422	1,653	65	198	354	1,420	133	404	776	3,073
01:15	48		418		40		366		88		784	
01:30	50		372		43		354		93		726	
01:45	40		441		50		346		90		787	
02:00	50	219	446	2,014	40	153	386	1,525	90	372	832	3,539
02:15	69		482		40		354		109		836	
02:30	54		552		39		379		93		931	
02:45	46		534		34		406		80		940	
03:00	50	223	428	1,995	38	251	380	1,504	88	474	808	3,499
03:15	52		526		48		380		100		906	
03:30	65		551		69		380		134		931	
03:45	56		490		96		364		152		854	
04:00	70	404	526	1,970	68	452	368	1,556	138	856	894	3,526
04:15	90		528		76		362		166		890	
04:30	124		457		139		396		263		853	
04:45	120		459		169		430		289		889	
05:00	133	700	461	1,833	144	816	440	1,675	277	1,516	901	3,508
05:15	178		460		184		426		362		886	
05:30	218		432		232		418		450		850	
05:45	171		480		256		391		427		871	
06:00	200	1,022	454	1,777	245	1,441	350	1,327	445	2,463	804	3,104
06:15	252		452		299		323		551		775	
06:30	262		432		416		346		678		778	
06:45	308		439		481		308		789		747	
07:00	295	1,392	394	1,388	538	2,071	322	1,324	833	3,463	716	2,712
07:15	356		362		531		375		887		737	
07:30	391		330		522		333		913		663	
07:45	350		302		480		294		830		596	
08:00	404	1,409	298	1,060	478	1,943	278	1,045	882	3,352	576	2,105
08:15	344		280		498		280		842		560	
08:30	324		228		493		258		817		486	
08:45	337		254		474		229		811		483	
09:00	302	1,082	263	851	396	1,736	239	934	698	2,818	502	1,785
09:15	260		248		462		254		722		502	
09:30	264		194		436		247		700		441	
09:45	256		146		442		194		698		340	
10:00	301	1,200	189	658	354	1,412	231	709	655	2,612	420	1,367
10:15	327		162		380		190		707		352	
10:30	308		146		368		150		676		296	
10:45	264		161		310		138		574		299	
11:00	294	1,268	146	473	328	1,337	154	530	622	2,605	300	1,003
11:15	293		108		337		126		630		234	
11:30	372		116		314		118		686		234	
11:45	309		103		358		132		667		235	
Totals	9,435		17,072		12,124		14,970		21,559		32,042	
Split%	43.8		53.3		56.2		46.7					
Day Totals		26,507				27,094				53,601		
Day Splits		49.5				50.5						
Peak Hour	07:15		03:30		06:45		04:45		07:15		02:30	
Volume	1,501		2,095		2,072		1,714		3,512		3,585	
Factor	0.93		0.95		0.96		0.97		0.96		0.95	

* Data File : D1909140

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FIRST STREET
Segment : HARBOR BLVD TO FAIRVIEW ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/11/19
Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	42	129	196	749	38	124	238	843	80	253	434	1,592
12:15	30		185		34		222		64		407	
12:30	24		188		26		169		50		357	
12:45	33		180		26		214		59		394	
01:00	24	79	214	890	29	90	220	924	53	169	434	1,814
01:15	22		228		17		240		39		468	
01:30	15		216		32		222		47		438	
01:45	18		232		12		242		30		474	
02:00	17	74	248	982	14	70	213	962	31	144	461	1,944
02:15	21		228		19		258		40		486	
02:30	18		238		17		225		35		463	
02:45	18		268		20		266		38		534	
03:00	16	84	268	1,096	18	80	267	1,186	34	164	535	2,282
03:15	16		266		17		318		33		584	
03:30	20		280		20		280		40		560	
03:45	32		282		25		321		57		603	
04:00	32	178	274	1,115	26	168	326	1,453	58	346	600	2,568
04:15	36		279		24		374		60		653	
04:30	56		282		54		372		110		654	
04:45	54		280		64		381		118		661	
05:00	56	382	278	1,164	55	304	382	1,520	111	686	660	2,684
05:15	68		302		79		398		147		700	
05:30	114		298		84		354		198		652	
05:45	144		286		86		386		230		672	
06:00	124	780	249	983	102	517	360	1,278	226	1,297	609	2,261
06:15	160		256		115		342		275		598	
06:30	234		254		141		322		375		576	
06:45	262		224		159		254		421		478	
07:00	336	1,556	236	824	156	835	253	889	492	2,391	489	1,713
07:15	384		198		204		208		588		406	
07:30	368		202		227		224		595		426	
07:45	468		188		248		204		716		392	
08:00	362	1,334	164	585	274	862	158	603	636	2,196	322	1,188
08:15	334		160		180		160		514		320	
08:30	326		126		204		147		530		273	
08:45	312		135		204		138		516		273	
09:00	252	914	137	484	175	730	118	477	427	1,644	255	961
09:15	232		134		188		127		420		261	
09:30	228		109		202		120		430		229	
09:45	202		104		165		112		367		216	
10:00	166	710	94	348	164	734	96	316	330	1,444	190	664
10:15	168		111		196		82		364		193	
10:30	216		67		186		70		402		137	
10:45	160		76		188		68		348		144	
11:00	200	785	66	202	176	815	54	205	376	1,600	120	407
11:15	176		58		206		65		382		123	
11:30	204		36		229		46		433		82	
11:45	205		42		204		40		409		82	
Totals	7,005		9,422		5,329		10,656		12,334		20,078	
Split%	56.8		46.9		43.2		53.1					
Day Totals		16,427				15,985				32,412		
Day Splits		50.7				49.3						
Peak Hour	07:15		05:00		07:15		04:30		07:15		05:00	
Volume	1,582		1,164		953		1,533		2,535		2,684	
Factor	0.85		0.96		0.87		0.96		0.89		0.96	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : EDINGER AVENUE
Segment : SANTA ANA RIVER TO FAIRVIEW ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/17/19
Day: Tuesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	21	88	144	628	28	83	176	659	49	171	320	1,287
12:15	35		165		17		162		52		327	
12:30	18		167		14		162		32		329	
12:45	14		152		24		159		38		311	
01:00	11	49	176	794	10	53	144	685	21	102	320	1,479
01:15	17		169		18		157		35		326	
01:30	11		231		11		186		22		417	
01:45	10		218		14		198		24		416	
02:00	8	32	185	881	5	40	200	870	13	72	385	1,751
02:15	4		202		8		205		12		407	
02:30	16		196		9		206		25		402	
02:45	4		298		18		259		22		557	
03:00	5	51	291	1,015	16	61	253	1,096	21	112	544	2,111
03:15	12		270		10		291		22		561	
03:30	19		216		14		268		33		484	
03:45	15		238		21		284		36		522	
04:00	21	151	266	1,009	11	137	304	1,244	32	288	570	2,253
04:15	31		232		20		326		51		558	
04:30	48		264		46		294		94		558	
04:45	51		247		60		320		111		567	
05:00	40	298	250	994	42	255	336	1,367	82	553	586	2,361
05:15	74		290		64		343		138		633	
05:30	78		224		70		332		148		556	
05:45	106		230		79		356		185		586	
06:00	104	578	212	799	63	489	310	1,167	167	1,067	522	1,966
06:15	130		214		111		319		241		533	
06:30	158		175		144		264		302		439	
06:45	186		198		171		274		357		472	
07:00	212	1,072	169	692	168	956	210	737	380	2,028	379	1,429
07:15	306		185		230		190		536		375	
07:30	298		185		268		191		566		376	
07:45	256		153		290		146		546		299	
08:00	274	1,018	184	673	249	821	162	564	523	1,839	346	1,237
08:15	262		168		224		156		486		324	
08:30	262		188		188		124		450		312	
08:45	220		133		160		122		380		255	
09:00	200	699	125	443	147	526	108	408	347	1,225	233	851
09:15	189		128		130		112		319		240	
09:30	172		95		111		110		283		205	
09:45	138		95		138		78		276		173	
10:00	147	668	82	240	162	638	89	256	309	1,306	171	496
10:15	137		70		156		70		293		140	
10:30	206		50		159		52		365		102	
10:45	178		38		161		45		339		83	
11:00	139	615	42	161	178	635	52	167	317	1,250	94	328
11:15	170		38		162		43		332		81	
11:30	142		48		151		39		293		87	
11:45	164		33		144		33		308		66	
Totals	5,319		8,329		4,694		9,220		10,013		17,549	
Split%	53.1		47.5		46.9		52.5					
Day Totals		13,648				13,914				27,562		
Day Splits		49.5				50.5						
Peak Hour	07:15		02:45		07:15		05:00		07:15		05:00	
Volume	1,134		1,075		1,037		1,367		2,171		2,361	
Factor	0.93		0.90		0.89		0.96		0.96		0.93	

* Data File : D1909049

Thursday, October 10, 2019 Location: Santa Ana PROJECT:

ADT259 WARNER AVE from SANTA ANA RIVER to FAIRVIEW ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			37		21			12:00			194		204		
0:15			26		23			12:15			180		201		
0:30			24		20			12:30			211		176		
0:45			32	119	17	81	200	12:45			201	786	152	733	1519
1:00			22		8			13:00			212		204		
1:15			8		9			13:15			200		185		
1:30			14		11			13:30			231		211		
1:45			20	64	13	41	105	13:45			214	857	270	870	1727
2:00			15		9			14:00			259		308		
2:15			13		11			14:15			265		324		
2:30			14		8			14:30			290		386		
2:45			14	56	14	42	98	14:45			257	1071	337	1355	2426
3:00			17		13			15:00			231		377		
3:15			20		20			15:15			233		357		
3:30			21		12			15:30			238		398		
3:45			31	89	15	60	149	15:45			234	936	387	1519	2455
4:00			34		23			16:00			271		348		
4:15			43		14			16:15			253		346		
4:30			65		45			16:30			246		397		
4:45			63	205	101	183	388	16:45			303	1073	365	1456	2529
5:00			99		69			17:00			237		391		
5:15			123		91			17:15			216		418		
5:30			148		114			17:30			242		447		
5:45			240	610	126	400	1010	17:45			224	919	426	1682	2601
6:00			144		137			18:00			251		379		
6:15			145		123			18:15			214		336		
6:30			170		164			18:30			198		311		
6:45			250	709	189	613	1322	18:45			201	864	220	1246	2110
7:00			304		176			19:00			181		212		
7:15			400		223			19:15			157		156		
7:30			387		242			19:30			153		161		
7:45			375	1466	254	895	2361	19:45			144	635	154	683	1318
8:00			398		220			20:00			121		117		
8:15			408		245			20:15			149		137		
8:30			346		213			20:30			127		124		
8:45			334	1486	225	903	2389	20:45			103	500	114	492	992
9:00			284		198			21:00			125		87		
9:15			203		156			21:15			92		76		
9:30			214		158			21:30			109		82		
9:45			225	926	196	708	1634	21:45			116	442	54	299	741
10:00			200		185			22:00			76		56		
10:15			189		168			22:15			64		46		
10:30			192		157			22:30			53		38		
10:45			168	749	156	666	1415	22:45			47	240	41	181	421
11:00			176		147			23:00			67		57		
11:15			159		157			23:15			46		38		
11:30			188		166			23:30			41		52		
11:45			180	703	174	644	1347	23:45			34	188	37	184	372
Total Vol.				7182		5236	**12418**					8511		10700	**19211**

Daily Totals

NB	SB	EB	WB	Combined
		15693	15936	**31629**

			AM			PM		
Split %			57.8%	42.2%	**39.3%**	44.3%	55.7%	**60.7%**
Peak Hour	0:30	0:30	7:30	7:30	**7:30**	16:00	17:00	**16:45**
Volume			1568	961	**2529**	1073	1682	**2619**
P.H.F.			0.96	0.95	**0.97**	0.89	0.94	**0.95**

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : HARBOR BOULEVARD
Segment : MACARTHUR TO SEGERSTROM
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/03/19
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	67	199	312	1,356	41	122	402	1,498	108	321	714	2,854
12:15	54		340		24		373		78		713	
12:30	34		350		34		373		68		723	
12:45	44		354		23		350		67		704	
01:00	34	116	314	1,472	20	82	361	1,358	54	198	675	2,830
01:15	28		361		19		331		47		692	
01:30	26		382		28		356		54		738	
01:45	28		415		15		310		43		725	
02:00	25	100	385	1,670	16	78	314	1,316	41	178	699	2,986
02:15	26		440		13		330		39		770	
02:30	27		463		26		350		53		813	
02:45	22		382		23		322		45		704	
03:00	17	92	475	1,874	24	137	302	1,218	41	229	777	3,092
03:15	20		445		26		338		46		783	
03:30	26		498		41		289		67		787	
03:45	29		456		46		289		75		745	
04:00	20	134	515	1,899	56	408	308	1,239	76	542	823	3,138
04:15	22		473		70		282		92		755	
04:30	28		472		116		339		144		811	
04:45	64		439		166		310		230		749	
05:00	63	336	430	1,763	115	782	298	1,203	178	1,118	728	2,966
05:15	75		447		152		298		227		745	
05:30	90		432		221		316		311		748	
05:45	108		454		294		291		402		745	
06:00	116	561	488	1,876	236	1,432	280	1,016	352	1,993	768	2,892
06:15	121		458		310		260		431		718	
06:30	150		454		400		242		550		696	
06:45	174		476		486		234		660		710	
07:00	174	870	444	1,525	536	2,323	216	816	710	3,193	660	2,341
07:15	216		383		606		204		822		587	
07:30	204		388		599		210		803		598	
07:45	276		310		582		186		858		496	
08:00	282	1,104	239	905	575	2,323	192	666	857	3,427	431	1,571
08:15	291		218		574		177		865		395	
08:30	275		210		568		167		843		377	
08:45	256		238		606		130		862		368	
09:00	232	892	193	815	487	1,885	140	510	719	2,777	333	1,325
09:15	226		227		516		142		742		369	
09:30	228		203		455		122		683		325	
09:45	206		192		427		106		633		298	
10:00	250	930	226	667	362	1,490	103	339	612	2,420	329	1,006
10:15	226		193		376		104		602		297	
10:30	222		124		338		70		560		194	
10:45	232		124		414		62		646		186	
11:00	264	1,142	100	463	376	1,415	56	241	640	2,557	156	704
11:15	304		103		320		69		624		172	
11:30	278		114		353		56		631		170	
11:45	296		146		366		60		662		206	
Totals	6,476		16,285		12,477		11,420		18,953		27,705	
Split%	34.2		58.8		65.8		41.2					
Day Totals		22,761				23,897				46,658		
Day Splits		48.8				51.2						
Peak Hour	11:00		03:30		07:15		12:00		08:00		03:15	
Volume	1,142		1,942		2,362		1,498		3,427		3,138	
Factor	0.94		0.94		0.97		0.93		0.99		0.95	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FAIRVIEW STREET
Segment : MCFADDEN AVE TO FIRST ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/01/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	65	195	223	970	48	148	202	829	113	343	425	1,799
12:15	63		244		41		240		104		484	
12:30	37		235		29		202		66		437	
12:45	30		268		30		185		60		453	
01:00	26	105	264	1,148	23	100	192	853	49	205	456	2,001
01:15	28		287		31		205		59		492	
01:30	25		280		19		226		44		506	
01:45	26		317		27		230		53		547	
02:00	25	102	366	1,576	21	84	238	987	46	186	604	2,563
02:15	29		376		25		196		54		572	
02:30	18		405		16		272		34		677	
02:45	30		429		22		281		52		710	
03:00	27	121	394	1,672	25	159	277	1,011	52	280	671	2,683
03:15	26		425		30		256		56		681	
03:30	42		414		50		256		92		670	
03:45	26		439		54		222		80		661	
04:00	54	306	434	1,769	50	396	260	1,180	104	702	694	2,949
04:15	56		446		68		316		124		762	
04:30	94		431		110		308		204		739	
04:45	102		458		168		296		270		754	
05:00	98	568	439	1,784	152	865	360	1,463	250	1,433	799	3,247
05:15	150		475		189		350		339		825	
05:30	156		448		232		370		388		818	
05:45	164		422		292		383		456		805	
06:00	150	856	470	1,737	245	1,230	368	1,298	395	2,086	838	3,035
06:15	184		451		228		330		412		781	
06:30	246		434		349		335		595		769	
06:45	276		382		408		265		684		647	
07:00	314	1,491	372	1,346	444	1,797	286	982	758	3,288	658	2,328
07:15	391		352		458		260		849		612	
07:30	424		318		476		202		900		520	
07:45	362		304		419		234		781		538	
08:00	346	1,155	266	976	423	1,562	207	710	769	2,717	473	1,686
08:15	299		258		454		180		753		438	
08:30	272		242		360		163		632		405	
08:45	238		210		325		160		563		370	
09:00	210	902	194	753	298	1,168	154	579	508	2,070	348	1,332
09:15	238		194		271		158		509		352	
09:30	210		195		334		118		544		313	
09:45	244		170		265		149		509		319	
10:00	238	922	157	536	288	1,021	122	414	526	1,943	279	950
10:15	202		162		260		117		462		279	
10:30	235		116		244		82		479		198	
10:45	247		101		229		93		476		194	
11:00	222	930	104	346	246	815	82	266	468	1,745	186	612
11:15	232		84		206		78		438		162	
11:30	244		92		177		59		421		151	
11:45	232		66		186		47		418		113	
Totals	7,653		14,613		9,345		10,572		16,998		25,185	
Split%	45.0		58.0		55.0		42.0					
Day Totals		22,266				19,917				42,183		
Day Splits		52.8				47.2						
Peak Hour	07:15		04:45		07:00		05:15		07:15		05:15	
Volume	1,523		1,820		1,797		1,471		3,299		3,286	
Factor	0.90		0.96		0.94		0.96		0.92		0.98	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FIRST STREET
Segment : FAIRVIEW ST TO RAITT ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/11/19
Day: Wednesday

Interval	WB				EB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	50	149	268	1,002	50	161	230	914	100	310	498	1,916
12:15	41		266		50		217		91		483	
12:30	27		222		29		233		56		455	
12:45	31		246		32		234		63		480	
01:00	26	96	266	1,099	31	90	250	1,006	57	186	516	2,105
01:15	28		270		20		266		48		536	
01:30	30		289		21		232		51		521	
01:45	12		274		18		258		30		532	
02:00	25	85	292	1,206	15	74	276	1,054	40	159	568	2,260
02:15	20		316		17		248		37		564	
02:30	23		292		24		258		47		550	
02:45	17		306		18		272		35		578	
03:00	18	96	326	1,396	15	88	300	1,173	33	184	626	2,569
03:15	15		364		9		307		24		671	
03:30	30		350		26		294		56		644	
03:45	33		356		38		272		71		628	
04:00	26	176	372	1,563	30	205	296	1,192	56	381	668	2,755
04:15	43		376		40		300		83		676	
04:30	52		404		67		304		119		708	
04:45	55		411		68		292		123		703	
05:00	68	348	385	1,506	82	433	288	1,274	150	781	673	2,780
05:15	88		371		86		340		174		711	
05:30	92		360		115		318		207		678	
05:45	100		390		150		328		250		718	
06:00	106	582	334	1,328	155	842	284	1,101	261	1,424	618	2,429
06:15	128		364		185		276		313		640	
06:30	160		326		232		263		392		589	
06:45	188		304		270		278		458		582	
07:00	211	1,049	256	933	340	1,568	254	885	551	2,617	510	1,818
07:15	266		234		430		228		696		462	
07:30	274		237		398		215		672		452	
07:45	298		206		400		188		698		394	
08:00	250	899	195	695	410	1,426	172	652	660	2,325	367	1,347
08:15	210		182		357		178		567		360	
08:30	227		160		335		155		562		315	
08:45	212		158		324		147		536		305	
09:00	218	873	168	599	285	1,040	128	482	503	1,913	296	1,081
09:15	215		160		262		132		477		292	
09:30	232		153		249		124		481		277	
09:45	208		118		244		98		452		216	
10:00	211	872	118	357	206	822	104	334	417	1,694	222	691
10:15	231		96		188		82		419		178	
10:30	232		65		244		80		476		145	
10:45	198		78		184		68		382		146	
11:00	214	968	72	217	214	877	70	230	428	1,845	142	447
11:15	256		55		205		66		461		121	
11:30	262		42		216		54		478		96	
11:45	236		48		242		40		478		88	
Totals	6,193		11,901		7,626		10,297		13,819		22,198	
Split%	44.8		53.6		55.2		46.4					
Day Totals		18,094				17,923				36,017		
Day Splits		50.2				49.8						
Peak Hour	07:15		04:15		07:15		05:00		07:15		04:30	
Volume	1,088		1,576		1,638		1,274		2,726		2,795	
Factor	0.91		0.96		0.95		0.94		0.98		0.98	

* Data File : D1909089

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : BRISTOL STREET
Segment : SEVENTEENTH ST TO SANTA CLARA
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/17/19
Day: Tuesday

Interval	SB				NB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	64	227	298	1,112	56	165	289	1,182	120	392	587	2,294
12:15	70		248		52		274		122		522	
12:30	39		288		23		321		62		609	
12:45	54		278		34		298		88		576	
01:00	58	179	274	1,147	22	111	312	1,288	80	290	586	2,435
01:15	48		288		27		316		75		604	
01:30	34		285		34		318		68		603	
01:45	39		300		28		342		67		642	
02:00	34	126	258	1,153	31	104	316	1,023	65	230	574	2,176
02:15	22		301		26		237		48		538	
02:30	36		292		24		214		60		506	
02:45	34		302		23		256		57		558	
03:00	28	102	340	1,457	28	173	257	1,238	56	275	597	2,695
03:15	22		363		34		231		56		594	
03:30	26		368		51		366		77		734	
03:45	26		386		60		384		86		770	
04:00	34	264	433	1,692	74	513	394	1,532	108	777	827	3,224
04:15	58		398		113		372		171		770	
04:30	74		422		158		400		232		822	
04:45	98		439		168		366		266		805	
05:00	82	514	412	1,684	179	919	440	1,645	261	1,433	852	3,329
05:15	113		454		226		406		339		860	
05:30	153		416		280		411		433		827	
05:45	166		402		234		388		400		790	
06:00	218	1,213	361	1,392	226	1,104	346	1,477	444	2,317	707	2,869
06:15	237		352		246		385		483		737	
06:30	356		358		332		386		688		744	
06:45	402		321		300		360		702		681	
07:00	388	1,469	296	1,065	288	1,307	354	1,254	676	2,776	650	2,319
07:15	344		284		290		322		634		606	
07:30	366		258		358		276		724		534	
07:45	371		227		371		302		742		529	
08:00	482	1,851	218	875	354	1,301	258	1,026	836	3,152	476	1,901
08:15	471		232		332		260		803		492	
08:30	455		238		302		238		757		476	
08:45	443		187		313		270		756		457	
09:00	324	1,360	225	866	278	1,036	264	949	602	2,396	489	1,815
09:15	328		224		260		252		588		476	
09:30	354		217		248		215		602		432	
09:45	354		200		250		218		604		418	
10:00	318	1,082	174	605	239	982	212	561	557	2,064	386	1,166
10:15	274		174		248		157		522		331	
10:30	244		133		250		102		494		235	
10:45	246		124		245		90		491		214	
11:00	268	1,061	142	472	242	1,122	84	244	510	2,183	226	716
11:15	261		128		262		66		523		194	
11:30	258		96		306		58		564		154	
11:45	274		106		312		36		586		142	
Totals	9,448		13,520		8,837		13,419		18,285		26,939	
Split%	51.7		50.2		48.3		49.8					
Day Totals		22,968				22,256				45,224		
Day Splits		50.8				49.2						
Peak Hour	08:00		04:30		07:30		05:00		08:00		04:45	
Volume	1,851		1,727		1,415		1,645		3,152		3,344	
Factor	0.96		0.95		0.95		0.93		0.94		0.97	

Thursday, October 10, 2019 Location: Santa Ana PROJECT:

ADT230 SEVENTEENTH ST from COLLEGE AVE to BRISTOL ST. **Prepared by AimTD tel. 714 753 7888**

AM Period	NB	SB	EB	WB			PM Period	NB	SB	EB	WB	
0:30			10	34			12:00			278	256	
0:15			12	27			12:15			290	245	
0:30			9	20			12:30			286	251	
0:45			11	42	17	98	140	12:45			301	1155	242	994	2149
1:00			13	23			13:00			303	267	
1:15			10	15			13:15			298	242	
1:30			8	16			13:30			285	246	
1:45			7	38	13	67	105	13:45			274	1160	294	1049	2209
2:00			6	10			14:00			296	286	
2:15			8	9			14:15			314	275	
2:30			11	12			14:30			348	258	
2:45			7	32	8	39	71	14:45			332	1290	301	1120	2410
3:00			10	12			15:00			320	304	
3:15			12	14			15:15			325	321	
3:30			13	9			15:30			336	313	
3:45			17	52	11	46	98	15:45			342	1323	326	1264	2587
4:00			22	15			16:00			326	343	
4:15			32	13			16:15			358	356	
4:30			33	18			16:30			339	324	
4:45			29	116	26	72	188	16:45			346	1369	375	1398	2767
5:00			56	17			17:00			314	359	
5:15			102	24			17:15			380	356	
5:30			98	51			17:30			419	364	
5:45			105	361	54	146	507	17:45			439	1552	312	1391	2943
6:00			127	75			18:00			377	321	
6:15			170	93			18:15			384	303	
6:30			229	84			18:30			352	297	
6:45			330	856	114	366	1222	18:45			313	1426	316	1237	2663
7:00			392	152			19:00			294	284	
7:15			460	195			19:15			252	252	
7:30			428	266			19:30			213	234	
7:45			361	1641	278	891	2532	19:45			229	988	250	1020	2008
8:00			393	234			20:00			186	210	
8:15			368	201			20:15			173	185	
8:30			374	173			20:30			191	178	
8:45			353	1488	194	802	2290	20:45			179	729	187	760	1489
9:00			344	203			21:00			190	201	
9:15			360	183			21:15			203	194	
9:30			332	198			21:30			173	165	
9:45			318	1354	203	787	2141	21:45			145	711	134	694	1405
10:00			286	216			22:00			113	114	
10:15			273	205			22:15			94	95	
10:30			263	200			22:30			65	75	
10:45			279	1101	231	852	1953	22:45			43	315	82	366	681
11:00			309	217			23:00			24	68	
11:15			314	246			23:15			18	45	
11:30			301	237			23:30			23	47	
11:45			293	1217	228	928	2145	23:45			15	80	32	192	272
Total Vol.				8298		5094	**13392**				12098		11485		**23583**

			Daily Totals		
	NB	SB	EB	WB	**Combined**
			20396	16579	**36975**
	AM		**PM**		
Split %			51.3%	48.7%	**63.8%**
Peak Hour	0:30	0:30	17:30	16:45	**17:15**
Volume			1619	1454	**2968**
P.H.F.			0.92	0.97	**0.95**

pacific@aimtd.com Tell. 714 753 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : BRISTOL STREET
Segment : CIVIC CENTER DR TO SEVENTEENTH
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/17/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	71	177	288	1,161	56	212	288	1,028	127	389	576	2,189
12:15	48		274		64		254		112		528	
12:30	26		297		42		242		68		539	
12:45	32		302		50		244		82		546	
01:00	38	118	270	1,194	44	146	256	1,124	82	264	526	2,318
01:15	26		308		42		280		68		588	
01:30	27		300		26		308		53		608	
01:45	27		316		34		280		61		596	
02:00	36	113	318	1,221	30	115	262	1,084	66	228	580	2,305
02:15	34		315		24		230		58		545	
02:30	18		322		30		256		48		578	
02:45	25		266		31		336		56		602	
03:00	30	179	314	1,333	28	103	286	1,138	58	282	600	2,471
03:15	40		308		23		278		63		586	
03:30	45		353		28		274		73		627	
03:45	64		358		24		300		88		658	
04:00	64	432	356	1,479	32	233	340	1,221	96	665	696	2,700
04:15	88		373		52		277		140		650	
04:30	126		374		71		266		197		640	
04:45	154		376		78		338		232		714	
05:00	168	772	359	1,535	75	451	294	1,211	243	1,223	653	2,746
05:15	190		418		88		332		278		750	
05:30	214		366		150		290		364		656	
05:45	200		392		138		295		338		687	
06:00	190	1,082	364	1,510	177	946	298	1,021	367	2,028	662	2,531
06:15	270		408		191		204		461		612	
06:30	292		372		266		264		558		636	
06:45	330		366		312		255		642		621	
07:00	302	1,451	346	1,228	342	1,366	226	926	644	2,817	572	2,154
07:15	376		302		356		252		732		554	
07:30	398		282		342		228		740		510	
07:45	375		298		326		220		701		518	
08:00	356	1,262	225	904	336	1,343	200	863	692	2,605	425	1,767
08:15	334		233		314		219		648		452	
08:30	310		220		356		210		666		430	
08:45	262		226		337		234		599		460	
09:00	264	1,064	204	762	287	1,164	240	933	551	2,228	444	1,695
09:15	272		194		288		222		560		416	
09:30	276		178		292		258		568		436	
09:45	252		186		297		213		549		399	
10:00	283	1,016	136	445	309	1,056	206	629	592	2,072	342	1,074
10:15	245		118		275		179		520		297	
10:30	236		99		234		128		470		227	
10:45	252		92		238		116		490		208	
11:00	210	1,121	84	275	252	1,033	133	409	462	2,154	217	684
11:15	278		87		260		112		538		199	
11:30	341		48		233		80		574		128	
11:45	292		56		288		84		580		140	
Totals	8,787		13,047		8,168		11,587		16,955		24,634	
Split%	51.8		53.0		48.2		47.0					
Day Totals		21,834				19,755				41,589		
Day Splits		52.5				47.5						
Peak Hour	07:15		05:15		07:00		04:45		07:15		04:45	
Volume	1,505		1,540		1,366		1,254		2,865		2,773	
Factor	0.95		0.92		0.96		0.93		0.97		0.92	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FAIRVIEW STREET
Segment : SEVENTEENTH ST TO TRASK AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/01/19

Interval	NB				SB				Combined				Day: Tuesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	46	143	238	970	59	202	228	919	105	345	466	1,889	
12:15	46		246		55		232		101		478		
12:30	23		238		48		204		71		442		
12:45	28		248		40		255		68		503		
01:00	24	109	225	1,056	38	131	214	968	62	240	439	2,024	
01:15	29		258		36		234		65		492		
01:30	26		276		22		226		48		502		
01:45	30		297		35		294		65		591		
02:00	18	81	324	1,416	30	88	268	1,189	48	169	592	2,605	
02:15	19		322		26		311		45		633		
02:30	21		380		13		276		34		656		
02:45	23		390		19		334		42		724		
03:00	30	178	379	1,461	20	107	342	1,267	50	285	721	2,728	
03:15	38		334		19		298		57		632		
03:30	68		374		42		310		110		684		
03:45	42		374		26		317		68		691		
04:00	78	443	390	1,560	39	261	315	1,248	117	704	705	2,808	
04:15	74		380		46		297		120		677		
04:30	144		394		78		304		222		698		
04:45	147		396		98		332		245		728		
05:00	167	819	420	1,635	102	634	338	1,280	269	1,453	758	2,915	
05:15	202		404		132		336		334		740		
05:30	246		419		186		318		432		737		
05:45	204		392		214		288		418		680		
06:00	234	1,037	385	1,489	215	1,070	302	1,144	449	2,107	687	2,633	
06:15	223		390		220		290		443		680		
06:30	286		388		287		288		573		676		
06:45	294		326		348		264		642		590		
07:00	296	1,230	362	1,197	359	1,401	225	908	655	2,631	587	2,105	
07:15	302		304		322		264		624		568		
07:30	322		279		358		202		680		481		
07:45	310		252		362		217		672		469		
08:00	357	1,108	238	805	390	1,327	208	728	747	2,435	446	1,533	
08:15	285		189		363		201		648		390		
08:30	256		186		306		146		562		332		
08:45	210		192		268		173		478		365		
09:00	184	851	188	728	274	1,156	188	636	458	2,007	376	1,364	
09:15	245		200		280		145		525		345		
09:30	197		189		288		150		485		339		
09:45	225		151		314		153		539		304		
10:00	236	917	128	413	252	907	147	489	488	1,824	275	902	
10:15	218		104		249		140		467		244		
10:30	226		95		204		94		430		189		
10:45	237		86		202		108		439		194		
11:00	197	908	84	261	213	863	94	294	410	1,771	178	555	
11:15	213		60		189		65		402		125		
11:30	228		69		216		72		444		141		
11:45	270		48		245		63		515		111		
Totals	7,824		12,991		8,147		11,070		15,971		24,061		
Split%	49.0		54.0		51.0		46.0						
Day Totals		20,815				19,217				40,032			
Day Splits		52.0				48.0							
Peak Hour	07:15		04:45		07:30		04:45		07:30		04:45		
Volume	1,291		1,639		1,473		1,324		2,747		2,963		
Factor	0.90		0.98		0.94		0.98		0.92		0.98		

* Data File : D1909076

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : BRISTOL STREET
Segment : MCFADDEN AVE TO FIRST ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/17/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	62	173	240	1,016	59	185	264	962	121	358	504	1,978
12:15	47		238		55		224		102		462	
12:30	30		253		37		230		67		483	
12:45	34		285		34		244		68		529	
01:00	32	114	234	1,114	44	135	202	943	76	249	436	2,057
01:15	24		302		38		218		62		520	
01:30	22		290		26		246		48		536	
01:45	36		288		27		277		63		565	
02:00	32	120	294	1,312	21	111	275	1,107	53	231	569	2,419
02:15	32		318		23		242		55		560	
02:30	29		324		27		306		56		630	
02:45	27		376		40		284		67		660	
03:00	27	136	412	1,701	26	107	316	1,282	53	243	728	2,983
03:15	33		468		17		342		50		810	
03:30	28		425		30		305		58		730	
03:45	48		396		34		319		82		715	
04:00	52	264	424	1,730	39	279	318	1,381	91	543	742	3,111
04:15	52		444		62		350		114		794	
04:30	84		435		100		338		184		773	
04:45	76		427		78		375		154		802	
05:00	117	493	432	1,778	94	499	360	1,504	211	992	792	3,282
05:15	112		448		82		394		194		842	
05:30	130		441		156		366		286		807	
05:45	134		457		167		384		301		841	
06:00	130	756	441	1,644	176	1,016	338	1,262	306	1,772	779	2,906
06:15	172		439		188		326		360		765	
06:30	216		393		264		296		480		689	
06:45	238		371		388		302		626		673	
07:00	239	1,371	346	1,289	412	1,829	262	1,004	651	3,200	608	2,293
07:15	352		344		484		296		836		640	
07:30	420		310		465		226		885		536	
07:45	360		289		468		220		828		509	
08:00	343	1,240	263	953	430	1,719	208	819	773	2,959	471	1,772
08:15	300		263		435		195		735		458	
08:30	292		189		446		227		738		416	
08:45	305		238		408		189		713		427	
09:00	208	872	168	677	265	1,107	223	820	473	1,979	391	1,497
09:15	220		190		260		191		480		381	
09:30	240		171		301		220		541		391	
09:45	204		148		281		186		485		334	
10:00	230	862	161	519	277	998	158	537	507	1,860	319	1,056
10:15	210		130		238		149		448		279	
10:30	216		110		240		122		456		232	
10:45	206		118		243		108		449		226	
11:00	205	967	78	286	218	942	82	306	423	1,909	160	592
11:15	254		76		227		96		481		172	
11:30	256		66		222		64		478		130	
11:45	252		66		275		64		527		130	
Totals	7,368		14,019		8,927		11,927		16,295		25,946	
Split%	45.2		54.0		54.8		46.0					
Day Totals		21,387				20,854				42,241		
Day Splits		50.6				49.4						
Peak Hour	07:15		05:15		07:15		05:00		07:15		05:00	
Volume	1,475		1,787		1,847		1,504		3,322		3,282	
Factor	0.88		0.98		0.95		0.95		0.94		0.97	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : CIVIC CENTER DRIVE
Segment : BRISTOL ST TO FLOWER ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/18/19

Interval	EB				WB				Combined				Day: Wednesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	13	36	98	441	8	42	139	489	21	78	237	930	
12:15	8		97		13		122		21		219		
12:30	9		118		8		138		17		256		
12:45	6		128		13		90		19		218		
01:00	7	23	132	549	4	33	96	593	11	56	228	1,142	
01:15	10		152		12		156		22		308		
01:30	3		145		15		186		18		331		
01:45	3		120		2		155		5		275		
02:00	6	21	122	507	5	19	129	572	11	40	251	1,079	
02:15	4		130		6		129		10		259		
02:30	5		119		4		132		9		251		
02:45	6		136		4		182		10		318		
03:00	6	27	190	635	6	24	146	645	12	51	336	1,280	
03:15	3		151		3		163		6		314		
03:30	9		160		12		170		21		330		
03:45	9		134		3		166		12		300		
04:00	7	65	154	588	7	60	206	859	14	125	360	1,447	
04:15	11		138		7		181		18		319		
04:30	19		140		26		234		45		374		
04:45	28		156		20		238		48		394		
05:00	30	171	166	659	24	129	273	969	54	300	439	1,628	
05:15	45		157		22		246		67		403		
05:30	41		168		28		250		69		418		
05:45	55		168		55		200		110		368		
06:00	67	425	156	501	58	310	198	573	125	735	354	1,074	
06:15	83		130		58		140		141		270		
06:30	119		134		84		121		203		255		
06:45	156		81		110		114		266		195		
07:00	175	1,064	94	316	120	867	88	353	295	1,931	182	669	
07:15	282		80		213		86		495		166		
07:30	293		82		258		92		551		174		
07:45	314		60		276		87		590		147		
08:00	240	836	62	240	196	571	78	260	436	1,407	140	500	
08:15	243		61		177		74		420		135		
08:30	189		57		110		50		299		107		
08:45	164		60		88		58		252		118		
09:00	104	396	61	196	76	299	66	200	180	695	127	396	
09:15	96		64		64		40		160		104		
09:30	92		40		76		46		168		86		
09:45	104		31		83		48		187		79		
10:00	70	322	40	122	90	324	45	127	160	646	85	249	
10:15	82		33		68		34		150		67		
10:30	102		27		76		28		178		55		
10:45	68		22		90		20		158		42		
11:00	74	354	16	53	99	470	23	80	173	824	39	133	
11:15	72		9		111		22		183		31		
11:30	88		12		128		20		216		32		
11:45	120		16		132		15		252		31		
Totals	3,740		4,807		3,148		5,720		6,888		10,527		
Split%	54.3		45.7		45.7		54.3						
Day Totals		8,547				8,868				17,415			
Day Splits		49.1				50.9							
Peak Hour	07:15		05:00		07:15		04:45		07:15		04:45		
Volume	1,129		659		943		1,007		2,072		1,654		
Factor	0.90		0.98		0.85		0.92		0.88		0.94		

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FLOWER STREET
Segment : MCFADDEN AVE TO FIRST ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/10/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	22	58	65	330	24	82	69	305	46	140	134	635
12:15	13		88		15		76		28		164	
12:30	12		92		18		82		30		174	
12:45	11		85		25		78		36		163	
01:00	6	29	76	370	12	44	78	332	18	73	154	702
01:15	16		83		8		70		24		153	
01:30	5		101		10		93		15		194	
01:45	2		110		14		91		16		201	
02:00	5	17	100	575	11	37	100	438	16	54	200	1,013
02:15	5		150		9		110		14		260	
02:30	1		169		9		98		10		267	
02:45	6		156		8		130		14		286	
03:00	8	34	174	682	6	38	158	531	14	72	332	1,213
03:15	5		178		7		120		12		298	
03:30	8		164		14		121		22		285	
03:45	13		166		11		132		24		298	
04:00	15	86	172	729	9	76	136	536	24	162	308	1,265
04:15	20		187		11		124		31		311	
04:30	29		190		24		140		53		330	
04:45	22		180		32		136		54		316	
05:00	44	230	175	788	28	205	142	543	72	435	317	1,331
05:15	54		220		46		132		100		352	
05:30	62		186		70		130		132		316	
05:45	70		207		61		139		131		346	
06:00	70	365	209	754	54	332	134	490	124	697	343	1,244
06:15	81		197		92		106		173		303	
06:30	96		190		96		132		192		322	
06:45	118		158		90		118		208		276	
07:00	122	627	122	404	112	498	96	383	234	1,125	218	787
07:15	196		105		128		96		324		201	
07:30	182		96		126		96		308		192	
07:45	127		81		132		95		259		176	
08:00	156	519	90	309	137	548	80	297	293	1,067	170	606
08:15	124		83		133		82		257		165	
08:30	133		64		142		74		275		138	
08:45	106		72		136		61		242		133	
09:00	76	293	60	217	82	306	82	276	158	599	142	493
09:15	75		61		64		62		139		123	
09:30	68		49		74		68		142		117	
09:45	74		47		86		64		160		111	
10:00	68	283	35	144	62	293	60	195	130	576	95	339
10:15	62		42		78		49		140		91	
10:30	77		39		72		51		149		90	
10:45	76		28		81		35		157		63	
11:00	53	283	25	84	76	322	52	150	129	605	77	234
11:15	73		27		89		43		162		70	
11:30	77		19		77		25		154		44	
11:45	80		13		80		30		160		43	
Totals	2,824		5,386		2,781		4,476		5,605		9,862	
Split%	50.4		54.6		49.6		45.4					
Day Totals		8,210				7,257				15,467		
Day Splits		53.1				46.9						
Peak Hour	07:15		05:15		08:00		04:30		07:15		05:15	
Volume	661		822		548		550		1,184		1,357	
Factor	0.84		0.93		0.96		0.97		0.91		0.96	

Thursday, October 03, 2019 Location: Santa Ana PROJECT:

ADT167 MAIN ST from SEVENTEENTH ST to SANTA CLARA AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	58		42					12:00	227		212				
0:15	53		30					12:15	236		221				
0:30	54		41					12:30	224		230				
0:45	36	201	35	148			349	12:45	239	926	219	882			1808
1:00	46		29					13:00	268		218				
1:15	35		28					13:15	266		224				
1:30	27		26					13:30	241		205				
1:45	21	129	22	105			234	13:45	267	1042	197	844			1886
2:00	34		20					14:00	274		198				
2:15	41		34					14:15	257		201				
2:30	30		25					14:30	286		213				
2:45	26	131	21	100			231	14:45	272	1089	219	831			1920
3:00	21		16					15:00	269		216				
3:15	25		12					15:15	327		234				
3:30	30		8					15:30	312		265				
3:45	32	108	11	47			155	15:45	313	1221	255	970			2191
4:00	35		12					16:00	306		233				
4:15	56		21					16:15	341		238				
4:30	76		32					16:30	335		295				
4:45	87	254	38	103			357	16:45	291	1273	248	1014			2287
5:00	101		40					17:00	286		254				
5:15	99		62					17:15	295		266				
5:30	137		64					17:30	321		267				
5:45	144	481	98	264			745	17:45	309	1211	270	1057			2268
6:00	137		114					18:00	326		253				
6:15	142		157					18:15	335		246				
6:30	161		234					18:30	320		216				
6:45	159	599	291	796			1395	18:45	284	1265	204	919			2184
7:00	187		318					19:00	260		180				
7:15	214		278					19:15	256		160				
7:30	204		258					19:30	240		139				
7:45	267	872	269	1123			1995	19:45	222	978	109	588			1566
8:00	234		298					20:00	197		125				
8:15	213		276					20:15	195		118				
8:30	204		293					20:30	178		113				
8:45	202	853	258	1125			1978	20:45	186	756	96	452			1208
9:00	215		242					21:00	195		99				
9:15	186		223					21:15	175		90				
9:30	170		210					21:30	155		124				
9:45	182	753	201	876			1629	21:45	138	663	106	419			1082
10:00	195		197					22:00	116		87				
10:15	177		185					22:15	124		76				
10:30	171		175					22:30	99		64				
10:45	185	728	204	761			1489	22:45	54	393	45	272			665
11:00	198		189					23:00	58		55				
11:15	213		195					23:15	62		47				
11:30	217		201					23:30	56		42				
11:45	235	863	214	799			1662	23:45	70	246	53	197			443
Total Vol.		5972		6247			**12219**			11063		8445			**19508**

Daily Totals

NB	SB	EB	WB	**Combined**
17035	14692			**31727**

	AM			**PM**		
Split %	48.9%	51.1%	**38.5%**	56.7%	43.3%	**61.5%**
Peak Hour	11:45	6:45	**7:45**	15:45	16:30	**17:30**
Volume	922	1145	**2054**	1295	1063	**2327**
P.H.F.	0.98	0.90	**0.96**	0.95	0.90	**0.99**

cs@aimtd.com Tell. 714 253 7888

Wednesday, October 02, 2019 Location: Santa Ana PROJECT:

ADT165 MAIN ST from CIVIC CENTER DR to WASHINGTON AVE. **Prepared by AimTD tel. 714 753 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	57		48					12:00	229		189				
0:15	51		43					12:15	242		182				
0:30	50		47					12:30	257		213				
0:45	30	188	38	176			364	12:45	279	1007	209	793			1800
1:00	17		34					13:00	311		199				
1:15	14		28					13:15	256		213				
1:30	21		23					13:30	276		199				
1:45	35	87	19	104			191	13:45	277	1120	208	819			1939
2:00	33		22					14:00	310		231				
2:15	26		17					14:15	289		186				
2:30	30		19					14:30	297		194				
2:45	18	107	18	76			183	14:45	284	1180	213	824			2004
3:00	17		16					15:00	291		232				
3:15	12		20					15:15	275		214				
3:30	24		30					15:30	304		257				
3:45	37	90	32	98			188	15:45	329	1199	217	920			2119
4:00	49		27					16:00	335		230				
4:15	45		35					16:15	344		206				
4:30	71		43					16:30	365		241				
4:45	98	263	38	143			406	16:45	356	1400	274	951			2351
5:00	91		50					17:00	334		246				
5:15	112		70					17:15	302		232				
5:30	150		108					17:30	316		245				
5:45	145	498	133	361			859	17:45	324	1276	234	957			2233
6:00	153		152					18:00	315		215				
6:15	146		194					18:15	349		157				
6:30	208		202					18:30	331		139				
6:45	223	730	238	786			1516	18:45	297	1292	147	658			1950
7:00	242		250					19:00	279		162				
7:15	257		303					19:15	259		158				
7:30	268		300					19:30	219		148				
7:45	276	1043	337	1190			2233	19:45	218	975	165	633			1608
8:00	271		314					20:00	233		145				
8:15	238		286					20:15	197		150				
8:30	203		320					20:30	216		153				
8:45	194	906	297	1217			2123	20:45	198	844	134	582			1426
9:00	186		257					21:00	189		140				
9:15	203		231					21:15	176		157				
9:30	199		228					21:30	170		135				
9:45	186	774	230	946			1720	21:45	154	689	125	557			1246
10:00	214		198					22:00	180		90				
10:15	220		210					22:15	145		79				
10:30	212		178					22:30	118		78				
10:45	204	850	206	792			1642	22:45	106	549	85	332			881
11:00	201		193					23:00	85		92				
11:15	226		177					23:15	75		86				
11:30	217		189					23:30	56		44				
11:45	215	859	210	769			1628	23:45	52	268	57	279			547
Total Vol.	6395		6658				**13053**		11799		8305				**20104**

Daily Totals

NB	SB	EB	WB	Combined
18194	14963			**33157**

	AM			PM		
Split %	49.0%	51.0%	**39.4%**	58.7%	41.3%	**60.6%**
Peak Hour	7:15	7:45	**7:15**	16:00	16:45	**16:15**
Volume	1072	1257	**2326**	1400	997	**2366**
P.H.F.	0.97	0.93	**0.95**	0.97	0.91	**0.94**

pacific@aimtd.com Tell. 714 753 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : CIVIC CENTER DRIVE
Segment : FLOWER ST TO ROSS ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/18/19

Interval	WB				EB				Combined				Day: Wednesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	10	48	122	473	17	53	148	517	27	101	270	990	
12:15	17		114		10		131		27		245		
12:30	15		122		12		116		27		238		
12:45	6		115		14		122		20		237		
01:00	9	27	128	640	12	37	137	580	21	64	265	1,220	
01:15	5		166		7		146		12		312		
01:30	10		170		12		178		22		348		
01:45	3		176		6		119		9		295		
02:00	4	10	142	510	1	22	149	622	5	32	291	1,132	
02:15	4		116		3		138		7		254		
02:30	0		122		15		144		15		266		
02:45	2		130		3		191		5		321		
03:00	5	18	120	524	7	19	215	712	12	37	335	1,236	
03:15	3		132		0		169		3		301		
03:30	4		140		4		174		8		314		
03:45	6		132		8		154		14		286		
04:00	6	48	172	710	6	46	172	827	12	94	344	1,537	
04:15	4		144		11		182		15		326		
04:30	13		202		12		231		25		433		
04:45	25		192		17		242		42		434		
05:00	24	113	276	929	21	131	248	760	45	244	524	1,689	
05:15	16		241		28		172		44		413		
05:30	23		240		40		162		63		402		
05:45	50		172		42		178		92		350		
06:00	52	255	174	490	53	366	163	568	105	621	337	1,058	
06:15	54		124		68		154		122		278		
06:30	56		98		114		138		170		236		
06:45	93		94		131		113		224		207		
07:00	112	755	69	285	140	807	92	302	252	1,562	161	587	
07:15	172		73		196		78		368		151		
07:30	224		78		214		80		438		158		
07:45	247		65		257		52		504		117		
08:00	238	750	66	220	218	682	66	233	456	1,432	132	453	
08:15	218		64		176		50		394		114		
08:30	153		42		140		50		293		92		
08:45	141		48		148		67		289		115		
09:00	100	376	39	178	102	440	47	158	202	816	86	336	
09:15	94		46		121		52		215		98		
09:30	100		47		116		35		216		82		
09:45	82		46		101		24		183		70		
10:00	87	335	32	101	94	402	26	101	181	737	58	202	
10:15	84		23		104		36		188		59		
10:30	74		28		103		21		177		49		
10:45	90		18		101		18		191		36		
11:00	102	397	17	64	106	555	14	58	208	952	31	122	
11:15	91		17		143		18		234		35		
11:30	88		15		150		14		238		29		
11:45	116		15		156		12		272		27		
Totals	3,132		5,124		3,560		5,438		6,692		10,562		
Split%	46.8		48.5		53.2		51.5						
Day Totals		8,256				8,998				17,254			
Day Splits		47.8				52.2							
Peak Hour	07:30		04:45		07:15		04:15		07:30		04:30		
Volume	927		949		885		903		1,792		1,804		
Factor	0.94		0.86		0.86		0.91		0.89		0.86		

Wednesday, October 02, 2019 Location: Santa Ana PROJECT:

ADT208 SANTA ANA BLVD from FLOWER ST to ROSS ST. **Prepared by AimTD tel. 714 753 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			7		9			12:00			98		97		
0:15			8		11			12:15			86		89		
0:30			7		9			12:30			94		104		
0:45			2	24	13	42	66	12:45			106	384	108	398	782
1:00			1		10			13:00			89		123		
1:15			1		7			13:15			86		132		
1:30			0		6			13:30			95		105		
1:45			3	5	8	31	36	13:45			79	349	101	461	810
2:00			2		11			14:00			108		96		
2:15			0		7			14:15			89		95		
2:30			2		4			14:30			87		103		
2:45			3	7	2	24	31	14:45			97	381	123	417	798
3:00			6		5			15:00			102		127		
3:15			4		1			15:15			113		145		
3:30			2		0			15:30			103		153		
3:45			3	15	2	8	23	15:45			107	425	167	592	1017
4:00			6		4			16:00			123		159		
4:15			10		5			16:15			156		153		
4:30			13		3			16:30			178		163		
4:45			11	40	8	20	60	16:45			168	625	175	650	1275
5:00			16		12			17:00			156		213		
5:15			24		24			17:15			134		234		
5:30			29		36			17:30			121		204		
5:45			39	108	65	137	245	17:45			102	513	195	846	1359
6:00			54		64			18:00			97		172		
6:15			75		75			18:15			87		142		
6:30			86		78			18:30			103		104		
6:45			103	318	95	312	630	18:45			76	363	123	541	904
7:00			123		121			19:00			86		96		
7:15			189		158			19:15			78		86		
7:30			254		175			19:30			64		74		
7:45			304	870	145	599	1469	19:45			61	289	76	332	621
8:00			234		157			20:00			58		78		
8:15			153		134			20:15			53		61		
8:30			145		109			20:30			43		56		
8:45			126	658	89	489	1147	20:45			37	191	64	259	450
9:00			103		76			21:00			45		64		
9:15			100		89			21:15			35		43		
9:30			87		75			21:30			32		63		
9:45			95	385	78	318	703	21:45			40	152	53	223	375
10:00			76		100			22:00			28		47		
10:15			68		89			22:15			17		41		
10:30			79		96			22:30			23		36		
10:45			81	304	78	363	667	22:45			24	92	27	151	243
11:00			74		86			23:00			14		32		
11:15			89		75			23:15			8		18		
11:30			94		95			23:30			12		20		
11:45			90	347	99	355	702	23:45			11	45	16	86	131
Total Vol.			3081		2698		**5779**				3809		4956		**8765**

Daily Totals

NB	SB	EB	WB	Combined
		6890	7654	**14544**

			AM					PM		
Split %			53.3%	46.7%	**39.7%**			43.5%	56.5%	**60.3%**
Peak Hour	0:30	0:30	7:15	7:15	**7:15**			16:15	17:00	**16:30**
Volume			981	635	**1616**			658	846	**1421**
P.H.F.			0.81	0.91	**0.90**			0.92	0.90	**0.96**

pacific@aimtd.com Tell. 714 753 7888

Attachment 8

Attachment 8

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FIRST STREET
Segment : MAIN ST TO STANDARD AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/11/19
Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	54	193	299	1,249	58	185	274	1,115	112	378	573	2,364
12:15	49		306		52		282		101		588	
12:30	42		320		46		269		88		589	
12:45	48		324		29		290		77		614	
01:00	38	144	325	1,375	28	112	316	1,211	66	256	641	2,586
01:15	32		362		34		248		66		610	
01:30	28		356		23		334		51		690	
01:45	46		332		27		313		73		645	
02:00	31	116	330	1,314	36	136	333	1,369	67	252	663	2,683
02:15	31		324		34		326		65		650	
02:30	25		323		36		350		61		673	
02:45	29		337		30		360		59		697	
03:00	22	163	352	1,395	21	117	378	1,446	43	280	730	2,841
03:15	37		356		24		360		61		716	
03:30	42		315		32		362		74		677	
03:45	62		372		40		346		102		718	
04:00	56	376	324	1,440	33	135	356	1,451	89	511	680	2,891
04:15	86		362		26		368		112		730	
04:30	101		392		38		352		139		744	
04:45	133		362		38		375		171		737	
05:00	135	791	381	1,560	60	304	374	1,454	195	1,095	755	3,014
05:15	162		380		61		358		223		738	
05:30	236		406		72		354		308		760	
05:45	258		393		111		368		369		761	
06:00	258	1,243	330	1,294	118	566	352	1,279	376	1,809	682	2,573
06:15	286		338		134		313		420		651	
06:30	365		324		133		306		498		630	
06:45	334		302		181		308		515		610	
07:00	378	1,557	310	1,171	230	1,266	298	1,109	608	2,823	608	2,280
07:15	394		339		311		273		705		612	
07:30	384		264		355		278		739		542	
07:45	401		258		370		260		771		518	
08:00	375	1,422	221	866	291	1,086	192	772	666	2,508	413	1,638
08:15	384		213		276		208		660		421	
08:30	331		210		269		184		600		394	
08:45	332		222		250		188		582		410	
09:00	344	1,238	166	639	259	1,014	171	659	603	2,252	337	1,298
09:15	322		183		213		162		535		345	
09:30	278		154		276		162		554		316	
09:45	294		136		266		164		560		300	
10:00	270	1,088	125	446	248	998	158	566	518	2,086	283	1,012
10:15	270		118		242		140		512		258	
10:30	256		119		242		136		498		255	
10:45	292		84		266		132		558		216	
11:00	276	1,157	90	285	246	1,068	102	336	522	2,225	192	621
11:15	270		69		268		80		538		149	
11:30	290		68		276		66		566		134	
11:45	321		58		278		88		599		146	
Totals	9,488		13,034		6,987		12,767		16,475		25,801	
Split%	57.6		50.5		42.4		49.5					
Day Totals		22,522				19,754				42,276		
Day Splits		53.3				46.7						
Peak Hour	07:00		05:00		07:15		04:15		07:15		05:00	
Volume	1,557		1,560		1,327		1,469		2,881		3,014	
Factor	0.97		0.96		0.90		0.98		0.93		0.99	

Thursday, October 10, 2019 Location: Santa Ana PROJECT:

ADT161 MAIN ST from McFADDEN AVE to CHESTNUT AVE. **Prepared by AimTD tel. 714 753 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	32		29					12:00	221		230				
0:15	21		24					12:15	195		205				
0:30	24		14					12:30	162		265				
0:45	18	95	17	84			179	12:45	182	760	257	957			1717
1:00	23		23					13:00	156		244				
1:15	14		16					13:15	186		214				
1:30	18		18					13:30	207		225				
1:45	16	71	21	78			149	13:45	174	723	251	934			1657
2:00	18		24					14:00	207		263				
2:15	22		25					14:15	173		236				
2:30	19		21					14:30	187		244				
2:45	23	82	24	94			176	14:45	201	768	303	1046			1814
3:00	21		17					15:00	197		285				
3:15	29		19					15:15	199		295				
3:30	20		25					15:30	178		300				
3:45	28	98	24	85			183	15:45	175	749	336	1216			1965
4:00	24		27					16:00	196		354				
4:15	34		48					16:15	204		313				
4:30	42		54					16:30	193		334				
4:45	39	139	66	195			334	16:45	213	806	326	1327			2133
5:00	52		94					17:00	264		295				
5:15	76		107					17:15	268		303				
5:30	92		100					17:30	248		265				
5:45	106	326	112	413			739	17:45	256	1036	314	1177			2213
6:00	148		122					18:00	224		317				
6:15	203		120					18:15	220		336				
6:30	261		126					18:30	189		309				
6:45	250	862	142	510			1372	18:45	176	809	299	1261			2070
7:00	268		210					19:00	187		275				
7:15	271		189					19:15	183		231				
7:30	294		264					19:30	164		207				
7:45	289	1122	252	915			2037	19:45	149	683	175	888			1571
8:00	285		231					20:00	139		154				
8:15	270		207					20:15	123		167				
8:30	316		197					20:30	110		125				
8:45	234	1105	179	814			1919	20:45	114	486	103	549			1035
9:00	205		155					21:00	99		132				
9:15	203		200					21:15	112		109				
9:30	187		185					21:30	118		113				
9:45	181	776	192	732			1508	21:45	96	425	94	448			873
10:00	175		200					22:00	75		104				
10:15	164		209					22:15	88		92				
10:30	160		184					22:30	78		108				
10:45	170	669	213	806			1475	22:45	63	304	85	389			693
11:00	158		197					23:00	52		81				
11:15	196		215					23:15	50		79				
11:30	209		194					23:30	46		56				
11:45	195	758	215	821			1579	23:45	34	182	38	254			436
Total Vol.		6103		5547			**11650**			7731		10446			**18177**

Daily Totals

NB	SB	EB	WB	Combined
13834	15993			**29827**

	AM			PM		
Split %	52.4%	47.6%	**39.1%**	42.5%	57.5%	**60.9%**
Peak Hour	7:45	7:30	**7:30**	17:00	15:45	**17:00**
Volume	1160	954	**2092**	1036	1337	**2213**
P.H.F.	0.92	0.90	**0.94**	0.96	0.94	**0.97**

pacific@aimtd.com Tell. 714 753 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : GRAND AVENUE
Segment : SANTA CLARA AVE TO FAIRHAVEN
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/12/19
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	21	72	192	780	21	81	199	746	42	153	391	1,526
12:15	15		200		27		177		42		377	
12:30	20		212		17		170		37		382	
12:45	16		176		16		200		32		376	
01:00	12	43	190	804	10	41	214	722	22	84	404	1,526
01:15	11		213		12		156		23		369	
01:30	11		198		12		164		23		362	
01:45	9		203		7		188		16		391	
02:00	14	57	209	968	7	36	184	814	21	93	393	1,782
02:15	16		234		12		202		28		436	
02:30	15		251		6		222		21		473	
02:45	12		274		11		206		23		480	
03:00	10	59	248	1,055	8	51	208	900	18	110	456	1,955
03:15	12		244		14		254		26		498	
03:30	21		285		6		210		27		495	
03:45	16		278		23		228		39		506	
04:00	24	143	304	1,253	16	116	213	917	40	259	517	2,170
04:15	32		307		26		226		58		533	
04:30	41		316		38		250		79		566	
04:45	46		326		36		228		82		554	
05:00	62	302	353	1,463	26	260	287	1,099	88	562	640	2,562
05:15	62		332		56		294		118		626	
05:30	87		406		74		270		161		676	
05:45	91		372		104		248		195		620	
06:00	78	432	354	1,319	132	1,016	224	769	210	1,448	578	2,088
06:15	96		360		199		172		295		532	
06:30	132		320		306		180		438		500	
06:45	126		285		379		193		505		478	
07:00	140	777	228	799	383	1,728	176	659	523	2,505	404	1,458
07:15	192		214		414		178		606		392	
07:30	227		189		481		153		708		342	
07:45	218		168		450		152		668		320	
08:00	189	675	134	524	477	1,806	144	509	666	2,481	278	1,033
08:15	170		128		469		134		639		262	
08:30	168		142		415		117		583		259	
08:45	148		120		445		114		593		234	
09:00	148	575	126	404	422	1,174	124	427	570	1,749	250	831
09:15	125		102		274		111		399		213	
09:30	136		90		230		94		366		184	
09:45	166		86		248		98		414		184	
10:00	175	627	96	292	184	686	88	241	359	1,313	184	533
10:15	156		84		184		54		340		138	
10:30	150		64		164		49		314		113	
10:45	146		48		154		50		300		98	
11:00	164	693	43	149	166	674	48	170	330	1,367	91	319
11:15	160		46		152		42		312		88	
11:30	176		36		178		34		354		70	
11:45	193		24		178		46		371		70	
Totals	4,455		9,810		7,669		7,973		12,124		17,783	
Split%	36.7		55.2		63.3		44.8					
Day Totals		14,265				15,642				29,907		
Day Splits		47.7				52.3						
Peak Hour	07:15		05:30		07:30		05:00		07:30		05:00	
Volume	826		1,492		1,877		1,099		2,681		2,562	
Factor	0.91		0.92		0.98		0.93		0.95		0.95	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : GRAND AVENUE
Segment : FOURTH ST TO SANTA ANA BLVD
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/12/19
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	44	105	252	1,022	25	101	257	918	69	206	509	1,940
12:15	26		266		33		227		59		493	
12:30	15		250		24		237		39		487	
12:45	20		254		19		197		39		451	
01:00	27	103	292	1,179	23	84	242	842	50	187	534	2,021
01:15	20		270		21		187		41		457	
01:30	31		293		27		192		58		485	
01:45	25		324		13		221		38		545	
02:00	19	80	360	1,415	18	61	183	866	37	141	543	2,281
02:15	26		331		13		229		39		560	
02:30	22		336		10		204		32		540	
02:45	13		388		20		250		33		638	
03:00	14	103	386	1,579	13	85	224	872	27	188	610	2,451
03:15	27		379		14		218		41		597	
03:30	30		423		26		206		56		629	
03:45	32		391		32		224		64		615	
04:00	48	245	370	1,627	33	279	242	886	81	524	612	2,513
04:15	55		409		58		218		113		627	
04:30	62		398		80		212		142		610	
04:45	80		450		108		214		188		664	
05:00	95	492	442	1,780	85	614	224	947	180	1,106	666	2,727
05:15	110		462		134		271		244		733	
05:30	164		444		175		229		339		673	
05:45	123		432		220		223		343		655	
06:00	138	692	480	1,766	184	1,045	221	763	322	1,737	701	2,529
06:15	158		460		205		181		363		641	
06:30	206		410		260		175		466		585	
06:45	190		416		396		186		586		602	
07:00	225	1,055	350	1,080	384	1,448	176	605	609	2,503	526	1,685
07:15	260		270		382		148		642		418	
07:30	288		270		348		143		636		413	
07:45	282		190		334		138		616		328	
08:00	230	886	206	722	460	1,892	134	507	690	2,778	340	1,229
08:15	228		178		487		111		715		289	
08:30	224		180		499		142		723		322	
08:45	204		158		446		120		650		278	
09:00	210	912	141	564	257	1,028	123	448	467	1,940	264	1,012
09:15	226		144		316		115		542		259	
09:30	234		149		227		118		461		267	
09:45	242		130		228		92		470		222	
10:00	242	896	118	395	212	788	104	271	454	1,684	222	666
10:15	190		112		186		65		376		177	
10:30	225		85		194		46		419		131	
10:45	239		80		196		56		435		136	
11:00	264	1,003	63	219	182	877	44	168	446	1,880	107	387
11:15	245		62		237		48		482		110	
11:30	256		60		198		35		454		95	
11:45	238		34		260		41		498		75	
Totals	6,572		13,348		8,302		8,093		14,874		21,441	
Split%	44.2		62.3		55.8		37.7					
Day Totals		19,920				16,395				36,315		
Day Splits		54.9				45.1						
Peak Hour	07:15		05:15		08:00		05:00		08:00		05:15	
Volume	1,060		1,818		1,892		947		2,778		2,762	
Factor	0.92		0.95		0.95		0.87		0.96		0.94	

* Data File : D1909124

Tuesday, September 24, 2019 CITY: Santa Ana PROJECT: SC

ADT218 SANTA CLARA AVE from GR to AVE to TUSTIN AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			4		4			12:00			72		69		
0:15			8		3			12:15			77		73		
0:30			5		5			12:30			82		67		
0:45			3	20	3	15	35	12:45			69	300	87	296	596
1:00			6		5			13:00			82		66		
1:15			4		2			13:15			64		97		
1:30			2		3			13:30			88		85		
1:45			3	15	3	13	28	13:45			71	305	95	343	648
2:00			3		8			14:00			83		76		
2:15			0		0			14:15			95		81		
2:30			0		6			14:30			127		84		
2:45			2	5	0	14	19	14:45			108	413	88	329	742
3:00			4		2			15:00			93		99		
3:15			6		4			15:15			103		94		
3:30			3		6			15:30			110		97		
3:45			4	17	4	16	33	15:45			106	412	107	397	809
4:00			8		4			16:00			118		98		
4:15			6		4			16:15			110		115		
4:30			10		4			16:30			83		117		
4:45			16	40	11	23	63	16:45			115	426	113	443	869
5:00			11		16			17:00			117		136		
5:15			14		12			17:15			110		124		
5:30			28		26			17:30			144		136		
5:45			24	77	17	71	148	17:45			98	469	128	524	993
6:00			22		20			18:00			116		148		
6:15			42		34			18:15			92		98		
6:30			61		52			18:30			82		116		
6:45			49	174	58	164	338	18:45			77	367	87	449	816
7:00			70		61			19:00			52		79		
7:15			121		78			19:15			72		83		
7:30			119		108			19:30			68		53		
7:45			120	430	112	359	789	19:45			42	234	49	264	498
8:00			107		85			20:00			40		47		
8:15			92		67			20:15			55		25		
8:30			67		70			20:30			47		45		
8:45			77	343	68	290	633	20:45			35	177	39	156	333
9:00			81		57			21:00			48		34		
9:15			69		76			21:15			38		41		
9:30			72		54			21:30			28		27		
9:45			70	292	61	248	540	21:45			41	155	23	125	280
10:00			58		51			22:00			25		19		
10:15			80		61			22:15			25		19		
10:30			72		64			22:30			15		19		
10:45			65	275	62	238	513	22:45			19	84	19	76	160
11:00			61		51			23:00			15		18		
11:15			56		60			23:15			13		6		
11:30			82		68			23:30			8		6		
11:45			72	271	69	248	519	23:45			7	43	5	35	78
Total Vol.			1959		1699		**3658**				3385		3437		**6822**

Daily Totals

NB	SB	EB	WB	Combined
		5344	5136	**10480**

	AM			PM		
Split %	53.6%	46.4%	**34.9%**	49.6%	50.4%	**65.1%**
Peak Hour	7:15	7:15	**7:15**	16:45	17:15	**17:15**
Volume	467	383	**850**	486	536	**1004**
P.H.F.	0.96	0.85	**0.92**	0.84	0.91	**0.90**

Wednesday, September 25, 2019 CITY: Santa Ana PROJECT: SC

ADT258 TUSTIN AVE from SANTA CLARA AVE to FAIRHAVEN AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	19		25					12:00	196		232				
0:15	17		18					12:15	257		239				
0:30	21		24					12:30	219		251				
0:45	21	78	16	83			161	12:45	262	934	279	1001			1935
1:00	21		24					13:00	231		256				
1:15	9		14					13:15	246		221				
1:30	9		11					13:30	259		248				
1:45	9	48	4	53			101	13:45	272	1008	245	970			1978
2:00	11		12					14:00	263		229				
2:15	11		11					14:15	280		248				
2:30	8		12					14:30	270		220				
2:45	8	38	10	45			83	14:45	286	1099	253	950			2049
3:00	8		8					15:00	277		267				
3:15	2		8					15:15	279		300				
3:30	6		16					15:30	294		259				
3:45	20	36	16	48			84	15:45	318	1168	257	1083			2251
4:00	9		14					16:00	366		275				
4:15	24		26					16:15	348		267				
4:30	25		36					16:30	388		272				
4:45	24	82	41	117			199	16:45	432	1534	271	1085			2619
5:00	36		49					17:00	516		335				
5:15	50		58					17:15	437		307				
5:30	57		60					17:30	445		325				
5:45	69	212	110	277			489	17:45	429	1827	269	1236			3063
6:00	68		157					18:00	477		283				
6:15	74		218					18:15	347		224				
6:30	97		410					18:30	300		211				
6:45	92	331	481	1266			1597	18:45	310	1434	206	924			2358
7:00	119		548					19:00	260		208				
7:15	125		663					19:15	243		185				
7:30	148		672					19:30	203		156				
7:45	175	567	682	2565			3132	19:45	148	854	162	711			1565
8:00	166		671					20:00	205		162				
8:15	161		665					20:15	145		142				
8:30	156		647					20:30	117		125				
8:45	164	647	572	2555			3202	20:45	134	601	130	559			1160
9:00	172		479					21:00	108		125				
9:15	152		349					21:15	130		94				
9:30	168		270					21:30	94		94				
9:45	169	661	278	1376			2037	21:45	77	409	100	413			822
10:00	177		241					22:00	89		83				
10:15	181		238					22:15	61		62				
10:30	165		231					22:30	66		41				
10:45	187	710	221	931			1641	22:45	50	266	65	251			517
11:00	211		203					23:00	69		49				
11:15	188		240					23:15	40		32				
11:30	189		201					23:30	34		33				
11:45	233	821	234	878			1699	23:45	31	174	29	143			317
Total Vol.		4231		10194			**14425**			11308		9326			**20634**

Daily Totals

NB	SB	EB	WB	**Combined**
15539	19520			**35059**

	AM			**PM**		
Split %	29.3%	70.7%	**41.1%**	54.8%	45.2%	**58.9%**
Peak Hour	11:45	7:30	**7:30**	16:45	16:45	**16:45**
Volume	905	2690	**3340**	1830	1238	**3068**
P.H.F.	0.88	0.99	**0.97**	0.88	0.92	**0.90**

cs@aimtd.com Tell. 714 253 7888

Thursday, October 10, 2019 Location: Santa Ana PROJECT:

ADT239 SEVENTEENTH ST from CABRILLO PARK DR to TUSTIN AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			12		34			12:00			256		258		
0:15			15		23			12:15			262		290		
0:30			9		17			12:30			304		306		
0:45			8	44	19	93	137	12:45			256	1078	317	1171	2249
1:00			7		12			13:00			245		291		
1:15			10		14			13:15			215		295		
1:30			7		11			13:30			277		326		
1:45			9	33	8	45	78	13:45			244	981	283	1195	2176
2:00			7		10			14:00			283		278		
2:15			5		14			14:15			261		229		
2:30			10		16			14:30			258		263		
2:45			5	27	9	49	76	14:45			235	1037	293	1063	2100
3:00			7		8			15:00			252		276		
3:15			5		13			15:15			245		287		
3:30			9		15			15:30			250		263		
3:45			9	30	8	44	74	15:45			248	995	319	1145	2140
4:00			12		7			16:00			273		316		
4:15			15		13			16:15			319		276		
4:30			25		21			16:30			302		311		
4:45			41	93	27	68	161	16:45			313	1207	290	1193	2400
5:00			52		28			17:00			323		314		
5:15			67		41			17:15			356		313		
5:30			62		57			17:30			374		349		
5:45			68	249	54	180	429	17:45			309	1362	353	1329	2691
6:00			86		58			18:00			303		316		
6:15			104		70			18:15			256		332		
6:30			176		97			18:30			289		283		
6:45			197	563	134	359	922	18:45			259	1107	282	1213	2320
7:00			191		186			19:00			277		283		
7:15			189		201			19:15			226		265		
7:30			207		268			19:30			180		190		
7:45			224	811	218	873	1684	19:45			175	858	214	952	1810
8:00			251		234			20:00			165		155		
8:15			272		271			20:15			150		171		
8:30			261		262			20:30			116		156		
8:45			248	1032	256	1023	2055	20:45			118	549	127	609	1158
9:00			217		233			21:00			123		154		
9:15			208		198			21:15			104		127		
9:30			200		209			21:30			97		106		
9:45			195	820	194	834	1654	21:45			105	429	72	459	888
10:00			188		226			22:00			71		80		
10:15			213		228			22:15			79		86		
10:30			232		244			22:30			78		54		
10:45			217	850	194	892	1742	22:45			70	298	47	267	565
11:00			218		252			23:00			67		42		
11:15			238		235			23:15			45		53		
11:30			257		232			23:30			32		41		
11:45			242	955	238	957	1912	23:45			26	170	35	171	341
Total Vol.				5507		5417	**10924**					10071		10767	**20838**

Daily Totals

NB	SB	EB	WB	Combined
		15578	16184	**31762**

			AM				PM		
Split %			50.4%	49.6%	**34.4%**		48.3%	51.7%	**65.6%**
Peak Hour	0:30	0:30	11:45	11:45	**11:45**		16:45	17:30	**17:00**
Volume			1064	1092	**2156**		1366	1350	**2691**
P.H.F.			0.88	0.89	**0.88**		0.91	0.96	**0.93**

Tuesday, September 24, 2019 CITY: Santa Ana PROJECT: SC

ADT255 TUSTIN AVE from FOURTH ST to FRUIT ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	12		11					12:00	197		198				
0:15	12		15					12:15	182		177				
0:30	12		12					12:30	192		195				
0:45	8	44	9	47			91	12:45	153	724	197	767			1491
1:00	6		4					13:00	178		196				
1:15	9		11					13:15	189		202				
1:30	7		8					13:30	199		181				
1:45	7	29	4	27			56	13:45	204	770	154	733			1503
2:00	5		7					14:00	185		162				
2:15	7		5					14:15	183		167				
2:30	3		7					14:30	192		153				
2:45	6	21	4	23			44	14:45	259	819	145	627			1446
3:00	3		6					15:00	259		176				
3:15	8		13					15:15	264		196				
3:30	8		6					15:30	286		191				
3:45	9	28	5	30			58	15:45	269	1078	187	750			1828
4:00	18		13					16:00	263		181				
4:15	24		10					16:15	316		152				
4:30	13		24					16:30	319		202				
4:45	24	79	25	72			151	16:45	311	1209	206	741			1950
5:00	27		27					17:00	327		247				
5:15	41		26					17:15	317		205				
5:30	30		57					17:30	340		201				
5:45	41	139	49	159			298	17:45	371	1355	166	819			2174
6:00	51		91					18:00	361		133				
6:15	65		130					18:15	332		110				
6:30	100		205					18:30	309		147				
6:45	102	318	216	642			960	18:45	296	1298	113	503			1801
7:00	115		310					19:00	189		105				
7:15	119		309					19:15	166		115				
7:30	138		320					19:30	143		106				
7:45	164	536	329	1268			1804	19:45	95	593	85	411			1004
8:00	245		354					20:00	96		74				
8:15	235		333					20:15	97		73				
8:30	199		337					20:30	91		84				
8:45	239	918	334	1358			2276	20:45	73	357	62	293			650
9:00	183		266					21:00	60		74				
9:15	187		240					21:15	77		51				
9:30	153		197					21:30	82		61				
9:45	197	720	195	898			1618	21:45	51	270	59	245			515
10:00	160		179					22:00	43		56				
10:15	178		159					22:15	44		40				
10:30	173		149					22:30	31		34				
10:45	154	665	129	616			1281	22:45	32	150	27	157			307
11:00	161		170					23:00	30		27				
11:15	177		158					23:15	20		35				
11:30	173		198					23:30	24		29				
11:45	172	683	210	736			1419	23:45	15	89	20	111			200
Total Vol.	4180		5876				**10056**		8712		6157				**14869**

Daily Totals

NB	SB	EB	WB	**Combined**
12892	12033			**24925**

	AM			**PM**		
Split %	41.6%	58.4%	**40.3%**	58.6%	41.4%	**59.7%**
Peak Hour	8:00	8:00	**8:00**	17:30	16:30	**17:00**
Volume	918	1358	**2276**	1404	860	**2174**
P.H.F.	0.94	0.96	**0.95**	0.97	0.87	**0.95**

cs@aimtd.com Tell. 714 253 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FIRST STREET
Segment : GRAND AVE TO LYON ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/10/19

Interval	EB				WB				Combined				Day: Tuesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	24	74	158	612	58	186	220	963	82	260	378	1,575	
12:15	15		153		49		260		64		413		
12:30	14		158		43		225		57		383		
12:45	21		143		36		258		57		401		
01:00	15	48	162	668	30	139	243	976	45	187	405	1,644	
01:15	12		172		34		236		46		408		
01:30	5		174		42		241		47		415		
01:45	16		160		33		256		49		416		
02:00	8	43	180	870	24	101	246	1,084	32	144	426	1,954	
02:15	10		192		24		248		34		440		
02:30	14		260		25		300		39		560		
02:45	11		238		28		290		39		528		
03:00	6	65	202	800	15	101	289	1,137	21	166	491	1,937	
03:15	14		209		28		271		42		480		
03:30	16		177		18		321		34		498		
03:45	29		212		40		256		69		468		
04:00	25	180	206	859	31	157	307	1,301	56	337	513	2,160	
04:15	37		218		38		300		75		518		
04:30	50		229		39		326		89		555		
04:45	68		206		49		368		117		574		
05:00	70	375	186	505	70	335	344	1,360	140	710	530	1,865	
05:15	78		62		70		342		148		404		
05:30	91		91		83		354		174		445		
05:45	136		166		112		320		248		486		
06:00	126	581	196	749	130	637	288	1,026	256	1,218	484	1,775	
06:15	144		188		129		268		273		456		
06:30	148		187		164		240		312		427		
06:45	163		178		214		230		377		408		
07:00	170	608	147	497	240	1,222	222	852	410	1,830	369	1,349	
07:15	172		140		305		210		477		350		
07:30	132		106		324		222		456		328		
07:45	134		104		353		198		487		302		
08:00	140	602	98	379	294	1,041	180	635	434	1,643	278	1,014	
08:15	146		110		272		163		418		273		
08:30	150		101		234		150		384		251		
08:45	166		70		241		142		407		212		
09:00	162	620	78	283	236	938	130	581	398	1,558	208	864	
09:15	150		86		266		162		416		248		
09:30	160		53		208		140		368		193		
09:45	148		66		228		149		376		215		
10:00	164	613	68	202	211	880	124	450	375	1,493	192	652	
10:15	158		48		216		132		374		180		
10:30	138		42		220		104		358		146		
10:45	153		44		233		90		386		134		
11:00	144	630	40	138	240	948	94	303	384	1,578	134	441	
11:15	148		36		234		64		382		100		
11:30	170		32		232		69		402		101		
11:45	168		30		242		76		410		106		
Totals	4,439		6,562		6,685		10,668		11,124		17,230		
Split%	39.9		38.1		60.1		61.9						
Day Totals		11,001				17,353				28,354			
Day Splits		38.8				61.2							
Peak Hour	06:30		02:30		07:15		04:45		07:15		04:15		
Volume	653		909		1,276		1,408		1,854		2,177		
Factor	0.95		0.87		0.90		0.96		0.95		0.95		

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FIRST STREET
Segment : SANTA ANA FWY TO GOLDEN CIRCLE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/11/19
Day: Wednesday

Interval	WB				EB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	22	85	132	605	21	78	212	691	43	163	344	1,296
12:15	31		148		24		162		55		310	
12:30	17		168		17		165		34		333	
12:45	15		157		16		152		31		309	
01:00	24	72	180	669	16	66	161	705	40	138	341	1,374
01:15	14		168		14		168		28		336	
01:30	17		158		19		186		36		344	
01:45	17		163		17		190		34		353	
02:00	18	54	172	664	20	56	164	732	38	110	336	1,396
02:15	17		164		12		166		29		330	
02:30	14		184		11		203		25		387	
02:45	5		144		13		199		18		343	
03:00	12	57	192	725	12	76	196	826	24	133	388	1,551
03:15	15		170		21		199		36		369	
03:30	14		169		19		203		33		372	
03:45	16		194		24		228		40		422	
04:00	14	80	222	795	21	135	188	871	35	215	410	1,666
04:15	14		177		29		232		43		409	
04:30	32		188		45		229		77		417	
04:45	20		208		40		222		60		430	
05:00	41	199	222	817	58	247	250	978	99	446	472	1,795
05:15	46		222		58		240		104		462	
05:30	54		186		44		228		98		414	
05:45	58		187		87		260		145		447	
06:00	62	354	194	654	90	448	251	860	152	802	445	1,514
06:15	69		170		90		224		159		394	
06:30	91		160		116		210		207		370	
06:45	132		130		152		175		284		305	
07:00	155	811	144	503	120	484	138	482	275	1,295	282	985
07:15	176		138		115		130		291		268	
07:30	240		119		136		122		376		241	
07:45	240		102		113		92		353		194	
08:00	192	787	94	342	172	742	102	400	364	1,529	196	742
08:15	216		94		186		92		402		186	
08:30	191		82		166		119		357		201	
08:45	188		72		218		87		406		159	
09:00	164	612	82	277	192	659	77	281	356	1,271	159	558
09:15	150		67		146		60		296		127	
09:30	160		62		157		78		317		140	
09:45	138		66		164		66		302		132	
10:00	140	497	66	218	130	533	56	205	270	1,030	122	423
10:15	127		57		143		61		270		118	
10:30	126		61		134		46		260		107	
10:45	104		34		126		42		230		76	
11:00	160	563	38	138	162	602	37	129	322	1,165	75	267
11:15	134		35		130		36		264		71	
11:30	123		27		162		26		285		53	
11:45	146		38		148		30		294		68	
Totals	4,171		6,407		4,126		7,160		8,297		13,567	
Split%	50.3		47.2		49.7		52.8					
Day Totals		10,578				11,286				21,864		
Day Splits		48.4				51.6						
Peak Hour	07:30		04:30		08:15		05:15		08:00		05:00	
Volume	888		840		762		979		1,529		1,795	
Factor	0.93		0.95		0.87		0.94		0.94		0.95	

* Data File : D1909141

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FAIRVIEW STREET
Segment : HARVARD AVE TO EDINGER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/25/19
Day: Wednesday

Interval	SB				NB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	18	72	204	942	56	175	268	969	74	247	472	1,911
12:15	21		254		44		211		65		465	
12:30	16		236		41		246		57		482	
12:45	17		248		34		244		51		492	
01:00	10	52	247	991	29	106	282	1,237	39	158	529	2,228
01:15	10		227		35		280		45		507	
01:30	16		245		21		328		37		573	
01:45	16		272		21		347		37		619	
02:00	14	66	283	1,116	39	110	440	1,615	53	176	723	2,731
02:15	16		265		23		352		39		617	
02:30	18		290		12		426		30		716	
02:45	18		278		36		397		54		675	
03:00	12	135	246	886	25	99	406	1,781	37	234	652	2,667
03:15	23		232		21		402		44		634	
03:30	42		206		21		475		63		681	
03:45	58		202		32		498		90		700	
04:00	64	471	216	841	43	183	462	1,914	107	654	678	2,755
04:15	68		226		38		486		106		712	
04:30	139		195		44		467		183		662	
04:45	200		204		58		499		258		703	
05:00	127	816	210	867	60	329	502	1,913	187	1,145	712	2,780
05:15	167		224		76		470		243		694	
05:30	228		204		96		467		324		671	
05:45	294		229		97		474		391		703	
06:00	218	1,231	195	685	124	600	454	1,687	342	1,831	649	2,372
06:15	278		170		140		399		418		569	
06:30	332		178		160		460		492		638	
06:45	403		142		176		374		579		516	
07:00	400	1,487	130	509	275	1,278	324	1,115	675	2,765	454	1,624
07:15	428		154		276		283		704		437	
07:30	350		113		375		256		725		369	
07:45	309		112		352		252		661		364	
08:00	370	1,480	107	403	250	886	238	829	620	2,366	345	1,232
08:15	374		118		220		207		594		325	
08:30	390		82		208		190		598		272	
08:45	346		96		208		194		554		290	
09:00	253	988	94	324	210	824	217	765	463	1,812	311	1,089
09:15	271		88		190		206		461		294	
09:30	239		68		234		165		473		233	
09:45	225		74		190		177		415		251	
10:00	182	812	52	190	181	731	136	531	363	1,543	188	721
10:15	205		45		181		159		386		204	
10:30	215		49		195		140		410		189	
10:45	210		44		174		96		384		140	
11:00	195	787	54	146	196	841	86	337	391	1,628	140	483
11:15	197		32		196		97		393		129	
11:30	191		33		226		88		417		121	
11:45	204		27		223		66		427		93	
Totals	8,397		7,900		6,162		14,693		14,559		22,593	
Split%	57.7		35.0		42.3		65.0					
Day Totals		16,297				20,855				37,152		
Day Splits		43.9				56.1						
Peak Hour	06:45		02:00		07:00		04:15		07:00		04:15	
Volume	1,581		1,116		1,278		1,954		2,765		2,789	
Factor	0.92		0.96		0.85		0.97		0.95		0.98	

* Data File : D1909070

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FAIRVIEW STREET
Segment : SEGERSTROM AVE TO WARNER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/09/19
Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	51	162	218	888	22	96	239	996	73	258	457	1,884
12:15	40		222		30		222		70		444	
12:30	38		222		25		265		63		487	
12:45	33		226		19		270		52		496	
01:00	25	90	292	1,227	11	47	262	1,092	36	137	554	2,319
01:15	28		280		11		246		39		526	
01:30	19		310		14		284		33		594	
01:45	18		345		11		300		29		645	
02:00	17	87	394	1,627	22	81	292	1,070	39	168	686	2,697
02:15	15		380		14		251		29		631	
02:30	19		394		16		279		35		673	
02:45	36		459		29		248		65		707	
03:00	21	77	418	1,738	24	176	277	1,111	45	253	695	2,849
03:15	17		424		22		289		39		713	
03:30	17		428		56		277		73		705	
03:45	22		468		74		268		96		736	
04:00	26	152	518	1,919	58	435	267	1,071	84	587	785	2,990
04:15	25		483		98		234		123		717	
04:30	46		474		128		276		174		750	
04:45	55		444		151		294		206		738	
05:00	60	292	470	1,933	116	856	270	1,071	176	1,148	740	3,004
05:15	48		501		188		274		236		775	
05:30	96		486		269		267		365		753	
05:45	88		476		283		260		371		736	
06:00	86	482	434	1,618	264	1,511	243	879	350	1,993	677	2,497
06:15	132		406		312		208		444		614	
06:30	132		434		420		228		552		662	
06:45	132		344		515		200		647		544	
07:00	192	983	302	1,032	490	2,095	232	743	682	3,078	534	1,775
07:15	213		290		556		182		769		472	
07:30	293		228		555		179		848		407	
07:45	285		212		494		150		779		362	
08:00	219	829	190	726	549	2,197	138	558	768	3,026	328	1,284
08:15	218		196		558		142		776		338	
08:30	196		160		557		152		753		312	
08:45	196		180		533		126		729		306	
09:00	214	782	156	616	374	1,270	94	405	588	2,052	250	1,021
09:15	184		162		334		128		518		290	
09:30	198		154		284		109		482		263	
09:45	186		144		278		74		464		218	
10:00	192	720	156	522	192	900	74	243	384	1,620	230	765
10:15	174		144		234		52		408		196	
10:30	176		128		234		50		410		178	
10:45	178		94		240		67		418		161	
11:00	167	778	76	276	213	875	38	149	380	1,653	114	425
11:15	205		72		198		33		403		105	
11:30	209		66		220		41		429		107	
11:45	197		62		244		37		441		99	
Totals	5,434		14,122		10,539		9,388		15,973		23,510	
Split%	34.0		60.1		66.0		39.9					
Day Totals		19,556				19,927				39,483		
Day Splits		49.5				50.5						
Peak Hour	07:30		03:45		08:00		01:30		07:30		04:45	
Volume	1,015		1,943		2,197		1,127		3,171		3,006	
Factor	0.87		0.94		0.98		0.94		0.93		0.97	

Data File : D1909068

Wednesday, September 11, 2019 Location: Santa Ana PROJECT:

ADT147 MacARTHUR BL from SUSAN ST to FAIRVIEW ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			16		15			12:00			217		153		
0:15			6		15			12:15			221		175		
0:30			9		14			12:30			213		145		
0:45			6	37	4	48	85	12:45			192	843	200	673	1516
1:00			7		6			13:00			191		187		
1:15			6		8			13:15			186		198		
1:30			13		5			13:30			217		199		
1:45			9	35	7	26	61	13:45			178	772	218	802	1574
2:00			6		4			14:00			210		215		
2:15			6		4			14:15			163		218		
2:30			11		0			14:30			259		210		
2:45			9	32	0	8	40	14:45			232	864	232	875	1739
3:00			18		6			15:00			220		315		
3:15			9		5			15:15			202		278		
3:30			21		6			15:30			232		290		
3:45			31	79	8	25	104	15:45			177	831	374	1257	2088
4:00			35		21			16:00			236		362		
4:15			25		10			16:15			235		385		
4:30			23		41			16:30			258		383		
4:45			42	125	64	136	261	16:45			234	963	386	1516	2479
5:00			35		32			17:00			313		414		
5:15			32		36			17:15			249		358		
5:30			62		62			17:30			262		341		
5:45			60	189	83	213	402	17:45			205	1029	407	1520	2549
6:00			62		55			18:00			219		379		
6:15			71		68			18:15			205		318		
6:30			129		73			18:30			180		240		
6:45			154	416	96	292	708	18:45			174	778	265	1202	1980
7:00			210		101			19:00			165		212		
7:15			246		127			19:15			131		162		
7:30			337		141			19:30			164		154		
7:45			390	1183	191	560	1743	19:45			104	564	135	663	1227
8:00			257		174			20:00			105		123		
8:15			336		132			20:15			127		81		
8:30			298		148			20:30			98		56		
8:45			291	1182	159	613	1795	20:45			96	426	86	346	772
9:00			219		144			21:00			106		85		
9:15			186		141			21:15			80		52		
9:30			169		142			21:30			74		51		
9:45			145	719	144	571	1290	21:45			57	317	34	222	539
10:00			143		142			22:00			64		55		
10:15			144		118			22:15			40		49		
10:30			158		139			22:30			41		34		
10:45			163	608	164	563	1171	22:45			33	178	29	167	345
11:00			180		117			23:00			40		25		
11:15			171		136			23:15			25		34		
11:30			165		152			23:30			19		26		
11:45			209	725	171	576	1301	23:45			11	95	26	111	206
Total Vol.				5330		3631	**8961**					7660		9354	**17014**

Daily Totals

NB	SB	EB	WB	Combined
		12990	12985	**25975**

			AM				PM		
Split %			59.5%	40.5%	**34.5%**		45.0%	55.0%	**65.5%**
Peak Hour	0:30	0:30	7:30	11:30	**7:30**		16:45	16:15	**16:15**
Volume			1320	651	**1958**		1058	1568	**2608**
P.H.F.			0.85	0.93	**0.84**		0.85	0.95	**0.90**

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : EDINGER AVENUE
Segment : FAIRVIEW ST TO RAITT ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/17/19

Interval	EB				WB				Combined				Day: Tuesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	35	112	166	666	34	104	172	665	69	216	338	1,331	
12:15	32		158		22		160		54		318		
12:30	30		186		21		175		51		361		
12:45	15		156		27		158		42		314		
01:00	17	79	193	791	14	57	162	750	31	136	355	1,541	
01:15	18		182		18		168		36		350		
01:30	30		202		12		194		42		396		
01:45	14		214		13		226		27		440		
02:00	8	45	194	961	8	55	202	865	16	100	396	1,826	
02:15	8		229		14		204		22		433		
02:30	15		276		15		207		30		483		
02:45	14		262		18		252		32		514		
03:00	5	48	300	1,073	14	78	264	1,093	19	126	564	2,166	
03:15	8		272		12		280		20		552		
03:30	16		231		20		273		36		504		
03:45	19		270		32		276		51		546		
04:00	24	163	298	1,053	22	199	284	1,197	46	362	582	2,250	
04:15	31		234		33		308		64		542		
04:30	56		269		66		294		122		563		
04:45	52		252		78		311		130		563		
05:00	49	337	280	1,103	62	379	317	1,213	111	716	597	2,316	
05:15	64		282		84		288		148		570		
05:30	104		276		116		287		220		563		
05:45	120		265		117		321		237		586		
06:00	105	624	251	951	100	558	296	1,112	205	1,182	547	2,063	
06:15	146		224		134		292		280		516		
06:30	176		252		152		242		328		494		
06:45	197		224		172		282		369		506		
07:00	244	1,080	204	856	198	905	240	797	442	1,985	444	1,653	
07:15	308		218		216		202		524		420		
07:30	273		238		239		196		512		434		
07:45	255		196		252		159		507		355		
08:00	222	900	236	796	218	727	166	645	440	1,627	402	1,441	
08:15	238		197		169		188		407		385		
08:30	220		195		176		149		396		344		
08:45	220		168		164		142		384		310		
09:00	164	669	155	561	150	580	126	464	314	1,249	281	1,025	
09:15	188		144		156		147		344		291		
09:30	172		120		138		109		310		229		
09:45	145		142		136		82		281		224		
10:00	150	620	105	328	153	644	99	311	303	1,264	204	639	
10:15	146		94		174		81		320		175		
10:30	167		70		145		71		312		141		
10:45	157		59		172		60		329		119		
11:00	148	635	58	200	170	614	50	164	318	1,249	108	364	
11:15	158		59		162		44		320		103		
11:30	151		42		148		39		299		81		
11:45	178		41		134		31		312		72		
Totals	5,312		9,339		4,900		9,276		10,212		18,615		
Split%	52.0		50.2		48.0		49.8						
Day Totals		14,651				14,176				28,827			
Day Splits		50.8				49.2							
Peak Hour	07:00		02:30		07:15		04:15		07:00		05:00		
Volume	1,080		1,110		925		1,230		1,985		2,316		
Factor	0.88		0.93		0.92		0.97		0.95		0.97		

Thursday, October 10, 2019 Location: Santa Ana PROJECT:

ADT174 McFADDEN AVE from FAIRVIEW ST to RAITT ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			21		35			12:00			103		104		
0:15			29		24			12:15			113		123		
0:30			23		20			12:30			98		113		
0:45			19	92	13	92	184	12:45			110	424	130	470	894
1:00			16		9			13:00			140		109		
1:15			10		11			13:15			158		121		
1:30			11		13			13:30			148		132		
1:45			14	51	12	45	96	13:45			156	602	126	488	1090
2:00			13		8			14:00			136		129		
2:15			8		5			14:15			169		132		
2:30			7		10			14:30			174		157		
2:45			12	40	16	39	79	14:45			184	663	184	602	1265
3:00			13		11			15:00			221		183		
3:15			19		13			15:15			193		203		
3:30			12		14			15:30			176		191		
3:45			15	59	17	55	114	15:45			187	777	205	782	1559
4:00			10		23			16:00			208		195		
4:15			19		25			16:15			194		175		
4:30			29		23			16:30			187		179		
4:45			35	93	41	112	205	16:45			181	770	190	739	1509
5:00			39		53			17:00			195		204		
5:15			58		62			17:15			204		195		
5:30			73		78			17:30			213		222		
5:45			87	257	86	279	536	17:45			217	829	216	837	1666
6:00			85		84			18:00			223		230		
6:15			91		78			18:15			197		200		
6:30			106		82			18:30			186		207		
6:45			127	409	101	345	754	18:45			181	787	189	826	1613
7:00			140		123			19:00			198		186		
7:15			178		164			19:15			179		175		
7:30			219		189			19:30			187		156		
7:45			229	766	196	672	1438	19:45			161	725	140	657	1382
8:00			218		187			20:00			124		117		
8:15			186		159			20:15			115		103		
8:30			174		122			20:30			134		111		
8:45			157	735	103	571	1306	20:45			110	483	100	431	914
9:00			125		98			21:00			102		98		
9:15			130		104			21:15			98		104		
9:30			108		91			21:30			94		68		
9:45			114	477	100	393	870	21:45			85	379	95	365	744
10:00			100		93			22:00			77		61		
10:15			109		98			22:15			79		71		
10:30			115		101			22:30			67		52		
10:45			116	440	109	401	841	22:45			68	291	38	222	513
11:00			123		117			23:00			56		27		
11:15			131		108			23:15			52		35		
11:30			119		107			23:30			47		24		
11:45			99	472	115	447	919	23:45			32	187	25	111	298
Total Vol.			3891		3451		**7342**				6917		6530		**13447**

Daily Totals

NB	SB	EB	WB	Combined
		10808	9981	**20789**

			AM			PM		
Split %			53.0%	47.0%	**35.3%**	51.4%	48.6%	**64.7%**
Peak Hour	0:30	0:30	7:30	7:15	**7:30**	17:15	17:30	**17:15**
Volume			852	736	**1583**	857	868	**1720**
P.H.F.			0.93	0.94	**0.93**	0.96	0.94	**0.95**

Thursday, October 03, 2019 Location: Santa Ana PROJECT:

ADT148 MacARTHUR BL from FAIRVIEW ST to RAITT ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			13		17			12:00			199		185		
0:15			15		15			12:15			186		197		
0:30			12		13			12:30			170		183		
0:45			11	51	16	61	112	12:45			173	728	194	759	1487
1:00			7		12			13:00			168		199		
1:15			6		8			13:15			201		214		
1:30			8		11			13:30			234		221		
1:45			4	25	7	38	63	13:45			208	811	237	871	1682
2:00			4		5			14:00			206		264		
2:15			2		10			14:15			229		242		
2:30			8		11			14:30			312		278		
2:45			14	28	9	35	63	14:45			304	1051	341	1125	2176
3:00			13		6			15:00			281		359		
3:15			11		8			15:15			242		342		
3:30			15		12			15:30			235		336		
3:45			21	60	18	44	104	15:45			214	972	407	1444	2416
4:00			31		15			16:00			206		400		
4:15			34		23			16:15			211		395		
4:30			39		27			16:30			214		414		
4:45			46	150	37	102	252	16:45			231	862	463	1672	2534
5:00			42		43			17:00			240		486		
5:15			57		45			17:15			238		452		
5:30			76		41			17:30			242		463		
5:45			68	243	48	177	420	17:45			214	934	461	1862	2796
6:00			84		52			18:00			218		451		
6:15			96		50			18:15			196		355		
6:30			124		78			18:30			167		374		
6:45			206	510	107	287	797	18:45			139	720	311	1491	2211
7:00			241		112			19:00			156		273		
7:15			353		199			19:15			124		223		
7:30			429		266			19:30			127		184		
7:45			435	1458	343	920	2378	19:45			104	511	136	816	1327
8:00			407		257			20:00			118		104		
8:15			320		168			20:15			105		112		
8:30			356		152			20:30			94		85		
8:45			322	1405	131	708	2113	20:45			103	420	96	397	817
9:00			252		127			21:00			95		86		
9:15			153		132			21:15			100		75		
9:30			142		121			21:30			96		72		
9:45			145	692	136	516	1208	21:45			68	359	67	300	659
10:00			136		108			22:00			54		62		
10:15			127		114			22:15			46		54		
10:30			134		119			22:30			41		46		
10:45			125	522	127	468	990	22:45			34	175	41	203	378
11:00			135		157			23:00			31		36		
11:15			153		154			23:15			23		45		
11:30			188		152			23:30			17		34		
11:45			213	689	163	626	1315	23:45			12	83	28	143	226
Total Vol.				5833		3982	**9815**					7626		11083	**18709**

Daily Totals

NB	SB	EB	WB	Combined
		13459	15065	**28524**

			AM				PM		
Split %			59.4%	40.6%	**34.4%**		40.8%	59.2%	**65.6%**
Peak Hour	0:30	0:30	7:15	7:15	**7:15**		14:30	16:45	**16:45**
Volume			1624	1065	**2689**		1139	1864	**2815**
P.H.F.			0.93	0.78	**0.86**		0.91	0.96	**0.97**

Wednesday, October 02, 2019 Location: Santa Ana PROJECT:

ADT222 SEGERSTROM AVE from FAIRVIEW ST to RAITT ST. **Prepared by AimTD tel. 714 753 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			34		35			12:00			94		89		
0:15			37		32			12:15			86		101		
0:30			26		29			12:30			68		85		
0:45			31	128	31	127	255	12:45			71	319	88	363	682
1:00			34		25			13:00			75		108		
1:15			26		21			13:15			78		93		
1:30			18		22			13:30			85		95		
1:45			20	98	19	87	185	13:45			104	342	113	409	751
2:00			19		17			14:00			87		105		
2:15			10		10			14:15			78		104		
2:30			11		12			14:30			90		101		
2:45			5	45	6	45	90	14:45			86	341	105	415	756
3:00			3		8			15:00			96		112		
3:15			5		7			15:15			105		103		
3:30			4		6			15:30			108		123		
3:45			6	18	11	32	50	15:45			110	419	147	485	904
4:00			7		12			16:00			106		139		
4:15			6		10			16:15			114		167		
4:30			4		9			16:30			195		184		
4:45			8	25	8	39	64	16:45			175	590	271	761	1351
5:00			6		6			17:00			189		242		
5:15			11		7			17:15			173		196		
5:30			16		8			17:30			191		207		
5:45			15	48	12	33	81	17:45			178	731	242	887	1618
6:00			21		8			18:00			172		257		
6:15			26		17			18:15			176		280		
6:30			27		23			18:30			163		268		
6:45			31	105	29	77	182	18:45			157	668	282	1087	1755
7:00			34		31			19:00			186		302		
7:15			42		51			19:15			188		330		
7:30			59		72			19:30			207		294		
7:45			84	219	68	222	441	19:45			193	774	280	1206	1980
8:00			81		63			20:00			198		271		
8:15			95		70			20:15			174		245		
8:30			134		80			20:30			137		179		
8:45			153	463	112	325	788	20:45			106	615	180	875	1490
9:00			156		135			21:00			96		156		
9:15			231		185			21:15			78		132		
9:30			276		249			21:30			86		83		
9:45			257	920	297	866	1786	21:45			89	349	73	444	793
10:00			252		251			22:00			101		80		
10:15			204		142			22:15			72		72		
10:30			178		123			22:30			61		70		
10:45			132	766	134	650	1416	22:45			52	286	64	286	572
11:00			104		108			23:00			56		54		
11:15			112		100			23:15			45		43		
11:30			101		96			23:30			37		42		
11:45			91	408	84	388	796	23:45			35	173	37	176	349
Total Vol.			3243		2891	**6134**					5607		7394		**13001**

Daily Totals

NB	SB	EB	WB	Combined
		8850	10285	**19135**

			AM					PM		
Split %			52.9%	47.1%	**32.1%**			43.1%	56.9%	**67.9%**
Peak Hour	0:30	0:30	9:15	9:15	**9:15**			19:15	18:45	**19:00**
Volume			1016	982	**1998**			786	1208	**1980**
P.H.F.			0.92	0.83	**0.90**			0.95	0.92	**0.96**

pacific@aimtd.com Tell. 714 753 7888

Attachment 8

Attachment 8

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : BRISTOL STREET
Segment : WARNER AVE TO EDINGER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/17/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	72	181	226	944	34	130	234	885	106	311	460	1,829
12:15	42		228		40		222		82		450	
12:30	29		225		34		222		63		447	
12:45	38		265		22		207		60		472	
01:00	34	123	251	1,071	28	86	212	892	62	209	463	1,963
01:15	23		272		18		188		41		460	
01:30	38		282		24		246		62		528	
01:45	28		266		16		246		44		512	
02:00	29	120	279	1,293	18	83	233	1,003	47	203	512	2,296
02:15	30		288		23		236		53		524	
02:30	24		344		16		266		40		610	
02:45	37		382		26		268		63		650	
03:00	29	92	402	1,547	22	124	332	1,088	51	216	734	2,635
03:15	18		384		20		236		38		620	
03:30	21		384		32		278		53		662	
03:45	24		377		50		242		74		619	
04:00	22	121	394	1,549	51	395	228	924	73	516	622	2,473
04:15	30		378		84		226		114		604	
04:30	33		376		146		216		179		592	
04:45	36		401		114		254		150		655	
05:00	44	220	426	1,569	99	606	266	1,057	143	826	692	2,626
05:15	48		394		115		241		163		635	
05:30	64		377		186		272		250		649	
05:45	64		372		206		278		270		650	
06:00	94	425	362	1,401	211	1,195	234	933	305	1,620	596	2,334
06:15	90		379		234		228		324		607	
06:30	108		336		328		239		436		575	
06:45	133		324		422		232		555		556	
07:00	190	1,030	254	1,057	421	1,708	226	858	611	2,738	480	1,915
07:15	236		283		432		252		668		535	
07:30	302		264		425		206		727		470	
07:45	302		256		430		174		732		430	
08:00	309	1,125	230	793	384	1,640	198	712	693	2,765	428	1,505
08:15	346		192		375		199		721		391	
08:30	300		187		445		177		745		364	
08:45	170		184		436		138		606		322	
09:00	165	704	166	649	310	1,110	146	578	475	1,814	312	1,227
09:15	169		171		256		143		425		314	
09:30	194		164		276		145		470		309	
09:45	176		148		268		144		444		292	
10:00	170	718	151	531	220	866	88	367	390	1,584	239	898
10:15	188		126		212		103		400		229	
10:30	182		110		206		90		388		200	
10:45	178		144		228		86		406		230	
11:00	198	870	91	347	229	924	68	225	427	1,794	159	572
11:15	241		100		219		57		460		157	
11:30	221		82		234		50		455		132	
11:45	210		74		242		50		452		124	
Totals	5,729		12,751		8,867		9,522		14,596		22,273	
Split%	39.3		57.2		60.7		42.8					
Day Totals		18,480				18,389				36,869		
Day Splits		50.1				49.9						
Peak Hour	07:30		04:45		07:00		02:45		07:45		02:45	
Volume	1,259		1,598		1,708		1,114		2,891		2,666	
Factor	0.91		0.94		0.99		0.84		0.97		0.91	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : BRISTOL STREET
Segment : SEGERSTROM AVE TO WARNER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/17/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	58	170	250	1,064	40	130	261	1,063	98	300	511	2,127
12:15	48		256		36		264		84		520	
12:30	25		278		31		288		56		566	
12:45	39		280		23		250		62		530	
01:00	34	113	256	1,083	20	83	256	1,022	54	196	512	2,105
01:15	30		254		22		214		52		468	
01:30	30		304		28		280		58		584	
01:45	19		269		13		272		32		541	
02:00	25	90	304	1,360	20	81	228	1,087	45	171	532	2,447
02:15	22		298		20		267		42		565	
02:30	20		342		23		282		43		624	
02:45	23		416		18		310		41		726	
03:00	18	58	409	1,493	18	113	342	1,115	36	171	751	2,608
03:15	12		340		19		257		31		597	
03:30	13		320		32		258		45		578	
03:45	15		424		44		258		59		682	
04:00	15	75	390	1,460	53	396	212	922	68	471	602	2,382
04:15	24		365		96		248		120		613	
04:30	14		373		120		234		134		607	
04:45	22		332		127		228		149		560	
05:00	26	150	400	1,480	106	604	271	1,092	132	754	671	2,572
05:15	32		370		121		277		153		647	
05:30	40		364		196		272		236		636	
05:45	52		346		181		272		233		618	
06:00	64	340	372	1,324	204	1,218	247	987	268	1,558	619	2,311
06:15	70		332		224		252		294		584	
06:30	98		308		348		234		446		542	
06:45	108		312		442		254		550		566	
07:00	158	913	277	1,092	408	1,907	235	922	566	2,820	512	2,014
07:15	212		290		491		252		703		542	
07:30	243		269		525		216		768		485	
07:45	300		256		483		219		783		475	
08:00	292	999	220	804	444	1,814	220	730	736	2,813	440	1,534
08:15	326		205		441		192		767		397	
08:30	223		201		464		166		687		367	
08:45	158		178		465		152		623		330	
09:00	154	685	192	648	394	1,306	124	511	548	1,991	316	1,159
09:15	184		162		306		131		490		293	
09:30	171		137		292		130		463		267	
09:45	176		157		314		126		490		283	
10:00	177	741	141	493	254	942	86	379	431	1,683	227	872
10:15	170		132		229		98		399		230	
10:30	200		106		215		107		415		213	
10:45	194		114		244		88		438		202	
11:00	239	989	104	352	244	1,034	58	197	483	2,023	162	549
11:15	276		100		232		43		508		143	
11:30	226		84		280		54		506		138	
11:45	248		64		278		42		526		106	
Totals	5,323		12,653		9,628		10,027		14,951		22,680	
Split%	35.6		55.8		64.4		44.2					
Day Totals		17,976				19,655				37,631		
Day Splits		47.8				52.2						
Peak Hour	07:30		03:45		07:15		02:15		07:30		02:30	
Volume	1,161		1,552		1,943		1,201		3,054		2,698	
Factor	0.89		0.92		0.93		0.88		0.98		0.90	

* Data File : D1909014

Wednesday, October 02, 2019 Location: Santa Ana PROJECT:

ADT261 WARNER AVE from RAITT ST to BRISTOL ST **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			32		32			12:00			182		187		
0:15			33		25			12:15			187		186		
0:30			25		29			12:30			177		222		
0:45			31	121	16	102	223	12:45			205	751	204	799	1550
1:00			14		24			13:00			189		232		
1:15			11		19			13:15			223		281		
1:30			13		14			13:30			240		270		
1:45			8	46	12	69	115	13:45			323	975	323	1106	2081
2:00			15		15			14:00			343		311		
2:15			7		14			14:15			386		303		
2:30			15		18			14:30			326		314		
2:45			16	53	13	60	113	14:45			312	1367	341	1269	2636
3:00			22		11			15:00			353		351		
3:15			23		13			15:15			321		376		
3:30			21		15			15:30			329		364		
3:45			34	100	18	57	157	15:45			319	1322	362	1453	2775
4:00			50		21			16:00			277		371		
4:15			55		31			16:15			298		395		
4:30			75		74			16:30			291		378		
4:45			111	291	85	211	502	16:45			321	1187	395	1539	2726
5:00			104		78			17:00			318		420		
5:15			130		96			17:15			348		421		
5:30			185		114			17:30			308		384		
5:45			204	623	127	415	1038	17:45			289	1263	397	1622	2885
6:00			195		121			18:00			296		393		
6:15			184		128			18:15			260		356		
6:30			231		139			18:30			275		324		
6:45			302	912	195	583	1495	18:45			231	1062	285	1358	2420
7:00			313		228			19:00			186		256		
7:15			363		324			19:15			165		241		
7:30			395		423			19:30			143		224		
7:45			408	1479	437	1412	2891	19:45			141	635	179	900	1535
8:00			274		313			20:00			134		165		
8:15			276		245			20:15			125		158		
8:30			241		213			20:30			114		132		
8:45			213	1004	194	965	1969	20:45			124	497	128	583	1080
9:00			202		185			21:00			118		124		
9:15			151		174			21:15			107		110		
9:30			179		170			21:30			114		116		
9:45			152	684	164	693	1377	21:45			96	435	98	448	883
10:00			153		169			22:00			86		94		
10:15			193		187			22:15			66		84		
10:30			175		168			22:30			71		100		
10:45			162	683	167	691	1374	22:45			40	263	78	356	619
11:00			177		189			23:00			45		64		
11:15			157		196			23:15			48		49		
11:30			171		185			23:30			34		51		
11:45			163	668	174	744	1412	23:45			29	156	37	201	357
Total Vol.				6664		6002	**12666**					9913		11634	**21547**

Daily Totals

NB	SB	EB	WB	**Combined**
		16577	17636	**34213**

			AM				**PM**		
Split %			52.6%	47.4%	**37.0%**		46.0%	54.0%	**63.0%**
Peak Hour	0:30	0:30	7:00	7:15	**7:15**		13:45	17:00	**16:45**
Volume			1479	1497	**2937**		1378	1622	**2915**
P.H.F.			0.91	0.86	**0.87**		0.89	0.96	**0.95**

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : BRISTOL STREET
Segment : SUNFLOWER AVE TO MACARTHUR BL
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/17/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	56	191	290	1,165	31	116	300	1,251	87	307	590	2,416
12:15	46		288		27		284		73		572	
12:30	51		296		34		324		85		620	
12:45	38		291		24		343		62		634	
01:00	31	96	290	1,166	24	76	300	1,126	55	172	590	2,292
01:15	26		274		13		260		39		534	
01:30	22		302		22		260		44		562	
01:45	17		300		17		306		34		606	
02:00	31	105	286	1,183	18	67	268	1,003	49	172	554	2,186
02:15	22		293		15		264		37		557	
02:30	20		298		14		232		34		530	
02:45	32		306		20		239		52		545	
03:00	10	43	313	1,196	15	99	268	955	25	142	581	2,151
03:15	14		266		22		230		36		496	
03:30	12		300		27		229		39		529	
03:45	7		317		35		228		42		545	
04:00	18	76	322	1,261	40	333	218	846	58	409	540	2,107
04:15	16		336		75		205		91		541	
04:30	20		303		108		227		128		530	
04:45	22		300		110		196		132		496	
05:00	36	171	338	1,277	96	555	200	872	132	726	538	2,149
05:15	34		323		129		214		163		537	
05:30	43		318		162		220		205		538	
05:45	58		298		168		238		226		536	
06:00	59	313	291	1,193	186	1,017	226	857	245	1,330	517	2,050
06:15	66		322		176		228		242		550	
06:30	84		286		311		183		395		469	
06:45	104		294		344		220		448		514	
07:00	110	549	261	1,019	328	1,535	222	854	438	2,084	483	1,873
07:15	147		234		368		218		515		452	
07:30	124		262		413		197		537		459	
07:45	168		262		426		217		594		479	
08:00	160	629	212	795	424	1,606	204	738	584	2,235	416	1,533
08:15	195		206		371		208		566		414	
08:30	161		208		409		180		570		388	
08:45	113		169		402		146		515		315	
09:00	140	637	180	639	350	1,093	142	500	490	1,730	322	1,139
09:15	155		164		260		126		415		290	
09:30	168		139		233		122		401		261	
09:45	174		156		250		110		424		266	
10:00	179	751	138	491	228	884	112	362	407	1,635	250	853
10:15	169		128		222		82		391		210	
10:30	193		106		252		84		445		190	
10:45	210		119		182		84		392		203	
11:00	240	1,081	93	332	254	1,052	82	231	494	2,133	175	563
11:15	276		104		258		56		534		160	
11:30	279		75		270		45		549		120	
11:45	286		60		270		48		556		108	
Totals	4,642		11,717		8,433		9,595		13,075		21,312	
Split%	35.5		55.0		64.5		45.0					
Day Totals		16,359				18,028				34,387		
Day Splits		47.6				52.4						
Peak Hour	11:00		04:45		07:30		12:00		07:45		12:00	
Volume	1,081		1,279		1,634		1,251		2,314		2,416	
Factor	0.94		0.95		0.96		0.91		0.97		0.95	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FLOWER STREET
Segment : SEGERSTROM AVE TO WARNER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/10/19
Day: Tuesday

Interval	SB				NB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	15	46	70	306	14	59	76	282	29	105	146	588
12:15	10		80		13		65		23		145	
12:30	10		78		19		65		29		143	
12:45	11		78		13		76		24		154	
01:00	3	15	80	295	11	29	96	361	14	44	176	656
01:15	2		60		9		78		11		138	
01:30	3		79		6		94		9		173	
01:45	7		76		3		93		10		169	
02:00	6	23	95	524	3	23	124	627	9	46	219	1,151
02:15	2		99		3		116		5		215	
02:30	5		140		8		172		13		312	
02:45	10		190		9		215		19		405	
03:00	3	34	109	425	8	23	275	935	11	57	384	1,360
03:15	7		113		0		217		7		330	
03:30	7		89		6		208		13		297	
03:45	17		114		9		235		26		349	
04:00	9	118	126	448	5	31	224	1,009	14	149	350	1,457
04:15	10		112		3		290		13		402	
04:30	44		105		9		236		53		341	
04:45	55		105		14		259		69		364	
05:00	30	260	120	506	10	90	320	1,217	40	350	440	1,723
05:15	61		124		20		321		81		445	
05:30	89		132		36		288		125		420	
05:45	80		130		24		288		104		418	
06:00	72	424	106	372	38	185	242	718	110	609	348	1,090
06:15	80		92		29		200		109		292	
06:30	122		92		48		156		170		248	
06:45	150		82		70		120		220		202	
07:00	171	727	92	331	84	538	118	418	255	1,265	210	749
07:15	186		79		127		102		313		181	
07:30	194		84		161		106		355		190	
07:45	176		76		166		92		342		168	
08:00	145	638	80	245	118	308	81	316	263	946	161	561
08:15	160		58		76		92		236		150	
08:30	164		61		62		79		226		140	
08:45	169		46		52		64		221		110	
09:00	115	346	41	146	57	186	47	204	172	532	88	350
09:15	78		38		40		53		118		91	
09:30	80		33		48		52		128		85	
09:45	73		34		41		52		114		86	
10:00	70	245	37	134	55	207	52	174	125	452	89	308
10:15	59		39		58		42		117		81	
10:30	56		30		42		42		98		72	
10:45	60		28		52		38		112		66	
11:00	59	262	11	54	48	253	45	109	107	515	56	163
11:15	62		15		78		28		140		43	
11:30	77		15		57		21		134		36	
11:45	64		13		70		15		134		28	
Totals	3,138		3,786		1,932		6,370		5,070		10,156	
Split%	61.9		37.3		38.1		62.7					
Day Totals		6,924				8,302				15,226		
Day Splits		45.5				54.5						
Peak Hour	07:00		02:30		07:15		05:00		07:15		05:00	
Volume	727		552		572		1,217		1,273		1,723	
Factor	0.94		0.73		0.86		0.95		0.90		0.97	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : EDINGER AVENUE
Segment : FLOWER ST TO BROADWAY
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/24/19
Day: Tuesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	36	91	176	638	50	123	237	1,094	86	214	413	1,732
12:15	23		136		19		323		42		459	
12:30	17		148		30		262		47		410	
12:45	15		178		24		272		39		450	
01:00	13	60	157	642	30	99	280	1,289	43	159	437	1,931
01:15	18		150		25		304		43		454	
01:30	11		161		23		339		34		500	
01:45	18		174		21		366		39		540	
02:00	20	59	176	892	15	74	403	1,786	35	133	579	2,678
02:15	17		210		12		413		29		623	
02:30	10		232		20		406		30		638	
02:45	12		274		27		564		39		838	
03:00	20	113	250	948	10	56	480	2,087	30	169	730	3,035
03:15	23		206		6		496		29		702	
03:30	32		226		16		564		48		790	
03:45	38		266		24		547		62		813	
04:00	48	381	244	905	15	116	556	2,316	63	497	800	3,221
04:15	72		210		14		568		86		778	
04:30	124		225		38		574		162		799	
04:45	137		226		49		618		186		844	
05:00	93	664	242	1,036	40	254	594	2,327	133	918	836	3,363
05:15	128		246		48		627		176		873	
05:30	190		280		80		598		270		878	
05:45	253		268		86		508		339		776	
06:00	211	1,018	225	839	86	482	566	1,836	297	1,500	791	2,675
06:15	247		232		98		434		345		666	
06:30	254		194		134		438		388		632	
06:45	306		188		164		398		470		586	
07:00	272	1,034	173	671	200	819	394	1,472	472	1,853	567	2,143
07:15	276		174		239		418		515		592	
07:30	234		164		206		341		440		505	
07:45	252		160		174		319		426		479	
08:00	230	997	168	606	180	759	302	1,013	410	1,756	470	1,619
08:15	252		164		226		283		478		447	
08:30	245		146		209		240		454		386	
08:45	270		128		144		188		414		316	
09:00	194	703	110	405	148	708	203	758	342	1,411	313	1,163
09:15	178		104		192		202		370		306	
09:30	155		100		176		215		331		315	
09:45	176		91		192		138		368		229	
10:00	144	576	82	257	184	725	163	558	328	1,301	245	815
10:15	123		65		165		160		288		225	
10:30	168		55		170		125		338		180	
10:45	141		55		206		110		347		165	
11:00	144	598	48	156	216	793	105	339	360	1,391	153	495
11:15	140		44		172		92		312		136	
11:30	164		40		213		74		377		114	
11:45	150		24		192		68		342		92	
Totals	6,294		7,995		5,008		16,875		11,302		24,870	
Split%	55.7		32.1		44.3		67.9					
Day Totals		14,289				21,883				36,172		
Day Splits		39.5				60.5						
Peak Hour	06:30		05:00		07:00		04:45		06:45		04:45	
Volume	1,108		1,036		819		2,437		1,897		3,431	
Factor	0.91		0.93		0.86		0.97		0.92		0.98	

Thursday, October 03, 2019 Location: Santa Ana PROJECT:

ADT160 MAIN ST from EDINGER AVE to McFADDEN AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	34		46					12:00	176		167				
0:15	38		36					12:15	204		187				
0:30	30		27					12:30	197		209				
0:45	36	138	40	149			287	12:45	216	793	175	738			1531
1:00	26		26					13:00	197		181				
1:15	25		13					13:15	205		167				
1:30	23		15					13:30	247		159				
1:45	27	101	17	71			172	13:45	206	855	202	709			1564
2:00	21		25					14:00	228		173				
2:15	23		21					14:15	295		153				
2:30	29		17					14:30	278		151				
2:45	22	95	22	85			180	14:45	267	1068	197	674			1742
3:00	15		19					15:00	305		177				
3:15	8		29					15:15	322		205				
3:30	17		23					15:30	290		188				
3:45	25	65	26	97			162	15:45	307	1224	197	767			1991
4:00	29		41					16:00	286		215				
4:15	24		31					16:15	332		181				
4:30	41		42					16:30	341		187				
4:45	40	134	54	168			302	16:45	320	1279	218	801			2080
5:00	48		49					17:00	323		200				
5:15	55		68					17:15	336		217				
5:30	78		78					17:30	307		223				
5:45	89	270	131	326			596	17:45	289	1255	238	878			2133
6:00	75		173					18:00	275		206				
6:15	111		155					18:15	311		190				
6:30	121		173					18:30	271		187				
6:45	137	444	212	713			1157	18:45	229	1086	165	748			1834
7:00	159		317					19:00	184		161				
7:15	194		331					19:15	177		156				
7:30	243		324					19:30	180		152				
7:45	234	830	348	1320			2150	19:45	150	691	162	631			1322
8:00	204		349					20:00	140		127				
8:15	185		326					20:15	169		134				
8:30	172		357					20:30	109		115				
8:45	164	725	325	1357			2082	20:45	131	549	123	499			1048
9:00	131		298					21:00	113		133				
9:15	127		261					21:15	120		105				
9:30	135		208					21:30	104		101				
9:45	152	545	195	962			1507	21:45	110	447	90	429			876
10:00	165		169					22:00	97		86				
10:15	156		164					22:15	76		68				
10:30	146		171					22:30	86		76				
10:45	157	624	178	682			1306	22:45	65	324	58	288			612
11:00	185		180					23:00	73		47				
11:15	169		153					23:15	68		42				
11:30	152		166					23:30	42		41				
11:45	158	664	164	663			1327	23:45	31	214	34	164			378
Total Vol.		4635		6593			**11228**			9785		7326			**17111**

Daily Totals

NB	SB	EB	WB	Combined
14420	13919			**28339**

	AM			PM		
Split %	41.3%	58.7%	**39.6%**	57.2%	42.8%	**60.4%**
Peak Hour	7:15	7:45	**7:15**	16:30	17:15	**16:45**
Volume	875	1380	**2227**	1320	884	**2144**
P.H.F.	0.90	0.97	**0.96**	0.96	0.93	**0.97**

cs@aimtd.com Tell. 714 253 7888

Thursday, October 10, 2019 CITY: Santa Ana PROJECT: SC

ADT159 MAIN ST from WARNER AVE to EDINGER AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	49		24					12:00	160		169				
0:15	45		37					12:15	170		159				
0:30	36		25					12:30	146		139				
0:45	31	161	35	121			282	12:45	184	660	146	613			1273
1:00	26		26					13:00	188		170				
1:15	23		18					13:15	195		157				
1:30	26		19					13:30	235		177				
1:45	21	96	12	75			171	13:45	218	836	139	643			1479
2:00	24		8					14:00	207		167				
2:15	20		16					14:15	271		182				
2:30	37		18					14:30	260		194				
2:45	26	107	19	61			168	14:45	314	1052	204	747			1799
3:00	28		18					15:00	273		182				
3:15	13		15					15:15	274		186				
3:30	21		31					15:30	330		175				
3:45	11	73	41	105			178	15:45	346	1223	187	730			1953
4:00	17		37					16:00	323		171				
4:15	24		65					16:15	353		165				
4:30	27		104					16:30	343		176				
4:45	37	105	116	322			427	16:45	318	1337	173	685			2022
5:00	49		91					17:00	332		187				
5:15	52		119					17:15	342		229				
5:30	63		162					17:30	300		224				
5:45	57	221	197	569			790	17:45	301	1275	211	851			2126
6:00	59		169					18:00	294		170				
6:15	66		195					18:15	337		165				
6:30	90		281					18:30	287		128				
6:45	106	321	317	962			1283	18:45	283	1201	145	608			1809
7:00	106		305					19:00	222		133				
7:15	145		372					19:15	209		144				
7:30	171		292					19:30	170		118				
7:45	193	615	299	1268			1883	19:45	154	755	120	515			1270
8:00	157		327					20:00	141		107				
8:15	137		334					20:15	176		119				
8:30	134		336					20:30	193		105				
8:45	133	561	356	1353			1914	20:45	162	672	102	433			1105
9:00	126		272					21:00	198		90				
9:15	122		204					21:15	174		93				
9:30	139		176					21:30	111		100				
9:45	155	542	165	817			1359	21:45	118	601	80	363			964
10:00	148		162					22:00	105		65				
10:15	151		157					22:15	108		70				
10:30	128		157					22:30	85		68				
10:45	139	566	152	628			1194	22:45	63	361	56	259			620
11:00	143		151					23:00	64		44				
11:15	163		141					23:15	78		47				
11:30	151		146					23:30	48		46				
11:45	164	621	155	593			1214	23:45	50	240	35	172			412
Total Vol.	3989		6874				**10863**		10213		6619				**16832**

Daily Totals

NB	SB	EB	WB	**Combined**
14202	13493			**27695**

	AM			**PM**		
Split %	36.7%	63.3%	**39.2%**	60.7%	39.3%	**60.8%**
Peak Hour	7:15	8:00	**7:15**	15:45	17:00	**17:00**
Volume	666	1353	**1956**	1365	851	**2126**
P.H.F.	0.86	0.95	**0.95**	0.97	0.93	**0.93**

cs@aimtd.com Tell. 714 253 7888

Wednesday, September 11, 2019 Location: Santa Ana PROJECT:

ADT157 MAIN ST from ALTON AVE to DYER RD. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	37		30					12:00	230		160				
0:15	25		33					12:15	206		177				
0:30	38		38					12:30	202		191				
0:45	34	134	57	158			292	12:45	226	864	172	700			1564
1:00	30		18					13:00	211		160				
1:15	26		19					13:15	277		171				
1:30	19		27					13:30	316		213				
1:45	16	91	20	84			175	13:45	291	1095	184	728			1823
2:00	33		23					14:00	247		189				
2:15	16		21					14:15	309		191				
2:30	68		21					14:30	364		180				
2:45	34	151	15	80			231	14:45	404	1324	186	746			2070
3:00	15		16					15:00	373		178				
3:15	17		16					15:15	340		174				
3:30	20		32					15:30	435		177				
3:45	20	72	34	98			170	15:45	359	1507	180	709			2216
4:00	16		47					16:00	384		162				
4:15	13		80					16:15	405		191				
4:30	25		123					16:30	379		202				
4:45	49	103	132	382			485	16:45	361	1529	193	748			2277
5:00	39		104					17:00	393		197				
5:15	32		125					17:15	435		191				
5:30	55		173					17:30	410		214				
5:45	79	205	209	611			816	17:45	444	1682	223	825			2507
6:00	75		209					18:00	435		165				
6:15	54		238					18:15	389		132				
6:30	84		319					18:30	400		152				
6:45	119	332	366	1132			1464	18:45	284	1508	118	567			2075
7:00	137		353					19:00	241		108				
7:15	146		348					19:15	210		126				
7:30	190		394					19:30	166		120				
7:45	163	636	395	1490			2126	19:45	158	775	119	473			1248
8:00	167		356					20:00	137		94				
8:15	133		434					20:15	119		101				
8:30	139		402					20:30	120		98				
8:45	132	571	355	1547			2118	20:45	104	480	84	377			857
9:00	140		236					21:00	101		78				
9:15	115		225					21:15	104		78				
9:30	141		208					21:30	111		70				
9:45	133	529	222	891			1420	21:45	74	390	64	290			680
10:00	128		152					22:00	112		75				
10:15	127		137					22:15	78		73				
10:30	144		156					22:30	90		56				
10:45	134	533	143	588			1121	22:45	75	355	62	266			621
11:00	181		165					23:00	83		43				
11:15	170		172					23:15	60		38				
11:30	169		180					23:30	58		35				
11:45	200	720	191	708			1428	23:45	39	240	42	158			398
Total Vol.		4077		7769			**11846**			11749		6587			**18336**

Daily Totals

NB	SB	EB	WB	**Combined**
15826	14356			**30182**

	AM			**PM**		
Split %	34.4%	65.6%	**39.2%**	64.1%	35.9%	**60.8%**
Peak Hour	11:45	7:45	**7:30**	17:15	17:00	**17:15**
Volume	838	1587	**2232**	1724	825	**2517**
P.H.F.	0.91	0.91	**0.96**	0.98	0.92	**0.94**

cs@aimtd.com Tell. 714 253 7888

Wednesday, September 11, 2019 Location: Santa Ana PROJECT:

ADT224 SEGERSTROM AVE from BRISTOL ST to FLOWER ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			25		25			12:00			127		142		
0:15			20		15			12:15			125		116		
0:30			23		29			12:30			136		117		
0:45			29	97	23	92	189	12:45			144	532	111	486	1018
1:00			17		13			13:00			145		140		
1:15			12		8			13:15			161		166		
1:30			9		16			13:30			196		213		
1:45			6	44	7	44	88	13:45			213	715	206	725	1440
2:00			14		15			14:00			194		192		
2:15			11		6			14:15			165		187		
2:30			9		10			14:30			166		222		
2:45			13	47	12	43	90	14:45			182	707	250	851	1558
3:00			10		12			15:00			219		231		
3:15			11		14			15:15			177		204		
3:30			25		6			15:30			231		268		
3:45			29	75	17	49	124	15:45			194	821	303	1006	1827
4:00			29		17			16:00			209		315		
4:15			45		19			16:15			197		313		
4:30			59		36			16:30			244		332		
4:45			91	224	52	124	348	16:45			218	868	290	1250	2118
5:00			58		26			17:00			229		279		
5:15			97		36			17:15			251		265		
5:30			103		40			17:30			260		280		
5:45			135	393	49	151	544	17:45			225	965	285	1109	2074
6:00			90		57			18:00			212		318		
6:15			130		67			18:15			186		242		
6:30			159		83			18:30			144		214		
6:45			202	581	107	314	895	18:45			153	695	186	960	1655
7:00			261		125			19:00			116		145		
7:15			297		144			19:15			115		148		
7:30			312		191			19:30			124		132		
7:45			296	1166	160	620	1786	19:45			115	470	111	536	1006
8:00			212		123			20:00			111		100		
8:15			203		96			20:15			92		103		
8:30			212		148			20:30			96		90		
8:45			193	820	136	503	1323	20:45			81	380	80	373	753
9:00			153		95			21:00			84		90		
9:15			145		103			21:15			77		81		
9:30			132		100			21:30			60		77		
9:45			104	534	108	406	940	21:45			64	285	77	325	610
10:00			109		101			22:00			64		70		
10:15			97		93			22:15			48		64		
10:30			94		92			22:30			48		47		
10:45			104	404	88	374	778	22:45			38	198	40	221	419
11:00			100		111			23:00			38		43		
11:15			103		108			23:15			35		35		
11:30			103		114			23:30			26		32		
11:45			123	429	128	461	890	23:45			22	121	28	138	259
Total Vol.				4814		3181	**7995**					6757		7980	**14737**

Daily Totals

NB	SB	EB	WB	Combined
		11571	11161	**22732**

			AM					PM		
Split %			60.2%	39.8%	**35.2%**			45.9%	54.1%	**64.8%**
Peak Hour	0:30	0:30	7:00	7:00	**7:00**			17:00	15:45	**16:00**
Volume			1166	620	**1786**			965	1263	**2118**
P.H.F.			0.93	0.81	**0.89**			0.93	0.95	**0.92**

Thursday, October 10, 2019 | CITY: Santa Ana | PROJECT:

ADT152 MacArthur between Flower and Main | Prepared by: Field Data Services of Arizor | **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			24		41			12:00			213		294		
0:15			21		35			12:15			245		288		
0:30			15		37			12:30			257		269		
0:45			14	74	25	138	212	12:45			285	1000	314	1165	2165
1:00			16		23			13:00			308		287		
1:15			11		25			13:15			303		275		
1:30			12		20			13:30			294		303		
1:45			14	53	16	84	137	13:45			312	1217	286	1151	2368
2:00			10		19			14:00			281		321		
2:15			9		15			14:15			313		312		
2:30			13		23			14:30			310		345		
2:45			16	48	25	82	130	14:45			287	1191	331	1309	2500
3:00			21		14			15:00			312		350		
3:15			23		18			15:15			279		398		
3:30			31		22			15:30			253		421		
3:45			36	111	21	75	186	15:45			237	1081	475	1644	2725
4:00			47		17			16:00			231		563		
4:15			62		28			16:15			252		514		
4:30			98		42			16:30			248		557		
4:45			101	308	38	125	433	16:45			240	971	586	2220	3191
5:00			121		52			17:00			227		617		
5:15			129		50			17:15			234		595		
5:30			175		64			17:30			242		582		
5:45			196	621	79	245	866	17:45			231	934	556	2350	3284
6:00			200		76			18:00			214		525		
6:15			234		86			18:15			236		512		
6:30			306		107			18:30			223		456		
6:45			372	1112	96	365	1477	18:45			220	893	423	1916	2809
7:00			421		131			19:00			198		302		
7:15			463		185			19:15			203		253		
7:30			521		197			19:30			187		194		
7:45			535	1940	176	689	2629	19:45			179	767	195	944	1711
8:00			501		175			20:00			176		168		
8:15			461		187			20:15			153		150		
8:30			452		157			20:30			134		178		
8:45			423	1837	162	681	2518	20:45			140	603	145	641	1244
9:00			345		142			21:00			142		133		
9:15			269		147			21:15			144		142		
9:30			204		164			21:30			121		145		
9:45			214	1032	153	606	1638	21:45			93	500	123	543	1043
10:00			196		158			22:00			101		131		
10:15			185		165			22:15			98		120		
10:30			157		172			22:30			76		96		
10:45			175	713	169	664	1377	22:45			53	328	65	412	740
11:00			168		197			23:00			56		79		
11:15			203		235			23:15			43		75		
11:30			184		268			23:30			31		89		
11:45			195	750	286	986	1736	23:45			25	155	53	296	451
Total Vol.			8599		4740		**13339**				9640		14591		**24231**

Daily Totals

NB	SB	EB	WB	Combined
		18239	19331	**37570**

	AM			PM		
Split %	64.5%	35.5%	**35.5%**	39.8%	60.2%	**64.5%**
Peak Hour	7:15	11:45	**7:15**	14:15	16:45	**16:45**
Volume	2020	1137	**2753**	1222	2380	**3323**
P.H.F.	0.94	0.97	**0.96**	0.98	0.96	**0.98**

cs@aimtd.com Tell. 714 253 7888

Wednesday, October 02, 2019 CITY: Santa Ana PROJECT:

Prepared by: Field Data Services of Arizor

ADT155 Main between Sunflower and MacArthur. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	23		16					12:00	167		141				
0:15	26		14					12:15	176		151				
0:30	21		12					12:30	206		158				
0:45	18	88	8	50			138	12:45	189	738	142	592			1330
1:00	13		9					13:00	198		152				
1:15	14		7					13:15	223		145				
1:30	15		6					13:30	208		136				
1:45	11	53	4	26			79	13:45	198	827	142	575			1402
2:00	9		6					14:00	206		121				
2:15	13		7					14:15	234		124				
2:30	15		4					14:30	254		117				
2:45	8	45	8	25			70	14:45	259	953	112	474			1427
3:00	11		5					15:00	276		98				
3:15	8		5					15:15	298		110				
3:30	7		11					15:30	342		123				
3:45	11	37	14	35			72	15:45	331	1247	142	473			1720
4:00	5		16					16:00	367		147				
4:15	12		24					16:15	389		136				
4:30	15		47					16:30	434		142				
4:45	16	48	75	162			210	16:45	456	1646	134	559			2205
5:00	21		71					17:00	521		152				
5:15	28		67					17:15	489		157				
5:30	37		86					17:30	456		175				
5:45	35	121	97	321			442	17:45	467	1933	154	638			2571
6:00	48		123					18:00	407		142				
6:15	54		156					18:15	342		113				
6:30	76		178					18:30	314		97				
6:45	70	248	207	664			912	18:45	286	1349	86	438			1787
7:00	87		245					19:00	234		65				
7:15	123		289					19:15	201		76				
7:30	145		305					19:30	142		65				
7:45	179	534	311	1150			1684	19:45	113	690	75	281			971
8:00	168		352					20:00	101		54				
8:15	143		316					20:15	87		46				
8:30	125		308					20:30	97		63				
8:45	112	548	298	1274			1822	20:45	67	352	45	208			560
9:00	104		251					21:00	86		53				
9:15	107		214					21:15	97		51				
9:30	98		156					21:30	76		47				
9:45	97	406	132	753			1159	21:45	86	345	32	183			528
10:00	87		121					22:00	76		25				
10:15	76		123					22:15	65		34				
10:30	73		108					22:30	70		31				
10:45	89	325	127	479			804	22:45	53	264	25	115			379
11:00	111		113					23:00	41		21				
11:15	104		134					23:15	42		16				
11:30	122		123					23:30	28		17				
11:45	136	473	125	495			968	23:45	32	143	20	74			217
Total Vol.	2926		5434				**8360**		10487		4610				**15097**

Daily Totals

NB	SB	EB	WB	Combined
13413	10044			**23457**

	AM			PM		
Split %	35.0%	65.0%	**35.6%**	69.5%	30.5%	**64.4%**
Peak Hour	11:45	7:45	**7:30**	17:00	17:00	**17:00**
Volume	685	1287	**1919**	1933	638	**2571**
P.H.F.	0.83	0.91	**0.92**	0.92	0.91	**0.96**

cs@aimtd.com Tell. 714 253 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : GRAND AVENUE
Segment : WARNER AVE TO EDINGER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/12/19
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	6	20	120	487	4	22	149	543	10	42	269	1,030
12:15	5		115		6		132		11		247	
12:30	5		130		10		136		15		266	
12:45	4		122		2		126		6		248	
01:00	3	14	144	580	1	8	133	451	4	22	277	1,031
01:15	4		134		2		98		6		232	
01:30	3		169		4		132		7		301	
01:45	4		133		1		88		5		221	
02:00	2	14	164	745	2	11	96	469	4	25	260	1,214
02:15	6		182		2		109		8		291	
02:30	2		213		3		138		5		351	
02:45	4		186		4		126		8		312	
03:00	4	16	224	1,101	4	28	153	582	8	44	377	1,683
03:15	4		256		6		148		10		404	
03:30	6		308		6		137		12		445	
03:45	2		313		12		144		14		457	
04:00	3	44	304	1,263	10	90	160	664	13	134	464	1,927
04:15	3		294		16		170		19		464	
04:30	11		341		16		184		27		525	
04:45	27		324		48		150		75		474	
05:00	18	124	328	1,305	30	177	226	701	48	301	554	2,006
05:15	26		322		34		182		60		504	
05:30	28		346		52		156		80		502	
05:45	52		309		61		137		113		446	
06:00	42	229	258	901	46	320	129	451	88	549	387	1,352
06:15	56		259		70		112		126		371	
06:30	57		220		90		105		147		325	
06:45	74		164		114		105		188		269	
07:00	90	428	131	374	120	554	96	354	210	982	227	728
07:15	96		99		124		80		220		179	
07:30	110		84		158		96		268		180	
07:45	132		60		152		82		284		142	
08:00	114	410	60	175	162	675	52	197	276	1,085	112	372
08:15	114		38		152		48		266		86	
08:30	94		42		175		47		269		89	
08:45	88		35		186		50		274		85	
09:00	101	338	29	124	138	464	46	153	239	802	75	277
09:15	78		36		132		35		210		71	
09:30	78		31		103		44		181		75	
09:45	81		28		91		28		172		56	
10:00	65	304	32	92	92	377	50	136	157	681	82	228
10:15	58		20		100		30		158		50	
10:30	84		22		91		24		175		46	
10:45	97		18		94		32		191		50	
11:00	88	430	18	53	114	482	31	79	202	912	49	132
11:15	104		14		94		18		198		32	
11:30	118		9		126		18		244		27	
11:45	120		12		148		12		268		24	
Totals	2,371		7,200		3,208		4,780		5,579		11,980	
Split%	42.5		60.1		57.5		39.9					
Day Totals		9,571				7,988				17,559		
Day Splits		54.5				45.5						
Peak Hour	07:30		04:45		08:00		04:30		07:45		04:30	
Volume	470		1,320		675		742		1,095		2,057	
Factor	0.89		0.95		0.91		0.82		0.96		0.93	

* Data File : D1909119

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : EDINGER AVENUE
Segment : LYON ST TO NEWPORT FREEWAY
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/24/19

Interval	EB				WB				Combined				Day: Tuesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	29	101	286	1,162	47	137	310	1,168	76	238	596	2,330	
12:15	30		278		25		284		55		562		
12:30	28		312		38		282		66		594		
12:45	14		286		27		292		41		578		
01:00	18	61	297	1,164	23	70	288	1,159	41	131	585	2,323	
01:15	17		293		18		316		35		609		
01:30	16		300		16		286		32		586		
01:45	10		274		13		269		23		543		
02:00	15	67	251	1,217	16	74	315	1,382	31	141	566	2,599	
02:15	17		303		27		355		44		658		
02:30	20		338		16		336		36		674		
02:45	15		325		15		376		30		701		
03:00	22	121	324	1,308	11	87	376	1,535	33	208	700	2,843	
03:15	26		310		16		375		42		685		
03:30	37		367		26		390		63		757		
03:45	36		307		34		394		70		701		
04:00	47	374	352	1,393	38	329	376	1,582	85	703	728	2,975	
04:15	66		324		49		420		115		744		
04:30	113		348		86		402		199		750		
04:45	148		369		156		384		304		753		
05:00	120	744	461	1,655	136	642	368	1,396	256	1,386	829	3,051	
05:15	153		435		113		346		266		781		
05:30	235		415		180		320		415		735		
05:45	236		344		213		362		449		706		
06:00	224	1,226	292	1,048	252	1,030	375	1,326	476	2,256	667	2,374	
06:15	284		254		220		384		504		638		
06:30	346		266		258		331		604		597		
06:45	372		236		300		236		672		472		
07:00	382	1,650	248	777	354	1,266	208	728	736	2,916	456	1,505	
07:15	460		205		291		200		751		405		
07:30	424		162		285		180		709		342		
07:45	384		162		336		140		720		302		
08:00	385	1,439	134	541	338	1,299	174	553	723	2,738	308	1,094	
08:15	372		148		378		127		750		275		
08:30	352		135		303		131		655		266		
08:45	330		124		280		121		610		245		
09:00	282	1,022	122	412	277	1,075	114	437	559	2,097	236	849	
09:15	254		94		284		128		538		222		
09:30	240		106		264		102		504		208		
09:45	246		90		250		93		496		183		
10:00	260	1,012	108	294	292	1,059	120	342	552	2,071	228	636	
10:15	250		68		250		90		500		158		
10:30	256		57		245		62		501		119		
10:45	246		61		272		70		518		131		
11:00	256	1,114	50	169	268	1,083	61	205	524	2,197	111	374	
11:15	262		43		264		40		526		83		
11:30	306		42		264		52		570		94		
11:45	290		34		287		52		577		86		
Totals	8,931		11,140		8,151		11,813		17,082		22,953		
Split%	52.3		48.5		47.7		51.5						
Day Totals		20,071				19,964				40,035			
Day Splits		50.1				49.9							
Peak Hour	07:15		04:45		07:45		03:45		07:00		04:30		
Volume	1,653		1,680		1,355		1,592		2,916		3,113		
Factor	0.90		0.91		0.90		0.95		0.97		0.94		

Wednesday, October 02, 2019 Location: Santa Ana PROJECT:

ADT267 WARNER AVE from GR to AVE to PULLMAN ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			9		12			12:00			177		174		
0:15			8		9			12:15			159		165		
0:30			9		8			12:30			163		152		
0:45			11	37	7	36	73	12:45			150	649	144	635	1284
1:00			7		11			13:00			169		150		
1:15			8		7			13:15			156		167		
1:30			7		9			13:30			154		209		
1:45			6	28	6	33	61	13:45			178	657	187	713	1370
2:00			5		7			14:00			174		180		
2:15			8		9			14:15			170		254		
2:30			9		9			14:30			164		348		
2:45			7	29	5	30	59	14:45			163	671	312	1094	1765
3:00			7		6			15:00			156		301		
3:15			13		7			15:15			153		296		
3:30			27		10			15:30			154		303		
3:45			47	94	4	27	121	15:45			148	611	311	1211	1822
4:00			41		3			16:00			171		274		
4:15			51		5			16:15			155		315		
4:30			95		11			16:30			168		356		
4:45			113	300	14	33	333	16:45			197	691	302	1247	1938
5:00			97		18			17:00			224		324		
5:15			123		21			17:15			229		307		
5:30			175		20			17:30			205		310		
5:45			290	685	43	102	787	17:45			168	826	301	1242	2068
6:00			165		54			18:00			136		294		
6:15			209		59			18:15			146		237		
6:30			223		53			18:30			117		171		
6:45			242	839	79	245	1084	18:45			103	502	103	805	1307
7:00			231		112			19:00			85		78		
7:15			283		153			19:15			78		73		
7:30			272		158			19:30			73		82		
7:45			315	1101	164	587	1688	19:45			64	300	70	303	603
8:00			286		161			20:00			56		64		
8:15			274		158			20:15			46		60		
8:30			255		141			20:30			37		50		
8:45			258	1073	139	599	1672	20:45			55	194	64	238	432
9:00			166		111			21:00			43		44		
9:15			173		123			21:15			37		44		
9:30			142		127			21:30			35		49		
9:45			98	579	110	471	1050	21:45			49	164	46	183	347
10:00			125		116			22:00			32		42		
10:15			100		112			22:15			29		36		
10:30			107		106			22:30			24		37		
10:45			106	438	101	435	873	22:45			24	109	42	157	266
11:00			126		113			23:00			16		35		
11:15			143		92			23:15			14		24		
11:30			176		105			23:30			12		31		
11:45			175	620	125	435	1055	23:45			8	50	15	105	155
Total Vol.				5823		3033	**8856**					5424		7933	**13357**

Daily Totals

NB	SB	EB	WB	Combined
		11247	10966	**22213**

			AM				PM		
Split %			65.8%	34.2%	**39.9%**		40.6%	59.4%	**60.1%**
Peak Hour	0:30	0:30	7:15	7:30	**7:15**		16:45	16:15	**16:30**
Volume			1156	641	**1792**		855	1297	**2107**
P.H.F.			0.92	0.98	**0.94**		0.93	0.91	**0.96**

Thursday, October 03, 2019 Location: Santa Ana PROJECT:

ADT264 WARNER AVE from MAIN ST to HALLADAY ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:30			16		27			12:00			167		152		
0:15			20		23			12:15			168		156		
0:30			13		25			12:30			193		164		
0:45			11	60	16	91	151	12:45			204	732	158	630	1362
1:00			5		14			13:00			231		175		
1:15			6		20			13:15			215		198		
1:30			5		18			13:30			244		204		
1:45			11	27	14	66	93	13:45			280	970	197	774	1744
2:00			16		20			14:00			252		188		
2:15			9		17			14:15			234		196		
2:30			18		9			14:30			241		218		
2:45			27	70	13	59	129	14:45			221	948	210	812	1760
3:00			20		19			15:00			236		229		
3:15			18		14			15:15			220		285		
3:30			21		8			15:30			227		270		
3:45			43	102	11	52	154	15:45			260	943	223	1007	1950
4:00			33		22			16:00			245		255		
4:15			54		13			16:15			235		277		
4:30			75		31			16:30			237		312		
4:45			71	233	28	94	327	16:45			213	930	263	1107	2037
5:00			94		34			17:00			241		275		
5:15			101		37			17:15			276		283		
5:30			230		63			17:30			319		267		
5:45			280	705	112	246	951	17:45			311	1147	253	1078	2225
6:00			224		103			18:00			265		248		
6:15			202		113			18:15			231		236		
6:30			209		109			18:30			208		245		
6:45			261	896	123	448	1344	18:45			178	882	213	942	1824
7:00			282		183			19:00			187		189		
7:15			322		231			19:15			153		156		
7:30			284		259			19:30			137		135		
7:45			324	1212	221	894	2106	19:45			123	600	115	595	1195
8:00			328		173			20:00			103		131		
8:15			286		150			20:15			106		96		
8:30			293		155			20:30			100		106		
8:45			267	1174	145	623	1797	20:45			92	401	115	448	849
9:00			196		147			21:00			94		108		
9:15			193		137			21:15			70		102		
9:30			141		153			21:30			87		88		
9:45			167	697	157	594	1291	21:45			52	303	68	366	669
10:00			146		149			22:00			61		92		
10:15			158		127			22:15			54		86		
10:30			151		135			22:30			47		58		
10:45			183	638	119	530	1168	22:45			42	204	47	283	487
11:00			158		158			23:00			26		42		
11:15			169		159			23:15			34		37		
11:30			145		146			23:30			26		36		
11:45			159	631	149	612	1243	23:45			30	116	33	148	264
Total Vol.				6445		4309	**10754**					8176		8190	**16366**

Daily Totals

NB	SB	EB	WB	Combined
		14621	12499	**27120**

			AM				PM		
Split %			59.9%	40.1%	**39.7%**		50.0%	50.0%	**60.3%**
Peak Hour	0:30	0:30	7:15	7:00	**7:15**		17:15	16:30	**17:00**
Volume			1258	894	**2142**		1171	1133	**2225**
P.H.F.			0.96	0.86	**0.97**		0.92	0.91	**0.95**

Wednesday, October 02, 2019 CITY: Santa Ana PROJECT: SC

ADT172 McFADDEN AVE from NEWHOPE ST to HARBOR BL. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			18		33			12:00			123		127		
0:15			23		19			12:15			125		119		
0:30			13		12			12:30			96		140		
0:45			10	64	13	77	141	12:45			120	464	106	492	956
1:00			7		16			13:00			115		127		
1:15			5		14			13:15			132		129		
1:30			7		7			13:30			124		106		
1:45			9	28	6	43	71	13:45			148	519	156	518	1037
2:00			11		18			14:00			155		162		
2:15			3		8			14:15			159		159		
2:30			5		9			14:30			145		165		
2:45			6	25	7	42	67	14:45			137	596	155	641	1237
3:00			10		3			15:00			166		180		
3:15			5		8			15:15			158		167		
3:30			11		5			15:30			139		183		
3:45			9	35	12	28	63	15:45			153	616	158	688	1304
4:00			12		12			16:00			151		163		
4:15			7		11			16:15			148		175		
4:30			20		20			16:30			148		194		
4:45			16	55	26	69	124	16:45			142	589	188	720	1309
5:00			25		22			17:00			166		233		
5:15			35		26			17:15			160		200		
5:30			32		40			17:30			171		211		
5:45			41	133	32	120	253	17:45			190	687	210	854	1541
6:00			52		44			18:00			184		178		
6:15			49		45			18:15			150		224		
6:30			69		64			18:30			152		181		
6:45			92	262	77	230	492	18:45			137	623	161	744	1367
7:00			108		95			19:00			136		159		
7:15			147		131			19:15			136		135		
7:30			159		170			19:30			128		129		
7:45			180	594	178	574	1168	19:45			96	496	129	552	1048
8:00			182		176			20:00			93		144		
8:15			207		145			20:15			92		96		
8:30			191		107			20:30			87		97		
8:45			160	740	117	545	1285	20:45			96	368	106	443	811
9:00			174		128			21:00			78		98		
9:15			140		111			21:15			87		108		
9:30			90		105			21:30			68		81		
9:45			106	510	106	450	960	21:45			67	300	70	357	657
10:00			113		115			22:00			60		76		
10:15			107		130			22:15			54		62		
10:30			108		108			22:30			41		75		
10:45			110	438	105	458	896	22:45			40	195	38	251	446
11:00			86		123			23:00			28		37		
11:15			96		107			23:15			34		32		
11:30			106		99			23:30			21		28		
11:45			120	408	114	443	851	23:45			21	104	27	124	228
Total Vol.			3292		3079		**6371**				5557		6384		**11941**

Daily Totals

NB	SB	EB	WB	Combined
		8849	9463	**18312**

	AM			PM		
Split %	51.7%	48.3%	**34.8%**	46.5%	53.5%	**65.2%**
Peak Hour	7:45	7:30	**7:30**	17:15	17:00	**17:00**
Volume	760	669	**1397**	705	854	**1541**
P.H.F.	0.92	0.94	**0.98**	0.93	0.92	**0.96**

cs@aimtd.com Tell. 714 253 7888

Tuesday, September 24, 2019 CITY: Santa Ana PROJECT: SC

ADT181 McFADDEN AVE from GR to AVE to LYON ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			12		13			12:00			150		119		
0:15			16		21			12:15			118		118		
0:30			16		12			12:30			132		118		
0:45			10	54	13	59	113	12:45			119	519	130	485	1004
1:00			9		18			13:00			131		121		
1:15			5		13			13:15			126		135		
1:30			10		14			13:30			137		145		
1:45			15	39	13	58	97	13:45			124	518	159	560	1078
2:00			8		19			14:00			120		158		
2:15			9		9			14:15			157		148		
2:30			12		11			14:30			185		189		
2:45			11	40	16	55	95	14:45			186	648	166	661	1309
3:00			6		6			15:00			177		180		
3:15			7		8			15:15			203		196		
3:30			20		10			15:30			204		168		
3:45			33	66	24	48	114	15:45			176	760	221	765	1525
4:00			19		19			16:00			193		211		
4:15			37		20			16:15			172		191		
4:30			54		44			16:30			178		206		
4:45			58	168	51	134	302	16:45			173	716	191	799	1515
5:00			61		43			17:00			216		213		
5:15			88		50			17:15			196		191		
5:30			117		69			17:30			204		187		
5:45			137	403	80	242	645	17:45			182	798	181	772	1570
6:00			136		82			18:00			190		163		
6:15			159		82			18:15			155		193		
6:30			171		96			18:30			165		137		
6:45			195	661	115	375	1036	18:45			160	670	146	639	1309
7:00			180		121			19:00			133		143		
7:15			204		148			19:15			130		122		
7:30			179		150			19:30			117		122		
7:45			180	743	183	602	1345	19:45			127	507	104	491	998
8:00			237		154			20:00			118		98		
8:15			201		127			20:15			99		89		
8:30			145		122			20:30			99		79		
8:45			171	754	141	544	1298	20:45			69	385	93	359	744
9:00			158		97			21:00			79		66		
9:15			116		101			21:15			60		83		
9:30			114		119			21:30			72		57		
9:45			121	509	89	406	915	21:45			52	263	54	260	523
10:00			119		110			22:00			66		66		
10:15			96		95			22:15			45		62		
10:30			118		108			22:30			35		37		
10:45			94	427	96	409	836	22:45			39	185	52	217	402
11:00			125		126			23:00			40		39		
11:15			114		115			23:15			22		41		
11:30			131		126			23:30			19		35		
11:45			125	495	115	482	977	23:45			17	98	25	140	238
Total Vol.			4359		3414		**7773**				6067		6148		**12215**

	Daily Totals				
	NB	SB	EB	WB	**Combined**
			10426	9562	**19988**

	AM			**PM**		
Split %	56.1%	43.9%	**38.9%**	49.7%	50.3%	**61.1%**
Peak Hour	7:15	7:15	**7:15**	17:00	15:45	**15:15**
Volume	800	635	**1435**	798	829	**1572**
P.H.F.	0.84	0.87	**0.92**	0.92	0.94	**0.97**

cs@aimtd.com Tell. 714 253 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : DYER ROAD
Segment : PULLMAN ST TO RED HILL AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/24/19
Day: Tuesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	20	52	214	769	38	198	228	930	58	250	442	1,699
12:15	10		190		38		234		48		424	
12:30	14		183		84		230		98		413	
12:45	8		182		38		238		46		420	
01:00	13	32	204	728	24	73	246	1,032	37	105	450	1,760
01:15	11		162		28		250		39		412	
01:30	2		186		13		285		15		471	
01:45	6		176		8		251		14		427	
02:00	12	66	186	687	16	63	297	1,179	28	129	483	1,866
02:15	7		155		17		278		24		433	
02:30	17		170		18		335		35		505	
02:45	30		176		12		269		42		445	
03:00	18	187	158	741	16	60	286	1,286	34	247	444	2,027
03:15	31		191		20		332		51		523	
03:30	56		192		11		323		67		515	
03:45	82		200		13		345		95		545	
04:00	56	480	183	852	26	115	370	1,350	82	595	553	2,202
04:15	85		206		24		316		109		522	
04:30	137		227		40		342		177		569	
04:45	202		236		25		322		227		558	
05:00	175	904	243	1,101	32	209	389	1,412	207	1,113	632	2,513
05:15	205		276		36		358		241		634	
05:30	228		294		58		308		286		602	
05:45	296		288		83		357		379		645	
06:00	214	900	230	844	88	460	322	1,197	302	1,360	552	2,041
06:15	241		215		134		329		375		544	
06:30	231		234		102		313		333		547	
06:45	214		165		136		233		350		398	
07:00	220	991	146	486	172	777	300	986	392	1,768	446	1,472
07:15	251		106		176		266		427		372	
07:30	264		120		186		232		450		352	
07:45	256		114		243		188		499		302	
08:00	228	950	124	380	245	1,001	214	748	473	1,951	338	1,128
08:15	222		90		253		168		475		258	
08:30	238		74		267		170		505		244	
08:45	262		92		236		196		498		288	
09:00	218	868	82	293	224	785	194	654	442	1,653	276	947
09:15	233		84		187		158		420		242	
09:30	211		60		195		172		406		232	
09:45	206		67		179		130		385		197	
10:00	170	677	42	195	193	739	150	488	363	1,416	192	683
10:15	168		54		191		122		359		176	
10:30	181		57		175		122		356		179	
10:45	158		42		180		94		338		136	
11:00	208	870	22	83	188	776	98	285	396	1,646	120	368
11:15	219		19		201		66		420		85	
11:30	199		25		184		65		383		90	
11:45	244		17		203		56		447		73	
Totals	6,977		7,159		5,256		11,547		12,233		18,706	
Split%	57.0		38.3		43.0		61.7					
Day Totals		14,136				16,803				30,939		
Day Splits		45.7				54.3						
Peak Hour	07:15		05:00		07:45		05:00		07:45		05:00	
Volume	999		1,101		1,008		1,412		1,952		2,513	
Factor	0.95		0.94		0.94		0.91		0.97		0.97	

Tuesday, September 24, 2019 CITY: Santa Ana PROJECT: SC

ADT176 McFADDEN AVE from BRISTOL ST to FLOWER ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			15		23			12:00			80		79		
0:15			23		15			12:15			103		90		
0:30			16		17			12:30			75		82		
0:45			15	69	14	69	138	12:45			74	332	73	324	656
1:00			12		15			13:00			100		78		
1:15			8		11			13:15			89		63		
1:30			5		11			13:30			79		103		
1:45			11	36	8	45	81	13:45			98	366	106	350	716
2:00			9		12			14:00			126		95		
2:15			7		9			14:15			122		116		
2:30			9		9			14:30			136		129		
2:45			4	29	8	38	67	14:45			113	497	146	486	983
3:00			7		7			15:00			147		160		
3:15			7		10			15:15			120		142		
3:30			17		10			15:30			125		137		
3:45			16	47	10	37	84	15:45			126	518	133	572	1090
4:00			18		10			16:00			115		139		
4:15			35		16			16:15			107		160		
4:30			36		26			16:30			117		154		
4:45			49	138	24	76	214	16:45			122	461	150	603	1064
5:00			50		26			17:00			109		140		
5:15			47		32			17:15			133		147		
5:30			83		45			17:30			143		143		
5:45			105	285	33	136	421	17:45			151	536	143	573	1109
6:00			87		60			18:00			125		131		
6:15			101		61			18:15			129		131		
6:30			103		73			18:30			132		138		
6:45			110	401	75	269	670	18:45			104	490	127	527	1017
7:00			119		96			19:00			116		123		
7:15			175		123			19:15			104		116		
7:30			194		118			19:30			102		100		
7:45			179	667	124	461	1128	19:45			98	420	104	443	863
8:00			161		119			20:00			90		102		
8:15			148		105			20:15			84		94		
8:30			124		66			20:30			85		56		
8:45			94	527	70	360	887	20:45			64	323	73	325	648
9:00			75		58			21:00			80		63		
9:15			85		74			21:15			75		47		
9:30			82		64			21:30			73		48		
9:45			70	312	63	259	571	21:45			63	291	62	220	511
10:00			70		84			22:00			40		61		
10:15			82		74			22:15			57		50		
10:30			87		68			22:30			35		38		
10:45			71	310	85	311	621	22:45			28	160	43	192	352
11:00			89		73			23:00			33		44		
11:15			68		75			23:15			30		33		
11:30			99		86			23:30			32		30		
11:45			84	340	93	327	667	23:45			28	123	15	122	245
Total Vol.			3161		2388		**5549**				4517		4737		**9254**

Daily Totals	NB	SB	EB	WB	Combined
			7678	7125	**14803**

	AM			PM		
Split %	57.0%	43.0%	**37.5%**	48.8%	51.2%	**62.5%**
Peak Hour	7:15	7:15	**7:15**	17:15	16:15	**17:15**
Volume	709	484	**1193**	552	604	**1116**
P.H.F.	0.91	0.98	**0.96**	0.91	0.94	**0.95**

Wednesday, September 25, 2019 CITY: Santa Ana PROJECT: SC

ADT169 MAIN ST from MAINPLACE DR to GARDEN GROVE FWY. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	27		46					12:00	233		223				
0:15	20		34					12:15	261		227				
0:30	21		42					12:30	230		211				
0:45	34	102	23	145			247	12:45	231	955	269	930			1885
1:00	31		32					13:00	197		240				
1:15	33		23					13:15	229		266				
1:30	34		19					13:30	199		247				
1:45	26	124	26	100			224	13:45	237	862	236	989			1851
2:00	31		11					14:00	214		230				
2:15	31		28					14:15	270		234				
2:30	34		25					14:30	248		222				
2:45	34	130	10	74			204	14:45	209	941	246	932			1873
3:00	23		30					15:00	174		251				
3:15	32		27					15:15	224		245				
3:30	34		24					15:30	245		254				
3:45	46	135	28	109			244	15:45	233	876	273	1023			1899
4:00	41		25					16:00	217		238				
4:15	67		26					16:15	260		318				
4:30	113		26					16:30	240		295				
4:45	115	336	38	115			451	16:45	309	1026	319	1170			2196
5:00	95		54					17:00	291		327				
5:15	52		58					17:15	341		302				
5:30	89		88					17:30	317		281				
5:45	87	323	88	288			611	17:45	296	1245	256	1166			2411
6:00	101		109					18:00	254		216				
6:15	117		109					18:15	270		211				
6:30	161		196					18:30	225		192				
6:45	211	590	207	621			1211	18:45	230	979	201	820			1799
7:00	144		308					19:00	186		189				
7:15	166		340					19:15	175		210				
7:30	194		373					19:30	160		189				
7:45	233	737	307	1328			2065	19:45	144	665	200	788			1453
8:00	264		353					20:00	129		186				
8:15	206		320					20:15	111		132				
8:30	211		320					20:30	113		137				
8:45	218	899	232	1225			2124	20:45	74	427	130	585			1012
9:00	175		251					21:00	70		143				
9:15	149		206					21:15	88		144				
9:30	163		175					21:30	54		103				
9:45	208	695	186	818			1513	21:45	63	275	87	477			752
10:00	190		169					22:00	155		86				
10:15	186		186					22:15	141		85				
10:30	206		190					22:30	135		76				
10:45	177	759	216	761			1520	22:45	106	537	89	336			873
11:00	194		190					23:00	88		92				
11:15	245		206					23:15	64		65				
11:30	235		203					23:30	69		69				
11:45	209	883	226	825			1708	23:45	56	277	68	294			571
Total Vol.	5713		6409				**12122**		9065		9510				**18575**

Daily Totals

NB	SB	EB	WB	Combined
14778	15919			**30697**

	AM			PM		
Split %	47.1%	52.9%	**39.5%**	48.8%	51.2%	**60.5%**
Peak Hour	11:30	7:15	**7:30**	16:45	16:15	**16:45**
Volume	938	1373	**2250**	1258	1259	**2487**
P.H.F.	0.90	0.92	**0.91**	0.94	0.96	**0.97**

cs@aimtd.com Tell. 714 253 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FIRST STREET
Segment : BRISTOL ST TO FLOWER ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/11/19
Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	54	172	264	1,057	56	179	214	903	110	351	478	1,960
12:15	44		275		39		220		83		495	
12:30	40		268		45		221		85		489	
12:45	34		250		39		248		73		498	
01:00	30	108	294	1,201	30	105	260	1,055	60	213	554	2,256
01:15	27		312		30		279		57		591	
01:30	25		321		26		238		51		559	
01:45	26		274		19		278		45		552	
02:00	30	117	308	1,210	32	129	306	1,227	62	246	614	2,437
02:15	24		288		24		298		48		586	
02:30	31		308		36		277		67		585	
02:45	32		306		37		346		69		652	
03:00	20	115	340	1,336	24	104	340	1,445	44	219	680	2,781
03:15	25		318		18		388		43		706	
03:30	30		320		28		338		58		658	
03:45	40		358		34		379		74		737	
04:00	52	286	333	1,393	33	155	374	1,478	85	441	707	2,871
04:15	74		363		24		374		98		737	
04:30	80		342		52		366		132		708	
04:45	80		355		46		364		126		719	
05:00	103	596	350	1,468	51	267	376	1,486	154	863	726	2,954
05:15	127		398		54		339		181		737	
05:30	174		343		76		381		250		724	
05:45	192		377		86		390		278		767	
06:00	213	1,098	326	1,240	92	494	384	1,369	305	1,592	710	2,609
06:15	255		324		130		342		385		666	
06:30	295		270		110		336		405		606	
06:45	335		320		162		307		497		627	
07:00	372	1,684	294	1,009	185	944	258	966	557	2,628	552	1,975
07:15	450		285		212		234		662		519	
07:30	455		218		253		252		708		470	
07:45	407		212		294		222		701		434	
08:00	356	1,452	201	754	253	865	228	719	609	2,317	429	1,473
08:15	362		207		207		184		569		391	
08:30	354		178		208		170		562		348	
08:45	380		168		197		137		577		305	
09:00	349	1,177	181	639	188	832	152	629	537	2,009	333	1,268
09:15	294		154		200		179		494		333	
09:30	269		152		220		142		489		294	
09:45	265		152		224		156		489		308	
10:00	244	992	129	381	224	846	130	464	468	1,838	259	845
10:15	230		98		214		122		444		220	
10:30	280		78		200		106		480		184	
10:45	238		76		208		106		446		182	
11:00	220	1,014	71	241	194	938	104	281	414	1,952	175	522
11:15	263		76		240		74		503		150	
11:30	243		45		236		52		479		97	
11:45	288		49		268		51		556		100	
Totals	8,811		11,929		5,858		12,022		14,669		23,951	
Split%	60.1		49.8		39.9		50.2					
Day Totals		20,740				17,880				38,620		
Day Splits		53.7				46.3						
Peak Hour	07:00		05:00		07:15		05:30		07:15		05:00	
Volume	1,684		1,468		1,012		1,497		2,680		2,954	
Factor	0.93		0.92		0.86		0.96		0.95		0.96	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FAIRHAVEN AVENUE
Segment : CAMBRIDGE ST TO TUSTIN AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/03/19
Day: Thursday

Interval	WB				EB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	10	25	59	223	6	27	68	280	16	52	127	503
12:15	4		56		7		68		11		124	
12:30	7		46		4		70		11		116	
12:45	4		62		10		74		14		136	
01:00	4	11	66	269	2	13	68	261	6	24	134	530
01:15	4		76		5		54		9		130	
01:30	1		64		4		69		5		133	
01:45	2		63		2		70		4		133	
02:00	1	7	78	376	3	8	73	315	4	15	151	691
02:15	3		88		2		101		5		189	
02:30	0		94		1		78		1		172	
02:45	3		116		2		63		5		179	
03:00	0	6	118	452	3	8	114	360	3	14	232	812
03:15	2		134		4		88		6		222	
03:30	4		104		1		68		5		172	
03:45	0		96		0		90		0		186	
04:00	0	11	96	532	5	17	85	359	5	28	181	891
04:15	2		158		5		92		7		250	
04:30	3		116		5		102		8		218	
04:45	6		162		2		80		8		242	
05:00	5	35	155	657	7	43	108	418	12	78	263	1,075
05:15	9		169		8		106		17		275	
05:30	10		175		11		100		21		275	
05:45	11		158		17		104		28		262	
06:00	12	93	135	457	24	207	70	276	36	300	205	733
06:15	23		124		34		72		57		196	
06:30	26		110		73		74		99		184	
06:45	32		88		76		60		108		148	
07:00	41	354	66	209	118	705	46	187	159	1,059	112	396
07:15	65		58		177		53		242		111	
07:30	100		48		198		46		298		94	
07:45	148		37		212		42		360		79	
08:00	139	362	30	108	172	567	30	117	311	929	60	225
08:15	92		22		164		28		256		50	
08:30	72		34		111		28		183		62	
08:45	59		22		120		31		179		53	
09:00	50	194	18	78	74	304	22	93	124	498	40	171
09:15	44		30		80		28		124		58	
09:30	54		17		70		27		124		44	
09:45	46		13		80		16		126		29	
10:00	66	220	23	57	51	225	14	70	117	445	37	127
10:15	36		14		66		27		102		41	
10:30	56		14		44		20		100		34	
10:45	62		6		64		9		126		15	
11:00	56	221	8	20	68	248	10	32	124	469	18	52
11:15	56		7		54		7		110		14	
11:30	49		3		56		9		105		12	
11:45	60		2		70		6		130		8	
Totals	1,539		3,438		2,372		2,768		3,911		6,206	
Split%	39.4		55.4		60.6		44.6					
Day Totals		4,977				5,140				10,117		
Day Splits		49.2				50.8						
Peak Hour	07:30		04:45		07:15		05:00		07:30		05:00	
Volume	479		661		759		418		1,225		1,075	
Factor	0.81		0.94		0.90		0.97		0.85		0.98	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FOURTH STREET
Segment : FRENCH ST TO GRAND AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/09/19
Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	10	34	78	296	21	71	122	509	31	105	200	805
12:15	9		66		13		125		22		191	
12:30	10		74		21		134		31		208	
12:45	5		78		16		128		21		206	
01:00	6	38	76	396	16	41	137	598	22	79	213	994
01:15	14		111		7		141		21		252	
01:30	12		115		8		180		20		295	
01:45	6		94		10		140		16		234	
02:00	5	24	106	388	10	40	155	575	15	64	261	963
02:15	6		84		12		148		18		232	
02:30	8		103		6		118		14		221	
02:45	5		95		12		154		17		249	
03:00	3	15	102	428	4	22	168	691	7	37	270	1,119
03:15	2		97		8		177		10		274	
03:30	6		120		4		164		10		284	
03:45	4		109		6		182		10		291	
04:00	7	78	116	480	11	47	190	728	18	125	306	1,208
04:15	16		112		12		172		28		284	
04:30	26		116		10		182		36		298	
04:45	29		136		14		184		43		320	
05:00	26	190	152	588	18	98	188	782	44	288	340	1,370
05:15	38		155		24		177		62		332	
05:30	56		135		26		231		82		366	
05:45	70		146		30		186		100		332	
06:00	54	345	116	342	32	162	202	610	86	507	318	952
06:15	67		82		40		135		107		217	
06:30	110		70		32		133		142		203	
06:45	114		74		58		140		172		214	
07:00	142	817	54	222	81	560	121	402	223	1,377	175	624
07:15	185		63		118		97		303		160	
07:30	266		56		167		98		433		154	
07:45	224		49		194		86		418		135	
08:00	202	494	28	156	144	418	68	254	346	912	96	410
08:15	118		32		92		69		210		101	
08:30	98		46		100		60		198		106	
08:45	76		50		82		57		158		107	
09:00	66	284	44	153	106	387	47	203	172	671	91	356
09:15	76		44		92		54		168		98	
09:30	63		33		88		53		151		86	
09:45	79		32		101		49		180		81	
10:00	61	247	50	123	87	396	47	170	148	643	97	293
10:15	61		33		97		36		158		69	
10:30	65		21		104		46		169		67	
10:45	60		19		108		41		168		60	
11:00	46	248	16	57	92	406	20	95	138	654	36	152
11:15	57		15		89		22		146		37	
11:30	76		16		116		30		192		46	
11:45	69		10		109		23		178		33	
Totals	2,814		3,629		2,648		5,617		5,462		9,246	
Split%	51.5		39.2		48.5		60.8					
Day Totals		6,443				8,265				14,708		
Day Splits		43.8				56.2						
Peak Hour	07:15		05:00		07:15		05:15		07:15		05:00	
Volume	877		588		623		796		1,500		1,370	
Factor	0.82		0.95		0.80		0.86		0.87		0.94	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : BROADWAY
Segment : CIVIC CENTER TO SEVENTEENTH
Client : CITY SANTA ANA
File:
Site: SANTA ANA
Date: 09/19/19
D1909027
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	3	18	130	481	18	85	142	584	21	103	272	1,065
12:15	2		118		29		136		31		254	
12:30	8		129		18		138		26		267	
12:45	5		104		20		168		25		272	
01:00	8	15	94	440	7	46	162	686	15	61	256	1,126
01:15	5		108		16		164		21		272	
01:30	2		136		11		188		13		324	
01:45	0		102		12		172		12		274	
02:00	1	14	140	615	18	48	161	679	19	62	301	1,294
02:15	4		145		8		169		12		314	
02:30	4		168		9		163		13		331	
02:45	5		162		13		186		18		348	
03:00	0	11	208	908	9	33	186	678	9	44	394	1,586
03:15	1		223		6		170		7		393	
03:30	9		253		11		162		20		415	
03:45	1		224		7		160		8		384	
04:00	1	24	259	1,105	13	98	157	690	14	122	416	1,795
04:15	5		238		15		159		20		397	
04:30	8		316		22		170		30		486	
04:45	10		292		48		204		58		496	
05:00	16	70	312	1,050	48	271	188	723	64	341	500	1,773
05:15	15		228		44		201		59		429	
05:30	23		256		78		171		101		427	
05:45	16		254		101		163		117		417	
06:00	23	144	281	862	120	619	173	583	143	763	454	1,445
06:15	32		226		123		149		155		375	
06:30	54		195		146		139		200		334	
06:45	35		160		230		122		265		282	
07:00	52	368	143	443	276	1,279	114	456	328	1,647	257	899
07:15	58		114		322		126		380		240	
07:30	122		100		367		116		489		216	
07:45	136		86		314		100		450		186	
08:00	193	508	121	402	282	982	90	385	475	1,490	211	787
08:15	136		114		237		126		373		240	
08:30	91		92		213		86		304		178	
08:45	88		75		250		83		338		158	
09:00	67	312	85	300	212	668	100	329	279	980	185	629
09:15	74		82		153		80		227		162	
09:30	95		79		159		82		254		161	
09:45	76		54		144		67		220		121	
10:00	69	300	74	194	138	558	54	239	207	858	128	433
10:15	74		50		146		78		220		128	
10:30	73		44		142		54		215		98	
10:45	84		26		132		53		216		79	
11:00	72	402	15	62	100	493	51	166	172	895	66	228
11:15	102		26		133		47		235		73	
11:30	116		10		130		31		246		41	
11:45	112		11		130		37		242		48	
Totals	2,186		6,862		5,180		6,198		7,366		13,060	
Split%	29.7		52.5		70.3		47.5					
Day Totals		9,048				11,378				20,426		
Day Splits		44.3				55.7						
Peak Hour	07:30		04:15		07:15		04:45		07:15		04:30	
Volume	587		1,158		1,285		764		1,794		1,911	
Factor	0.76		0.92		0.88		0.94		0.92		0.96	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : BROADWAY
Segment : SANTA ANA BL TO CIVIC CENTER D
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/19/19
Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	4	6	78	352	17	62	106	460	21	68	184	812
12:15	0		78		20		124		20		202	
12:30	1		106		13		106		14		212	
12:45	1		90		12		124		13		214	
01:00	3	9	99	389	6	31	126	498	9	40	225	887
01:15	4		86		10		119		14		205	
01:30	1		114		8		135		9		249	
01:45	1		90		7		118		8		208	
02:00	0	5	106	520	12	32	130	531	12	37	236	1,051
02:15	0		110		5		126		5		236	
02:30	1		156		5		136		6		292	
02:45	4		148		10		139		14		287	
03:00	0	8	189	753	4	19	154	566	4	27	343	1,319
03:15	0		196		2		148		2		344	
03:30	4		174		9		126		13		300	
03:45	4		194		4		138		8		332	
04:00	1	18	210	858	10	62	132	595	11	80	342	1,453
04:15	2		198		11		143		13		341	
04:30	5		238		13		148		18		386	
04:45	10		212		28		172		38		384	
05:00	5	33	203	836	24	154	168	641	29	187	371	1,477
05:15	7		209		24		192		31		401	
05:30	13		216		45		137		58		353	
05:45	8		208		61		144		69		352	
06:00	10	56	258	742	74	355	156	523	84	411	414	1,265
06:15	11		188		73		133		84		321	
06:30	17		164		82		124		99		288	
06:45	18		132		126		110		144		242	
07:00	36	200	129	353	154	690	100	405	190	890	229	758
07:15	42		92		186		103		228		195	
07:30	58		84		196		98		254		182	
07:45	64		48		154		104		218		152	
08:00	118	396	96	398	167	675	76	347	285	1,071	172	745
08:15	111		122		186		118		297		240	
08:30	82		100		148		86		230		186	
08:45	85		80		174		67		259		147	
09:00	67	270	82	305	141	482	84	299	208	752	166	604
09:15	70		84		108		86		178		170	
09:30	68		74		113		75		181		149	
09:45	65		65		120		54		185		119	
10:00	66	251	78	184	104	406	58	221	170	657	136	405
10:15	53		59		104		68		157		127	
10:30	80		39		106		50		186		89	
10:45	52		8		92		45		144		53	
11:00	50	284	8	21	88	390	45	156	138	674	53	177
11:15	78		6		113		44		191		50	
11:30	84		6		89		26		173		32	
11:45	72		1		100		41		172		42	
Totals	1,536		5,711		3,358		5,242		4,894		10,953	
Split%	31.4		52.1		68.6		47.9					
Day Totals		7,247				8,600				15,847		
Day Splits		45.7				54.3						
Peak Hour	08:00		05:15		07:15		04:30		08:00		04:30	
Volume	396		891		703		680		1,071		1,542	
Factor	0.84		0.86		0.90		0.89		0.90		0.96	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : CHESTNUT AVENUE
Segment : STANDARD AVE TO GRAND AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/25/19
Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	0	1	20	55	0	4	16	70	0	5	36	125
12:15	0		9		1		16		1		25	
12:30	0		14		1		16		1		30	
12:45	1		12		2		22		3		34	
01:00	1	1	22	126	2	4	15	137	3	5	37	263
01:15	0		32		2		14		2		46	
01:30	0		50		0		70		0		120	
01:45	0		22		0		38		0		60	
02:00	0	1	18	69	0	2	30	96	0	3	48	165
02:15	0		16		0		16		0		32	
02:30	0		18		0		34		0		52	
02:45	1		17		2		16		3		33	
03:00	0	2	14	67	0	2	14	78	0	4	28	145
03:15	1		20		1		24		2		44	
03:30	1		13		0		20		1		33	
03:45	0		20		1		20		1		40	
04:00	0	4	20	64	0	9	32	112	0	13	52	176
04:15	2		16		1		24		3		40	
04:30	0		16		5		26		5		42	
04:45	2		12		3		30		5		42	
05:00	10	39	36	105	6	39	42	130	16	78	78	235
05:15	8		20		14		32		22		52	
05:30	11		23		9		26		20		49	
05:45	10		26		10		30		20		56	
06:00	10	75	25	63	15	69	24	78	25	144	49	141
06:15	19		12		14		14		33		26	
06:30	24		16		16		20		40		36	
06:45	22		10		24		20		46		30	
07:00	32	224	6	26	18	192	12	35	50	416	18	61
07:15	54		8		42		2		96		10	
07:30	80		7		78		11		158		18	
07:45	58		5		54		10		112		15	
08:00	13	52	10	23	18	56	13	26	31	108	23	49
08:15	13		3		14		6		27		9	
08:30	14		6		7		4		21		10	
08:45	12		4		17		3		29		7	
09:00	16	54	4	18	10	47	3	22	26	101	7	40
09:15	14		2		19		5		33		7	
09:30	10		6		14		9		24		15	
09:45	14		6		4		5		18		11	
10:00	21	54	2	13	17	63	4	16	38	117	6	29
10:15	18		4		20		3		38		7	
10:30	8		3		19		6		27		9	
10:45	7		4		7		3		14		7	
11:00	11	51	1	8	13	66	3	13	24	117	4	21
11:15	16		3		23		3		39		6	
11:30	14		3		14		5		28		8	
11:45	10		1		16		2		26		3	
Totals	558		637		553		813		1,111		1,450	
Split%	50.2		43.9		49.8		56.1					
Day Totals		1,195				1,366				2,561		
Day Splits		46.7				53.3						
Peak Hour	07:00		01:00		07:00		01:30		07:00		01:15	
Volume	224		126		192		154		416		274	
Factor	0.70		0.63		0.62		0.55		0.66		0.57	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : CIVIC CENTER DRIVE
Segment : MAIN ST TO SANTIAGO
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/18/19
Day: Wednesday

Interval	WB				EB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	4	13	50	217	9	41	84	337	13	54	134	554
12:15	3		53		12		90		15		143	
12:30	2		54		10		94		12		148	
12:45	4		60		10		69		14		129	
01:00	3	9	71	268	4	19	70	357	7	28	141	625
01:15	2		71		6		70		8		141	
01:30	2		66		6		130		8		196	
01:45	2		60		3		87		5		147	
02:00	1	4	53	208	1	14	86	388	2	18	139	596
02:15	1		46		3		100		4		146	
02:30	1		63		8		92		9		155	
02:45	1		46		2		110		3		156	
03:00	2	7	79	315	5	15	116	503	7	22	195	818
03:15	0		98		2		121		2		219	
03:30	4		72		5		148		9		220	
03:45	1		66		3		118		4		184	
04:00	4	18	80	288	7	44	153	744	11	62	233	1,032
04:15	2		80		10		150		12		230	
04:30	4		66		11		191		15		257	
04:45	8		62		16		250		24		312	
05:00	10	63	64	270	18	101	234	654	28	164	298	924
05:15	9		57		17		188		26		245	
05:30	16		75		32		130		48		205	
05:45	28		74		34		102		62		176	
06:00	24	165	62	183	29	207	110	380	53	372	172	563
06:15	29		43		42		105		71		148	
06:30	26		35		66		93		92		128	
06:45	86		43		70		72		156		115	
07:00	76	529	39	144	68	472	74	223	144	1,001	113	367
07:15	116		42		100		56		216		98	
07:30	182		32		144		45		326		77	
07:45	155		31		160		48		315		79	
08:00	140	417	37	99	153	376	56	227	293	793	93	326
08:15	98		28		96		60		194		88	
08:30	109		22		60		57		169		79	
08:45	70		12		67		54		137		66	
09:00	62	226	24	84	54	222	26	124	116	448	50	208
09:15	68		20		60		40		128		60	
09:30	48		26		56		36		104		62	
09:45	48		14		52		22		100		36	
10:00	55	170	10	32	56	228	28	93	111	398	38	125
10:15	32		8		56		32		88		40	
10:30	48		10		56		22		104		32	
10:45	35		4		60		11		95		15	
11:00	50	203	4	15	90	384	11	64	140	587	15	79
11:15	46		4		89		20		135		24	
11:30	55		4		101		18		156		22	
11:45	52		3		104		15		156		18	
Totals	1,824		2,123		2,123		4,094		3,947		6,217	
Split%	46.2		34.1		53.8		65.9					
Day Totals		3,947				6,217				10,164		
Day Splits		38.8				61.2						
Peak Hour	07:15		03:15		07:15		04:30		07:15		04:30	
Volume	593		316		557		863		1,150		1,112	
Factor	0.81		0.81		0.87		0.86		0.88		0.89	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : CIVIC CENTER DRIVE
Segment : FAIRVIEW ST TO RAITT ST
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/18/19
Day: Wednesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	9	46	59	291	10	39	90	317	19	85	149	608
12:15	17		64		9		77		26		141	
12:30	14		82		14		76		28		158	
12:45	6		86		6		74		12		160	
01:00	13	30	96	347	13	39	80	403	26	69	176	750
01:15	10		96		14		88		24		184	
01:30	3		82		5		112		8		194	
01:45	4		73		7		123		11		196	
02:00	8	24	96	360	11	25	99	491	19	49	195	851
02:15	7		94		3		134		10		228	
02:30	3		82		6		142		9		224	
02:45	6		88		5		116		11		204	
03:00	2	17	136	482	3	30	142	524	5	47	278	1,006
03:15	3		112		11		154		14		266	
03:30	7		122		8		114		15		236	
03:45	5		112		8		114		13		226	
04:00	6	48	121	508	12	87	120	576	18	135	241	1,084
04:15	10		128		22		144		32		272	
04:30	16		128		24		160		40		288	
04:45	16		131		29		152		45		283	
05:00	32	127	144	661	34	167	162	660	66	294	306	1,321
05:15	26		174		26		196		52		370	
05:30	31		192		59		158		90		350	
05:45	38		151		48		144		86		295	
06:00	44	299	128	477	54	305	137	408	98	604	265	885
06:15	54		128		72		108		126		236	
06:30	82		126		74		91		156		217	
06:45	119		95		105		72		224		167	
07:00	147	831	96	326	107	437	76	310	254	1,268	172	636
07:15	186		70		102		72		288		142	
07:30	262		84		114		82		376		166	
07:45	236		76		114		80		350		156	
08:00	156	560	79	232	132	435	78	271	288	995	157	503
08:15	164		52		100		66		264		118	
08:30	118		53		103		62		221		115	
08:45	122		48		100		65		222		113	
09:00	74	290	54	190	64	272	67	240	138	562	121	430
09:15	61		60		60		68		121		128	
09:30	77		46		82		60		159		106	
09:45	78		30		66		45		144		75	
10:00	78	271	25	124	64	279	41	118	142	550	66	242
10:15	66		40		96		28		162		68	
10:30	70		27		65		32		135		59	
10:45	57		32		54		17		111		49	
11:00	62	252	20	61	64	285	24	64	126	537	44	125
11:15	53		11		65		19		118		30	
11:30	66		15		66		14		132		29	
11:45	71		15		90		7		161		22	
Totals	2,795		4,059		2,400		4,382		5,195		8,441	
Split%	53.8		48.1		46.2		51.9					
Day Totals		6,854				6,782				13,636		
Day Splits		50.3				49.7						
Peak Hour	07:15		05:00		07:15		04:30		07:15		05:00	
Volume	840		661		462		670		1,302		1,321	
Factor	0.80		0.86		0.88		0.85		0.87		0.89	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FLOWER STREET
Segment : WARNER AVE TO EDINGER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/10/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	15	46	52	209	7	36	66	262	22	82	118	471
12:15	12		48		6		78		18		126	
12:30	9		47		13		60		22		107	
12:45	10		62		10		58		20		120	
01:00	11	25	52	248	6	25	60	241	17	50	112	489
01:15	8		46		5		50		13		96	
01:30	3		71		4		62		7		133	
01:45	3		79		10		69		13		148	
02:00	0	11	73	391	8	23	77	381	8	34	150	772
02:15	2		86		2		83		4		169	
02:30	4		92		4		116		8		208	
02:45	5		140		9		105		14		245	
03:00	2	18	135	524	3	34	66	298	5	52	201	822
03:15	2		134		9		66		11		200	
03:30	6		131		10		86		16		217	
03:45	8		124		12		80		20		204	
04:00	2	27	122	481	10	101	74	336	12	128	196	817
04:15	5		121		13		84		18		205	
04:30	7		118		41		84		48		202	
04:45	13		120		37		94		50		214	
05:00	10	91	134	525	33	255	100	408	43	346	234	933
05:15	26		140		46		100		72		240	
05:30	23		127		86		90		109		217	
05:45	32		124		90		118		122		242	
06:00	35	161	130	465	61	342	94	339	96	503	224	804
06:15	29		120		77		96		106		216	
06:30	44		120		106		72		150		192	
06:45	53		95		98		77		151		172	
07:00	43	270	78	308	118	474	70	282	161	744	148	590
07:15	77		73		122		73		199		146	
07:30	79		84		130		72		209		156	
07:45	71		73		104		67		175		140	
08:00	89	302	83	258	132	466	65	207	221	768	148	465
08:15	80		69		104		54		184		123	
08:30	68		60		127		42		195		102	
08:45	65		46		103		46		168		92	
09:00	33	155	45	186	86	263	38	141	119	418	83	327
09:15	36		50		53		29		89		79	
09:30	47		46		62		40		109		86	
09:45	39		45		62		34		101		79	
10:00	48	175	36	138	50	219	30	115	98	394	66	253
10:15	40		31		66		28		106		59	
10:30	42		40		44		36		86		76	
10:45	45		31		59		21		104		52	
11:00	40	214	33	80	68	238	20	61	108	452	53	141
11:15	52		16		56		16		108		32	
11:30	66		18		62		11		128		29	
11:45	56		13		52		14		108		27	
Totals	1,495		3,813		2,476		3,071		3,971		6,884	
Split%	37.6		55.4		62.4		44.6					
Day Totals		5,308				5,547				10,855		
Day Splits		48.9				51.1						
Peak Hour	07:30		02:45		07:15		05:00		07:15		05:00	
Volume	319		540		488		408		804		933	
Factor	0.90		0.96		0.92		0.86		0.91		0.96	

Thursday, September 26, 2019 CITY: Santa Ana PROJECT: SC

ADT138 HAZARD AVE from EUCLID ST to NEWHOPE ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			10		18			12:00			46		69		
0:15			8		6			12:15			51		47		
0:30			4		5			12:30			55		63		
0:45			4	26	10	39	65	12:45			52	204	45	224	428
1:00			4		5			13:00			59		43		
1:15			6		4			13:15			53		60		
1:30			12		4			13:30			63		55		
1:45			6	28	6	19	47	13:45			77	252	73	231	483
2:00			4		0			14:00			61		74		
2:15			4		3			14:15			85		77		
2:30			0		0			14:30			78		64		
2:45			3	11	3	6	17	14:45			90	314	64	279	593
3:00			4		7			15:00			91		94		
3:15			7		2			15:15			90		81		
3:30			5		6			15:30			90		79		
3:45			0	16	3	18	34	15:45			117	388	76	330	718
4:00			4		4			16:00			86		84		
4:15			10		6			16:15			75		78		
4:30			10		14			16:30			78		96		
4:45			12	36	10	34	70	16:45			97	336	100	358	694
5:00			11		13			17:00			90		96		
5:15			12		12			17:15			89		146		
5:30			19		14			17:30			95		125		
5:45			28	70	15	54	124	17:45			105	379	132	499	878
6:00			27		18			18:00			84		133		
6:15			32		21			18:15			90		106		
6:30			40		31			18:30			88		90		
6:45			54	153	37	107	260	18:45			91	353	83	412	765
7:00			55		40			19:00			65		71		
7:15			94		81			19:15			65		67		
7:30			114		136			19:30			60		49		
7:45			156	419	172	429	848	19:45			46	236	46	233	469
8:00			110		126			20:00			56		33		
8:15			120		81			20:15			54		46		
8:30			121		64			20:30			39		36		
8:45			82	433	60	331	764	20:45			42	191	33	148	339
9:00			68		60			21:00			33		29		
9:15			58		79			21:15			41		27		
9:30			47		67			21:30			28		21		
9:45			50	223	71	277	500	21:45			26	128	40	117	245
10:00			70		42			22:00			23		25		
10:15			47		51			22:15			23		24		
10:30			49		52			22:30			16		17		
10:45			48	214	47	192	406	22:45			12	74	11	77	151
11:00			79		48			23:00			17		14		
11:15			54		66			23:15			8		16		
11:30			51		55			23:30			12		9		
11:45			68	252	34	203	455	23:45			9	46	13	52	98
Total Vol.			1881		1709		**3590**				2901		2960		**5861**

Daily Totals

NB	SB	EB	WB	Combined
		4782	4669	**9451**

	AM			PM		
Split %	52.4%	47.6%	**38.0%**	49.5%	50.5%	**62.0%**
Peak Hour	7:45	7:15	**7:30**	15:00	17:15	**17:15**
Volume	507	515	**1015**	388	536	**909**
P.H.F.	0.81	0.75	**0.77**	0.83	0.92	**0.96**

Tuesday, September 24, 2019 CITY: Santa Ana PROJECT: SC

ADT179 McFADDEN AVE from MAIN ST to STANDARD AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			15		24			12:00			76		89		
0:15			12		17			12:15			87		95		
0:30			13		14			12:30			92		79		
0:45			12	52	13	68	120	12:45			92	347	78	341	688
1:00			7		13			13:00			63		81		
1:15			7		14			13:15			87		86		
1:30			6		6			13:30			86		115		
1:45			10	30	11	44	74	13:45			95	331	106	388	719
2:00			15		11			14:00			95		125		
2:15			5		11			14:15			116		152		
2:30			5		6			14:30			130		187		
2:45			7	32	6	34	66	14:45			127	468	167	631	1099
3:00			6		5			15:00			130		181		
3:15			11		7			15:15			151		180		
3:30			23		5			15:30			107		196		
3:45			37	77	14	31	108	15:45			127	515	187	744	1259
4:00			18		7			16:00			108		182		
4:15			44		12			16:15			100		221		
4:30			55		27			16:30			100		196		
4:45			57	174	17	63	237	16:45			113	421	220	819	1240
5:00			60		20			17:00			114		208		
5:15			82		27			17:15			109		211		
5:30			109		41			17:30			120		203		
5:45			168	419	36	124	543	17:45			122	465	154	776	1241
6:00			136		43			18:00			134		175		
6:15			145		51			18:15			116		172		
6:30			157		37			18:30			110		157		
6:45			185	623	49	180	803	18:45			128	488	125	629	1117
7:00			214		67			19:00			114		110		
7:15			187		80			19:15			114		124		
7:30			220		84			19:30			99		103		
7:45			199	820	98	329	1149	19:45			88	415	101	438	853
8:00			164		107			20:00			101		88		
8:15			161		87			20:15			84		84		
8:30			125		77			20:30			71		44		
8:45			149	599	66	337	936	20:45			66	322	67	283	605
9:00			88		72			21:00			66		58		
9:15			97		68			21:15			71		63		
9:30			84		86			21:30			68		53		
9:45			83	352	73	299	651	21:45			55	260	62	236	496
10:00			76		92			22:00			60		69		
10:15			80		72			22:15			36		53		
10:30			87		64			22:30			25		46		
10:45			67	310	80	308	618	22:45			24	145	42	210	355
11:00			95		74			23:00			36		40		
11:15			90		101			23:15			31		28		
11:30			84		98			23:30			12		35		
11:45			85	354	78	351	705	23:45			21	100	20	123	223
Total Vol.			3842		2168		**6010**				4277		5618		**9895**

Daily Totals

NB	SB	EB	WB	Combined
		8119	7786	**15905**

	AM			PM		
Split %	63.9%	36.1%	**37.8%**	43.2%	56.8%	**62.2%**
Peak Hour	7:00	7:30	**7:00**	14:30	16:15	**16:45**
Volume	820	376	**1149**	538	845	**1298**
P.H.F.	0.93	0.88	**0.94**	0.89	0.96	**0.97**

cs@aimtd.com Tell. 714 253 7888

Thursday, October 03, 2019 Location: Santa Ana PROJECT:

ADT197 RAITT ST from FIRST ST to SANTA ANA BL. **Prepared by AimTD tel. 714 753 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	9		5					12:00	56		71				
0:15	6		6					12:15	58		67				
0:30	5		3					12:30	61		56				
0:45	2	22	5	19			41	12:45	65	240	64	258			498
1:00	0		4					13:00	54		70				
1:15	0		0					13:15	53		65				
1:30	1		2					13:30	61		58				
1:45	1	2	4	10			12	13:45	74	242	62	255			497
2:00	0		2					14:00	101		58				
2:15	2		0					14:15	89		67				
2:30	3		1					14:30	86		89				
2:45	1	6	0	3			9	14:45	103	379	79	293			672
3:00	3		1					15:00	109		96				
3:15	1		4					15:15	129		74				
3:30	2		2					15:30	132		67				
3:45	2	8	0	7			15	15:45	152	522	78	315			837
4:00	0		2					16:00	132		91				
4:15	3		4					16:15	164		76				
4:30	1		1					16:30	152		51				
4:45	6	10	5	12			22	16:45	175	623	57	275			898
5:00	9		8					17:00	142		89				
5:15	16		16					17:15	151		93				
5:30	18		13					17:30	158		72				
5:45	23	66	14	51			117	17:45	173	624	59	313			937
6:00	44		24					18:00	168		56				
6:15	36		25					18:15	152		64				
6:30	41		30					18:30	111		76				
6:45	52	173	48	127			300	18:45	85	516	78	274			790
7:00	98		104					19:00	71		51				
7:15	141		132					19:15	58		57				
7:30	195		150					19:30	64		46				
7:45	153	587	114	500			1087	19:45	47	240	56	210			450
8:00	121		65					20:00	53		45				
8:15	98		53					20:15	56		39				
8:30	64		55					20:30	51		37				
8:45	51	334	49	222			556	20:45	42	202	46	167			369
9:00	75		42					21:00	50		35				
9:15	53		45					21:15	34		37				
9:30	48		43					21:30	42		32				
9:45	70	246	35	165			411	21:45	25	151	28	132			283
10:00	57		46					22:00	21		25				
10:15	67		40					22:15	16		21				
10:30	53		36					22:30	14		18				
10:45	69	246	35	157			403	22:45	18	69	16	80			149
11:00	58		43					23:00	9		10				
11:15	59		65					23:15	7		7				
11:30	70		56					23:30	5		5				
11:45	66	253	54	218			471	23:45	7	28	5	27			55
Total Vol.		1953		1491			**3444**			3836		2599			**6435**

Daily Totals

NB	SB	EB	WB	Combined
5789	4090			**9879**

	AM			PM		
Split %	56.7%	43.3%	**34.9%**	59.6%	40.4%	**65.1%**
Peak Hour	7:15	7:00	**7:00**	17:30	14:30	**16:45**
Volume	610	500	**1087**	651	338	**937**
P.H.F.	0.78	0.83	**0.79**	0.96	0.88	**0.96**

pacific@aimtd.com Tell. 714 753 7888

Wednesday, September 11, 2019 Location: Santa Ana PROJECT:

ADT193 RAITT ST from SEGERSTROM AVE to WARNER AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	21		10					12:00	77		66				
0:15	12		7					12:15	54		60				
0:30	14		6					12:30	69		59				
0:45	11	58	7	30			88	12:45	71	271	69	254			525
1:00	10		4					13:00	86		98				
1:15	7		5					13:15	100		87				
1:30	6		2					13:30	176		90				
1:45	4	27	5	16			43	13:45	206	568	89	364			932
2:00	4		2					14:00	127		78				
2:15	7		4					14:15	113		57				
2:30	7		7					14:30	139		102				
2:45	5	23	4	17			40	14:45	185	564	112	349			913
3:00	2		9					15:00	250		106				
3:15	5		4					15:15	175		86				
3:30	2		8					15:30	209		69				
3:45	0	9	16	37			46	15:45	239	873	89	350			1223
4:00	5		16					16:00	251		82				
4:15	8		14					16:15	257		70				
4:30	4		34					16:30	299		79				
4:45	4	21	33	97			118	16:45	268	1075	88	319			1394
5:00	6		38					17:00	261		85				
5:15	11		62					17:15	234		90				
5:30	13		82					17:30	301		105				
5:45	12	42	95	277			319	17:45	237	1033	109	389			1422
6:00	20		57					18:00	246		101				
6:15	21		106					18:15	210		89				
6:30	42		95					18:30	151		75				
6:45	103	186	156	414			600	18:45	143	750	89	354			1104
7:00	117		172					19:00	128		91				
7:15	114		197					19:15	117		74				
7:30	176		187					19:30	104		57				
7:45	165	572	184	740			1312	19:45	103	452	61	283			735
8:00	170		163					20:00	90		62				
8:15	74		143					20:15	73		56				
8:30	84		179					20:30	71		59				
8:45	146	474	207	692			1166	20:45	81	315	37	214			529
9:00	104		87					21:00	67		58				
9:15	40		59					21:15	70		38				
9:30	34		65					21:30	57		28				
9:45	48	226	65	276			502	21:45	75	269	24	148			417
10:00	38		51					22:00	51		24				
10:15	31		36					22:15	56		14				
10:30	43		61					22:30	44		19				
10:45	46	158	53	201			359	22:45	36	187	16	73			260
11:00	46		49					23:00	27		9				
11:15	47		55					23:15	31		15				
11:30	52		44					23:30	24		6				
11:45	60	205	57	205			410	23:45	22	104	9	39			143
Total Vol.		2001		3002			**5003**			6461		3136			**9597**

Daily Totals

NB	SB	EB	WB	**Combined**
8462	6138			**14600**

	AM			**PM**		
Split %	40.0%	60.0%	**34.3%**	67.3%	32.7%	**65.7%**
Peak Hour	7:15	7:00	**7:15**	16:15	14:30	**16:45**
Volume	625	740	**1356**	1085	406	**1432**
P.H.F.	0.89	0.94	**0.93**	0.91	0.91	**0.88**

cs@aimtd.com Tell. 714 253 7888

Thursday, October 03, 2019 CITY: Santa Ana PROJECT: SC

ADT211 SANTA ANA BLVD from MAIN ST to FRENCH ST **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			0		23			12:00			0		44		
0:15			0		14			12:15			0		69		
0:30			0		16			12:30			0		48		
0:45			0	0	13	66	66	12:45			0	0	62	223	223
1:00			0		18			13:00			0		71		
1:15			0		6			13:15			0		60		
1:30			0		13			13:30			0		79		
1:45			0	0	9	46	46	13:45			0	0	75	285	285
2:00			0		6			14:00			0		71		
2:15			0		17			14:15			0		85		
2:30			0		17			14:30			0		86		
2:45			0	0	11	51	51	14:45			0	0	90	332	332
3:00			0		4			15:00			0		88		
3:15			0		7			15:15			0		108		
3:30			0		17			15:30			0		94		
3:45			0	0	19	47	47	15:45			0	0	93	383	383
4:00			0		12			16:00			0		135		
4:15			0		19			16:15			0		151		
4:30			0		18			16:30			0		166		
4:45			0	0	24	73	73	16:45			0	0	171	623	623
5:00			0		27			17:00			0		178		
5:15			0		34			17:15			0		182		
5:30			0		53			17:30			0		178		
5:45			0	0	75	189	189	17:45			0	0	192	730	730
6:00			0		71			18:00			0		146		
6:15			0		55			18:15			0		124		
6:30			0		78			18:30			0		127		
6:45			0	0	117	321	321	18:45			0	0	121	518	518
7:00			0		132			19:00			0		102		
7:15			0		106			19:15			0		94		
7:30			0		118			19:30			0		96		
7:45			0	0	137	493	493	19:45			0	0	83	375	375
8:00			0		107			20:00			0		80		
8:15			0		72			20:15			0		77		
8:30			0		67			20:30			0		80		
8:45			0	0	52	298	298	20:45			0	0	73	310	310
9:00			0		68			21:00			0		38		
9:15			0		56			21:15			0		58		
9:30			0		61			21:30			0		70		
9:45			0	0	56	241	241	21:45			0	0	40	206	206
10:00			0		64			22:00			0		43		
10:15			0		58			22:15			0		46		
10:30			0		48			22:30			0		36		
10:45			0	0	53	223	223	22:45			0	0	42	167	167
11:00			0		68			23:00			0		30		
11:15			0		54			23:15			0		28		
11:30			0		58			23:30			0		26		
11:45			0	0	65	245	245	23:45			0	0	21	105	105
Total Vol.						2293	**2293**							4257	**4257**

Daily Totals

NB	SB	EB	WB	Combined
			6550	**6550**

	AM		PM	
Split %	100.0%	**35.0%**	100.0%	**65.0%**
Peak Hour	7:00	**7:00**	17:00	**17:00**
Volume	493	**493**	730	**730**
P.H.F.	0.90	**0.90**	0.95	**0.95**

cs@aimtd.com Tell. 714 253 7888

Wednesday, October 02, 2019 CITY: Santa Ana PROJECT: SC

ADT206 SANTA ANA BLVD from RAITT ST to BRISTOL ST. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			3		4			12:00			20		31		
0:15			0		7			12:15			18		40		
0:30			3		5			12:30			25		37		
0:45			2	8	4	20	28	12:45			23	86	27	135	221
1:00			2		0			13:00			35		26		
1:15			0		3			13:15			23		37		
1:30			0		0			13:30			21		28		
1:45			3	5	0	3	8	13:45			26	105	32	123	228
2:00			0		0			14:00			29		22		
2:15			2		0			14:15			15		28		
2:30			0		0			14:30			26		22		
2:45			0	2	0	0	2	14:45			25	95	40	112	207
3:00			0		0			15:00			28		47		
3:15			2		0			15:15			41		43		
3:30			3		2			15:30			35		45		
3:45			2	7	3	5	12	15:45			30	134	39	174	308
4:00			4		2			16:00			18		45		
4:15			3		2			16:15			27		55		
4:30			8		4			16:30			36		49		
4:45			11	26	9	17	43	16:45			34	115	67	216	331
5:00			8		2			17:00			33		76		
5:15			16		5			17:15			25		82		
5:30			10		19			17:30			33		71		
5:45			14	48	20	46	94	17:45			28	119	64	293	412
6:00			17		22			18:00			27		47		
6:15			21		15			18:15			30		31		
6:30			20		22			18:30			16		37		
6:45			31	89	23	82	171	18:45			27	100	34	149	249
7:00			42		23			19:00			19		30		
7:15			96		29			19:15			17		26		
7:30			108		39			19:30			19		29		
7:45			108	354	51	142	496	19:45			9	64	23	108	172
8:00			66		35			20:00			9		30		
8:15			60		43			20:15			9		16		
8:30			25		20			20:30			10		24		
8:45			37	188	26	124	312	20:45			11	39	14	84	123
9:00			27		18			21:00			12		13		
9:15			26		25			21:15			13		12		
9:30			23		20			21:30			14		21		
9:45			13	89	27	90	179	21:45			7	46	19	65	111
10:00			27		21			22:00			9		16		
10:15			14		28			22:15			6		14		
10:30			18		19			22:30			3		7		
10:45			28	87	21	89	176	22:45			9	27	12	49	76
11:00			18		26			23:00			3		9		
11:15			21		31			23:15			4		8		
11:30			26		33			23:30			2		2		
11:45			15	80	31	121	201	23:45			2	11	4	23	34
Total Vol.			983		739		**1722**				941		1531		**2472**

Daily Totals

NB	SB	EB	WB	Combined
		1924	2270	**4194**

	AM			PM		
Split %	57.1%	42.9%	**41.1%**	38.1%	61.9%	**58.9%**
Peak Hour	7:15	7:30	**7:15**	15:00	16:45	**16:45**
Volume	378	168	**532**	134	296	**421**
P.H.F.	0.88	0.82	**0.84**	0.82	0.90	**0.97**

Wednesday, October 02, 2019 Location: Santa Ana PROJECT:

ADT243 STANDARD AVE from McFADDEN AVE to CHESTNUT AVE. **Prepared by AimTD tel. 714 753 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	15		11					12:00	77		61				
0:15	11		9	9				12:15	73		56				
0:30	11		6					12:30	82		66				
0:45	12	49	13	39			88	12:45	80	312	85	268			580
1:00	8		5					13:00	75		113				
1:15	9		6					13:15	86		105				
1:30	11		7					13:30	79		109				
1:45	13	41	4	22			63	13:45	91	331	92	419			750
2:00	6		5					14:00	114		83				
2:15	6		4					14:15	115		92				
2:30	2		4					14:30	132		79				
2:45	4	18	8	21			39	14:45	129	490	85	339			829
3:00	3		3					15:00	134		98				
3:15	5		5					15:15	166		96				
3:30	4		6					15:30	172		84				
3:45	7	19	4	18			37	15:45	166	638	92	370			1008
4:00	3		10					16:00	184		106				
4:15	6		5					16:15	188		93				
4:30	10		8					16:30	196		107				
4:45	15	34	14	37			71	16:45	218	786	113	419			1205
5:00	18		18					17:00	209		123				
5:15	15		19					17:15	222		114				
5:30	28		47					17:30	207		100				
5:45	31	92	48	132			224	17:45	197	835	99	436			1271
6:00	24		40					18:00	172		97				
6:15	26		46					18:15	141		122				
6:30	52		60					18:30	153		95				
6:45	85	187	63	209			396	18:45	131	597	89	403			1000
7:00	95		97					19:00	105		72				
7:15	105		112					19:15	96		74				
7:30	113		114					19:30	87		85				
7:45	156	469	146	469			938	19:45	91	379	72	303			682
8:00	134		120					20:00	96		77				
8:15	104		99					20:15	68		64				
8:30	85		84					20:30	57		49				
8:45	103	426	74	377			803	20:45	48	269	51	241			510
9:00	78		55					21:00	55		51				
9:15	70		74					21:15	45		53				
9:30	64		80					21:30	49		40				
9:45	73	285	76	285			570	21:45	32	181	43	187			368
10:00	56		57					22:00	43		34				
10:15	53		46					22:15	35		19				
10:30	49		57					22:30	29		27				
10:45	45	203	63	223			426	22:45	23	130	25	105			235
11:00	50		67					23:00	25		15				
11:15	56		78					23:15	15		23				
11:30	64		64					23:30	17		15				
11:45	74	244	59	268			512	23:45	13	70	16	69			139
Total Vol.		2067		2100			**4167**			5018		3559			**8577**

Daily Totals

NB	SB	EB	WB	Combined
7085	5659			**12744**

	AM			PM		
Split %	49.6%	50.4%	**32.7%**	58.5%	41.5%	**67.3%**
Peak Hour	7:15	7:15	**7:15**	16:45	16:30	**16:45**
Volume	508	492	**1000**	856	457	**1306**
P.H.F.	0.81	0.84	**0.83**	0.98	0.93	**0.97**

pacific@aimtd.com Tell. 714 753 7888

Wednesday, September 11, 2019 Location: Santa Ana PROJECT:

ADT241 STANDARD AVE from WARNER AVE to EDINGER AVE. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
0:00	23		12					12:00	92		75				
0:15	12		12					12:15	82		72				
0:30	14		12					12:30	78		65				
0:45	11	60	12	48			108	12:45	70	322	69	281			603
1:00	32		10					13:00	79		66				
1:15	13		9					13:15	91		73				
1:30	15		5					13:30	126		55				
1:45	7	67	10	34			101	13:45	109	405	65	259			664
2:00	8		6					14:00	120		75				
2:15	4		6					14:15	112		76				
2:30	15		5					14:30	147		95				
2:45	6	33	11	28			61	14:45	165	544	96	342			886
3:00	5		3					15:00	198		94				
3:15	4		7					15:15	151		75				
3:30	9		7					15:30	202		77				
3:45	12	30	16	33			63	15:45	188	739	70	316			1055
4:00	10		11					16:00	191		88				
4:15	9		29					16:15	188		88				
4:30	10		50					16:30	208		89				
4:45	23	52	74	164			216	16:45	257	844	86	351			1195
5:00	27		58					17:00	274		79				
5:15	38		67					17:15	241		107				
5:30	39		72					17:30	197		90				
5:45	38	142	123	320			462	17:45	146	858	103	379			1237
6:00	45		83					18:00	136		67				
6:15	51		79					18:15	149		65				
6:30	69		113					18:30	127		67				
6:45	67	232	120	395			627	18:45	102	514	71	270			784
7:00	94		112					19:00	74		60				
7:15	73		149					19:15	84		58				
7:30	89		160					19:30	79		65				
7:45	99	355	152	573			928	19:45	68	305	65	248			553
8:00	79		127					20:00	71		57				
8:15	78		112					20:15	56		47				
8:30	82		65					20:30	64		45				
8:45	72	311	80	384			695	20:45	47	238	44	193			431
9:00	54		68					21:00	42		39				
9:15	68		49					21:15	53		37				
9:30	62		67					21:30	37		35				
9:45	52	236	52	236			472	21:45	36	168	35	146			314
10:00	61		47					22:00	46		43				
10:15	53		50					22:15	35		30				
10:30	55		37					22:30	20		22				
10:45	47	216	48	182			398	22:45	33	134	20	115			249
11:00	67		33					23:00	24		20				
11:15	72		60					23:15	25		9				
11:30	74		59					23:30	18		11				
11:45	87	300	45	197			497	23:45	11	78	8	48			126
Total Vol.		2034		2594			**4628**			5149		2948			**8097**

Daily Totals

NB	SB	EB	WB	Combined
7183	5542			**12725**

	AM			PM		
Split %	43.9%	56.1%	**36.4%**	63.6%	36.4%	**63.6%**
Peak Hour	7:00	7:15	**7:00**	16:30	17:00	**16:30**
Volume	355	588	**928**	980	379	**1341**
P.H.F.	0.90	0.92	**0.92**	0.92	0.89	**0.95**

cs@aimtd.com Tell. 714 253 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : GREENVILLE STREET
Segment : WARNER AVE TO EDINGER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/01/19

Interval	NB				SB				Combined				Day: Tuesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	7	19	21	128	4	9	36	135	11	28	57	263	
12:15	8		29		2		31		10		60		
12:30	2		38		2		33		4		71		
12:45	2		40		1		35		3		75		
01:00	7	20	43	172	4	12	23	155	11	32	66	327	
01:15	4		43		1		42		5		85		
01:30	4		38		5		46		9		84		
01:45	5		48		2		44		7		92		
02:00	2	10	54	268	0	6	52	238	2	16	106	506	
02:15	1		45		2		58		3		103		
02:30	1		77		2		48		3		125		
02:45	6		92		2		80		8		172		
03:00	2	11	110	433	0	14	68	212	2	25	178	645	
03:15	2		114		4		46		6		160		
03:30	3		102		7		46		10		148		
03:45	4		107		3		52		7		159		
04:00	4	16	110	466	3	41	48	197	7	57	158	663	
04:15	2		121		10		43		12		164		
04:30	6		113		16		56		22		169		
04:45	4		122		12		50		16		172		
05:00	7	45	113	499	15	107	60	226	22	152	173	725	
05:15	11		135		16		54		27		189		
05:30	14		128		35		46		49		174		
05:45	13		123		41		66		54		189		
06:00	22	104	99	314	30	173	59	216	52	277	158	530	
06:15	18		93		46		50		64		143		
06:30	28		69		43		58		71		127		
06:45	36		53		54		49		90		102		
07:00	50	272	44	149	70	340	50	195	120	612	94	344	
07:15	70		35		102		52		172		87		
07:30	84		39		88		50		172		89		
07:45	68		31		80		43		148		74		
08:00	60	163	43	147	69	202	57	156	129	365	100	303	
08:15	44		34		52		42		96		76		
08:30	36		35		42		34		78		69		
08:45	23		35		39		23		62		58		
09:00	20	107	34	114	31	127	30	101	51	234	64	215	
09:15	32		34		30		28		62		62		
09:30	29		24		38		28		67		52		
09:45	26		22		28		15		54		37		
10:00	34	109	19	58	28	129	18	56	62	238	37	114	
10:15	23		20		26		11		49		31		
10:30	20		12		43		17		63		29		
10:45	32		7		32		10		64		17		
11:00	32	138	17	38	24	146	7	27	56	284	24	65	
11:15	40		15		33		8		73		23		
11:30	36		2		42		6		78		8		
11:45	30		4		47		6		77		10		
Totals	1,014		2,786		1,306		1,914		2,320		4,700		
Split%	43.7		59.3		56.3		40.7						
Day Totals		3,800				3,220				7,020			
Day Splits		54.1				45.9							
Peak Hour	07:15		05:00		07:00		02:15		07:15		05:00		
Volume	282		499		340		254		621		725		
Factor	0.84		0.92		0.83		0.79		0.90		0.96		

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : GREENVILLE STREET
Segment : SEGERSTROM AVE TO WARNER AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/01/19
Day: Tuesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	6	29	41	158	5	21	32	145	11	50	73	303
12:15	9		39		7		35		16		74	
12:30	4		36		9		36		13		72	
12:45	10		42		0		42		10		84	
01:00	3	15	46	187	3	12	32	193	6	27	78	380
01:15	6		43		2		48		8		91	
01:30	4		43		2		51		6		94	
01:45	2		55		5		62		7		117	
02:00	6	14	67	404	1	7	56	280	7	21	123	684
02:15	1		60		3		76		4		136	
02:30	2		84		1		72		3		156	
02:45	5		193		2		76		7		269	
03:00	1	5	192	642	4	14	66	219	5	19	258	861
03:15	2		138		0		52		2		190	
03:30	2		142		1		43		3		185	
03:45	0		170		9		58		9		228	
04:00	1	8	181	663	6	51	35	199	7	59	216	862
04:15	3		148		6		53		9		201	
04:30	1		178		17		47		18		225	
04:45	3		156		22		64		25		220	
05:00	4	24	174	666	16	122	57	229	20	146	231	895
05:15	8		190		29		54		37		244	
05:30	8		162		27		62		35		224	
05:45	4		140		50		56		54		196	
06:00	14	76	122	408	28	198	70	212	42	274	192	620
06:15	14		114		50		42		64		156	
06:30	21		93		44		50		65		143	
06:45	27		79		76		50		103		129	
07:00	26	231	52	205	94	571	39	184	120	802	91	389
07:15	57		54		147		57		204		111	
07:30	62		43		188		44		250		87	
07:45	86		56		142		44		228		100	
08:00	72	160	52	214	102	310	51	137	174	470	103	351
08:15	40		63		78		32		118		95	
08:30	30		53		54		31		84		84	
08:45	18		46		76		23		94		69	
09:00	31	117	47	136	36	153	22	90	67	270	69	226
09:15	22		41		36		27		58		68	
09:30	30		21		49		22		79		43	
09:45	34		27		32		19		66		46	
10:00	39	107	25	81	41	159	17	54	80	266	42	135
10:15	22		28		38		13		60		41	
10:30	18		10		34		11		52		21	
10:45	28		18		46		13		74		31	
11:00	32	141	15	61	40	153	5	28	72	294	20	89
11:15	30		15		28		4		58		19	
11:30	43		13		40		10		83		23	
11:45	36		18		45		9		81		27	
Totals	927		3,825		1,771		1,970		2,698		5,795	
Split%	34.4		66.0		65.6		34.0					
Day Totals		4,752				3,741				8,493		
Day Splits		56.0				44.0						
Peak Hour	07:15		04:30		07:15		02:15		07:15		04:30	
Volume	277		698		579		290		856		920	
Factor	0.81		0.92		0.77		0.95		0.86		0.94	

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Attachment 8

Location : FLOWER STREET

Segment : SANTA CLARA TO MEMORY LN

Client : CITY SANTA ANA

Site: SANTA ANA

Date: 09/12/19

File: D1909110

Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	3	9	58	187	14	30	82	302	17	39	140	489
12:15	4		50		3		74		7		124	
12:30	2		41		4		76		6		117	
12:45	0		38		9		70		9		108	
01:00	4	7	54	180	0	8	102	373	4	15	156	553
01:15	1		34		2		74		3		108	
01:30	2		49		0		87		2		136	
01:45	0		43		6		110		6		153	
02:00	0	4	68	314	4	16	127	484	4	20	195	798
02:15	2		96		6		148		8		244	
02:30	1		92		4		93		5		185	
02:45	1		58		2		116		3		174	
03:00	0	7	80	332	6	20	118	401	6	27	198	733
03:15	1		78		6		100		7		178	
03:30	1		94		4		73		5		167	
03:45	5		80		4		110		9		190	
04:00	3	9	81	392	2	44	92	466	5	53	173	858
04:15	3		74		10		132		13		206	
04:30	2		112		20		122		22		234	
04:45	1		125		12		120		13		245	
05:00	10	28	132	600	16	121	130	569	26	149	262	1,169
05:15	2		164		23		149		25		313	
05:30	6		162		48		162		54		324	
05:45	10		142		34		128		44		270	
06:00	10	90	128	404	40	299	136	457	50	389	264	861
06:15	18		104		47		113		65		217	
06:30	26		92		80		96		106		188	
06:45	36		80		132		112		168		192	
07:00	33	267	86	232	165	971	108	340	198	1,238	194	572
07:15	68		58		230		94		298		152	
07:30	82		40		284		80		366		120	
07:45	84		48		292		58		376		106	
08:00	132	285	34	129	178	531	81	251	310	816	115	380
08:15	74		32		138		68		212		100	
08:30	46		33		136		54		182		87	
08:45	33		30		79		48		112		78	
09:00	35	123	20	72	87	347	48	213	122	470	68	285
09:15	30		25		92		61		122		86	
09:30	32		13		78		58		110		71	
09:45	26		14		90		46		116		60	
10:00	28	142	8	29	58	262	47	140	86	404	55	169
10:15	52		10		66		50		118		60	
10:30	31		3		68		25		99		28	
10:45	31		8		70		18		101		26	
11:00	38	151	10	33	82	303	19	71	120	454	29	104
11:15	30		10		58		16		88		26	
11:30	46		7		88		30		134		37	
11:45	37		6		75		6		112		12	
Totals	1,122		2,904		2,952		4,067		4,074		6,971	
Split%	27.5		41.7		72.5		58.3					
Day Totals		4,026				7,019				11,045		
Day Splits		36.5				63.5						
Peak Hour	07:30		05:00		07:15		05:15		07:15		05:15	
Volume	372		600		984		575		1,350		1,171	
Factor	0.70		0.91		0.84		0.89		0.90		0.90	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : DYER ROAD
Segment : PULLMAN ST TO RED HILL AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 09/24/19
Day: Tuesday

Interval	EB				WB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	20	52	214	769	38	198	228	930	58	250	442	1,699
12:15	10		190		38		234		48		424	
12:30	14		183		84		230		98		413	
12:45	8		182		38		238		46		420	
01:00	13	32	204	728	24	73	246	1,032	37	105	450	1,760
01:15	11		162		28		250		39		412	
01:30	2		186		13		285		15		471	
01:45	6		176		8		251		14		427	
02:00	12	66	186	687	16	63	297	1,179	28	129	483	1,866
02:15	7		155		17		278		24		433	
02:30	17		170		18		335		35		505	
02:45	30		176		12		269		42		445	
03:00	18	187	158	741	16	60	286	1,286	34	247	444	2,027
03:15	31		191		20		332		51		523	
03:30	56		192		11		323		67		515	
03:45	82		200		13		345		95		545	
04:00	56	480	183	852	26	115	370	1,350	82	595	553	2,202
04:15	85		206		24		316		109		522	
04:30	137		227		40		342		177		569	
04:45	202		236		25		322		227		558	
05:00	175	904	243	1,101	32	209	389	1,412	207	1,113	632	2,513
05:15	205		276		36		358		241		634	
05:30	228		294		58		308		286		602	
05:45	296		288		83		357		379		645	
06:00	214	900	230	844	88	460	322	1,197	302	1,360	552	2,041
06:15	241		215		134		329		375		544	
06:30	231		234		102		313		333		547	
06:45	214		165		136		233		350		398	
07:00	220	991	146	486	172	777	300	986	392	1,768	446	1,472
07:15	251		106		176		266		427		372	
07:30	264		120		186		232		450		352	
07:45	256		114		243		188		499		302	
08:00	228	950	124	380	245	1,001	214	748	473	1,951	338	1,128
08:15	222		90		253		168		475		258	
08:30	238		74		267		170		505		244	
08:45	262		92		236		196		498		288	
09:00	218	868	82	293	224	785	194	654	442	1,653	276	947
09:15	233		84		187		158		420		242	
09:30	211		60		195		172		406		232	
09:45	206		67		179		130		385		197	
10:00	170	677	42	195	193	739	150	488	363	1,416	192	683
10:15	168		54		191		122		359		176	
10:30	181		57		175		122		356		179	
10:45	158		42		180		94		338		136	
11:00	208	870	22	83	188	776	98	285	396	1,646	120	368
11:15	219		19		201		66		420		85	
11:30	199		25		184		65		383		90	
11:45	244		17		203		56		447		73	
Totals	6,977		7,159		5,256		11,547		12,233		18,706	
Split%	57.0		38.3		43.0		61.7					
Day Totals		14,136				16,803				30,939		
Day Splits		45.7				54.3						
Peak Hour	07:15		05:00		07:45		05:00		07:45		05:00	
Volume	999		1,101		1,008		1,412		1,952		2,513	
Factor	0.95		0.94		0.94		0.91		0.97		0.97	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : FAIRHAVEN AVENUE
Segment : TUSTIN AVE TO NEWPORT FWY
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/03/19
Day: Thursday

Interval	WB				EB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	18	24	89	408	18	50	79	376	36	74	168	784
12:15	2		128		14		94		16		222	
12:30	3		96		7		101		10		197	
12:45	1		95		11		102		12		197	
01:00	8	14	114	452	10	21	109	426	18	35	223	878
01:15	2		114		5		92		7		206	
01:30	0		106		4		101		4		207	
01:45	4		118		2		124		6		242	
02:00	3	9	142	604	6	19	107	516	9	28	249	1,120
02:15	2		134		10		144		12		278	
02:30	0		134		1		144		1		278	
02:45	4		194		2		121		6		315	
03:00	5	22	186	615	10	21	154	583	15	43	340	1,198
03:15	7		146		3		158		10		304	
03:30	3		133		4		147		7		280	
03:45	7		150		4		124		11		274	
04:00	9	62	159	690	5	20	131	607	14	82	290	1,297
04:15	16		203		3		160		19		363	
04:30	20		162		7		166		27		328	
04:45	17		166		5		150		22		316	
05:00	44	178	180	833	11	60	147	664	55	238	327	1,497
05:15	38		238		14		188		52		426	
05:30	48		231		12		139		60		370	
05:45	48		184		23		190		71		374	
06:00	58	437	183	651	24	217	138	463	82	654	321	1,114
06:15	107		170		49		118		156		288	
06:30	126		158		68		90		194		248	
06:45	146		140		76		117		222		257	
07:00	178	994	94	338	98	537	101	400	276	1,531	195	738
07:15	202		78		123		112		325		190	
07:30	284		84		162		89		446		173	
07:45	330		82		154		98		484		180	
08:00	300	900	54	211	112	387	73	272	412	1,287	127	483
08:15	230		51		102		68		332		119	
08:30	194		56		93		66		287		122	
08:45	176		50		80		65		256		115	
09:00	139	506	42	142	76	292	80	250	215	798	122	392
09:15	109		34		64		58		173		92	
09:30	132		35		64		56		196		91	
09:45	126		31		88		56		214		87	
10:00	110	433	42	110	80	298	74	207	190	731	116	317
10:15	104		24		74		47		178		71	
10:30	97		22		70		44		167		66	
10:45	122		22		74		42		196		64	
11:00	114	411	12	49	74	324	35	116	188	735	47	165
11:15	93		16		76		26		169		42	
11:30	102		11		76		32		178		43	
11:45	102		10		98		23		200		33	
Totals	3,990		5,103		2,246		4,880		6,236		9,983	
Split%	64.0		51.1		36.0		48.9					
Day Totals		9,093				7,126				16,219		
Day Splits		56.1				43.9						
Peak Hour	07:30		05:15		07:15		05:00		07:30		05:00	
Volume	1,144		836		551		664		1,674		1,497	
Factor	0.87		0.88		0.85		0.87		0.86		0.88	

Tuesday, September 24, 2019 CITY: Santa Ana PROJECT: SC

ADT219 SANTA CLARA AVE from TUSTIN AVE to NEWPORT FWY. **Prepared by AimTD tel. 714 253 7888**

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
0:00			10		7			12:00			68		47		
0:15			7		6			12:15			50		33		
0:30			3		0			12:30			72		51		
0:45			0	20	0	13	33	12:45			80	270	67	198	468
1:00			2		2			13:00			80		45		
1:15			4		0			13:15			69		66		
1:30			2		2			13:30			59		53		
1:45			2	10	4	8	18	13:45			52	260	87	251	511
2:00			3		3			14:00			58		64		
2:15			3		2			14:15			61		55		
2:30			0		2			14:30			110		72		
2:45			2	8	0	7	15	14:45			85	314	99	290	604
3:00			0		0			15:00			88		94		
3:15			0		2			15:15			85		76		
3:30			0		4			15:30			84		87		
3:45			0	0	4	10	10	15:45			58	315	77	334	649
4:00			0		2			16:00			82		64		
4:15			6		2			16:15			85		79		
4:30			0		5			16:30			88		96		
4:45			0	6	2	11	17	16:45			94	349	85	324	673
5:00			8		7			17:00			90		106		
5:15			9		13			17:15			111		118		
5:30			8		14			17:30			106		106		
5:45			9	34	15	49	83	17:45			87	394	108	438	832
6:00			11		13			18:00			94		81		
6:15			46		30			18:15			86		88		
6:30			55		43			18:30			72		80		
6:45			47	159	55	141	300	18:45			58	310	56	305	615
7:00			63		50			19:00			55		53		
7:15			151		76			19:15			48		46		
7:30			137		106			19:30			53		34		
7:45			130	481	116	348	829	19:45			46	202	41	174	376
8:00			106		122			20:00			51		41		
8:15			57		100			20:15			45		35		
8:30			52		72			20:30			45		31		
8:45			72	287	54	348	635	20:45			25	166	21	128	294
9:00			63		56			21:00			30		20		
9:15			67		53			21:15			27		25		
9:30			45		45			21:30			21		11		
9:45			45	220	47	201	421	21:45			27	105	18	74	179
10:00			35		44			22:00			26		22		
10:15			54		37			22:15			26		12		
10:30			46		35			22:30			18		11		
10:45			50	185	44	160	345	22:45			16	86	9	54	140
11:00			51		39			23:00			14		12		
11:15			49		41			23:15			10		5		
11:30			49		38			23:30			10		7		
11:45			58	207	38	156	363	23:45			10	44	5	29	73
Total Vol.				1617		1452	**3069**					2815		2599	**5414**

Daily Totals

NB	SB	EB	WB	Combined
		4432	4051	**8483**

	AM			PM		
Split %	52.7%	47.3%	**36.2%**	52.0%	48.0%	**63.8%**
Peak Hour	7:15	7:30	**7:15**	16:45	17:00	**17:00**
Volume	524	444	**944**	401	438	**832**
P.H.F.	0.87	0.91	**0.96**	0.90	0.93	**0.91**

cs@aimtd.com Tell. 714 253 7888

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : HARBOR BOULEVARD
Segment : EDINGER AVE TO MCFADDEN AVE
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/03/19

Day: Thursday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	78	242	302	1,224	47	169	327	1,319	125	411	629	2,543
12:15	70		304		42		322		112		626	
12:30	46		316		45		312		91		628	
12:45	48		302		35		358		83		660	
01:00	72	160	328	1,382	27	98	286	1,272	99	258	614	2,654
01:15	36		326		25		308		61		634	
01:30	34		344		18		337		52		681	
01:45	18		384		28		341		46		725	
02:00	51	134	384	1,766	19	93	334	1,445	70	227	718	3,211
02:15	26		439		18		363		44		802	
02:30	29		426		34		350		63		776	
02:45	28		517		22		398		50		915	
03:00	35	113	508	2,114	28	234	295	1,197	63	347	803	3,311
03:15	27		548		42		311		69		859	
03:30	26		516		56		298		82		814	
03:45	25		542		108		293		133		835	
04:00	50	162	532	2,086	47	467	282	1,184	97	629	814	3,270
04:15	26		526		86		300		112		826	
04:30	42		520		138		296		180		816	
04:45	44		508		196		306		240		814	
05:00	60	312	541	2,221	168	973	332	1,307	228	1,285	873	3,528
05:15	73		561		198		324		271		885	
05:30	80		555		269		355		349		910	
05:45	99		564		338		296		437		860	
06:00	122	567	518	1,962	273	1,658	298	1,133	395	2,225	816	3,095
06:15	118		556		319		283		437		839	
06:30	154		478		480		268		634		746	
06:45	173		410		586		284		759		694	
07:00	200	1,001	402	1,431	572	2,472	268	1,013	772	3,473	670	2,444
07:15	224		394		612		262		836		656	
07:30	272		330		640		259		912		589	
07:45	305		305		648		224		953		529	
08:00	348	1,146	264	1,026	586	2,128	220	817	934	3,274	484	1,843
08:15	282		268		522		209		804		477	
08:30	248		272		520		222		768		494	
08:45	268		222		500		166		768		388	
09:00	228	945	197	777	444	1,714	184	626	672	2,659	381	1,403
09:15	216		204		427		156		643		360	
09:30	265		200		406		150		671		350	
09:45	236		176		437		136		673		312	
10:00	262	1,075	194	654	332	1,362	153	435	594	2,437	347	1,089
10:15	269		170		320		105		589		275	
10:30	276		166		352		101		628		267	
10:45	268		124		358		76		626		200	
11:00	290	1,193	107	455	306	1,189	98	340	596	2,382	205	795
11:15	303		94		253		80		556		174	
11:30	306		139		340		78		646		217	
11:45	294		115		290		84		584		199	
Totals	7,050		17,098		12,557		12,088		19,607		29,186	
Split%	36.0		58.6		64.0		41.4					
Day Totals		24,148				24,645				48,793		
Day Splits		49.5				50.5						
Peak Hour	07:30		05:00		07:15		02:00		07:15		05:00	
Volume	1,207		2,221		2,486		1,445		3,635		3,528	
Factor	0.87		0.98		0.96		0.91		0.95		0.97	

Transportation Studies, Inc.
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

Attachment 8

Location : HARBOR BOULEVARD
Segment : WARNER TO SANTA ANA RIVER
Client : CITY SANTA ANA

Site: SANTA ANA
Date: 10/09/19
Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	74	265	359	1,359	42	128	330	1,343	116	393	689	2,702
12:15	58		330		30		332		88		662	
12:30	63		318		32		357		95		675	
12:45	70		352		24		324		94		676	
01:00	68	204	328	1,473	14	71	333	1,305	82	275	661	2,778
01:15	49		350		12		328		61		678	
01:30	50		390		24		336		74		726	
01:45	37		405		21		308		58		713	
02:00	52	156	494	1,931	30	115	400	1,374	82	271	894	3,305
02:15	34		428		24		324		58		752	
02:30	49		496		30		341		79		837	
02:45	21		513		31		309		52		822	
03:00	37	110	604	2,356	24	229	291	1,175	61	339	895	3,531
03:15	16		533		47		288		63		821	
03:30	29		631		50		300		79		931	
03:45	28		588		108		296		136		884	
04:00	43	149	626	2,489	66	569	237	995	109	718	863	3,484
04:15	24		604		91		237		115		841	
04:30	36		619		164		258		200		877	
04:45	46		640		248		263		294		903	
05:00	48	270	672	2,625	184	1,200	290	1,012	232	1,470	962	3,637
05:15	78		655		241		250		319		905	
05:30	66		624		339		234		405		858	
05:45	78		674		436		238		514		912	
06:00	90	456	584	2,265	338	1,964	236	960	428	2,420	820	3,225
06:15	90		628		420		258		510		886	
06:30	140		549		456		232		596		781	
06:45	136		504		750		234		886		738	
07:00	202	1,014	406	1,437	628	3,573	190	712	830	4,587	596	2,149
07:15	204		384		1,000		191		1,204		575	
07:30	272		340		974		176		1,246		516	
07:45	336		307		971		155		1,307		462	
08:00	274	970	246	925	1,004	3,226	144	598	1,278	4,196	390	1,523
08:15	220		231		703		158		923		389	
08:30	237		218		714		170		951		388	
08:45	239		230		805		126		1,044		356	
09:00	228	928	201	797	759	2,203	112	515	987	3,131	313	1,312
09:15	231		207		562		170		793		377	
09:30	243		187		430		132		673		319	
09:45	226		202		452		101		678		303	
10:00	255	998	238	729	370	1,366	96	300	625	2,364	334	1,029
10:15	228		174		332		66		560		240	
10:30	262		159		314		80		576		239	
10:45	253		158		350		58		603		216	
11:00	261	1,131	148	497	332	1,171	54	207	593	2,302	202	704
11:15	308		142		284		60		592		202	
11:30	260		128		277		46		537		174	
11:45	302		79		278		47		580		126	
Totals	6,651		18,883		15,815		10,496		22,466		29,379	
Split%	29.6		64.3		70.4		35.7					
Day Totals		25,534				26,311				51,845		
Day Splits		49.3				50.7						
Peak Hour	11:00		05:00		07:15		02:00		07:15		04:30	
Volume	1,131		2,625		3,949		1,374		5,035		3,647	
Factor	0.92		0.97		0.98		0.86		0.96		0.95	

Data File : D1909135

IBI GROUP
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Technical Memorandum

To/Attention	City of Santa Ana	**Date**	October 22, 2020
From	IBI Group	**Project No**	119772
cc			
Subject	Addendum to Santa Ana General Plan Traffic Impact Study		

Overview

This memo serves as an addendum to the Traffic Impact Study (October 2020) prepared in support of the Santa Ana General Plan Update Environmental Impact Report (EIR). Presented in this memo is the analysis for ten (10) additional study intersections identified by the City of Tustin and Orange County Transportation Authority (OCTA) as locations where impacts may occur due to the project. The study intersections are listed below are shown in Exhibit A attached to this memo.

106. Red Hill Avenue and El Camino Real (City of Tustin)
107. Red Hill Avenue and I-5 NB Ramps (City of Tustin)
108. Red Hill Avenue and I-5 SB Ramps (City of Tustin)
109. Red Hill Avenue and Nisson Road (City of Tustin)
110. Red Hill Avenue and Walnut Avenue (City of Tustin)
111. Red Hill Avenue and Valencia Avenue (City of Tustin)
112. Tustin Ranch Road and Warner Avenue North (City of Tustin)
113. Tustin Ranch Road and Walnut Avenue (City of Tustin)
114. SR-55 SB Ramps and Irvine Boulevard (Orange County CMP)
115. SR-55 NB Ramps and Irvine Boulevard (Orange County CMP)

This analysis follows the methodology outlined in the Traffic Impact Study (October 2020). Intersection level of service (LOS) analyses were conducted for the Existing Year (2020) No Project, Future Year (2045) No Project, and Future Year (2045) With Project scenarios. Significant impacts were assessed for the year 2045 scenarios using the impact criteria of the presiding agency.

Existing Year (2020) No Project

A summary of the AM and PM peak hour level of service analysis results for the Existing Year (2020) No Project condition is provided in Table 1. Intersections are considered unacceptable if the level of service (LOS) is “E” or “F”. It should be noted that Caltrans and OC CMP intersections have a minimum LOS of C and E, respectively. The following intersections are forecast to operate at an unacceptable level of service in the Existing Year (2020) No Project condition:

- INT 113 – Tustin Ranch Road and Walnut Avenue (City of Tustin)

Table 1: Existing Year (2020) No Project Intersection LOS Summary

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
106	Red Hill Avenue and El Camino Real	0.71	C	0.62	B
107	Red Hill Avenue and I-5 NB Ramps	20.3	C	23.3	C
108	Red Hill Avenue and I-5 SB Ramps	22.0	C	22.8	C
109	Red Hill Avenue and Nisson Road	0.65	B	0.70	B
110	Red Hill Avenue and Walnut Avenue	0.68	B	0.79	C
111	Red Hill Avenue and Valencia Avenue	0.54	A	0.55	A
112	Tustin Ranch Road and Warner Avenue North	0.43	A	0.76	C
113	Tustin Ranch Road and Walnut Avenue	1.19	F	1.63	F
114	SR-55 SB Ramps and Irvine Boulevard	0.97	E	0.79	C
115	SR-55 NB Ramps and Irvine Boulevard	0.80	C	0.81	D

Notes: (1) LOS – Level of Service; (2) V/C – Volume to Capacity

Future Year (2045) No Project

A summary of the AM and PM peak hour level of service analysis results for the Future Year (2045) No Project condition is provided in Table 2. Intersections are considered unacceptable if the level of service (LOS) is “E” or “F”. It should be noted that Caltrans and OC CMP intersections have a minimum LOS of C and E, respectively. The following intersections are forecast to operate at an unacceptable level of service in the Future Year (2045) No Project condition:

- INT 113 – Tustin Ranch Road and Walnut Avenue (City of Tustin)
- INT 114 – SR-55 SB Ramps and Irvine Boulevard (Caltrans - CMP)

Table 2: Future Year (2045) No Project Intersection LOS Summary

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
106	Red Hill Avenue and El Camino Real	0.65	B	0.78	C
107	Red Hill Avenue and I-5 NB Ramps	20.8	C	23.7	C
108	Red Hill Avenue and I-5 SB Ramps	23.7	C	22.2	C
109	Red Hill Avenue and Nisson Road	0.65	B	0.69	B
110	Red Hill Avenue and Walnut Avenue	0.64	B	0.74	C
111	Red Hill Avenue and Valencia Avenue	0.65	B	0.74	C
112	Tustin Ranch Road and Warner Avenue North	0.45	A	0.89	D
113	Tustin Ranch Road and Walnut Avenue	1.27	F	1.72	F
114	SR-55 SB Ramps and Irvine Boulevard	1.10	F	0.92	E

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
115	SR-55 NB Ramps and Irvine Boulevard	0.91	E	0.93	E

Notes: (1) LOS – Level of Service; (2) V/C – Volume to Capacity

Future Year (2045) With Project

A summary of the AM and PM peak hour level of service analysis results for the Future Year (2045) With Project condition is provided in Table 3. Intersections are considered unacceptable if the level of service (LOS) is "E" or "F". It should be noted that Caltrans and OC CMP intersections have a minimum LOS of C and E, respectively. The following intersections are forecast to operate at an unacceptable level of service in the Future Year (2045) With Project condition:

- INT 112 – Tustin Ranch Road and Warner Avenue North
- INT 113 – Tustin Ranch Road and Walnut Avenue
- INT 114 – SR-55 SB Ramps and Irvine Boulevard (Caltrans - CMP)

Table 3: Future Year (2045) With Project Intersection LOS Summary

ID	INTERSECTION	AM		PM	
		V/C or Delay	LOS	V/C or Delay	LOS
106	Red Hill Avenue and El Camino Real	0.64	B	0.70	B
107	Red Hill Avenue and I-5 NB Ramps	20.1	C	23.6	C
108	Red Hill Avenue and I-5 SB Ramps	24.7	C	21.8	C
109	Red Hill Avenue and Nisson Road	0.66	B	0.72	C
110	Red Hill Avenue and Walnut Avenue	0.64	B	0.75	C
111	Red Hill Avenue and Valencia Avenue	0.68	B	0.75	C
112	Tustin Ranch Road and Warner Avenue North	0.46	A	0.92	E
113	Tustin Ranch Road and Walnut Avenue	1.31	F	1.77	F
114	SR-55 SB Ramps and Irvine Boulevard	1.18	F	0.93	E
115	SR-55 NB Ramps and Irvine Boulevard	0.82	D	0.84	D

Intersection Impact Assessment

Intersection impacts were determined using the criteria established by the presiding agency and further evaluated in order to determine the cause for the impact. Impacts are expected to occur due to the proposed land use changes, reclassifications, or a combination of both. The impacted intersections and the cause of impact is identified below:

- **INT 112 – Tustin Ranch Road and Warner Avenue North (PM peak hour / Tustin)**
    - The impact at this intersection is expected to occur as a result of the proposed land use changes. Specific improvements to this intersection to address this identified impact are presented in Table 5. Additionally, the City of Santa Ana will contribute to improvements based on the calculated fair-share percentage presented in Table 5.
- **113 – Tustin Ranch Road and Walnut Avenue (Tustin)**
    - The worsening of LOS at this intersection is expected to occur as a result of the proposed land use changes. Specific improvements to this intersection to address this identified impact are presented in Table 5. Additionally, the City of Santa Ana will contribute to improvements based on the calculated fair-share percentage presented in Table 5.

Table 6 summarizes intersection LOS for the future year scenario, with and without the project, as well as with the improvement measures implemented. All impacts are expected to be mitigated.

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Table 4: Future Year (2045) LOS Impact Summary

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	LOS IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS		
106	Red Hill Avenue and El Camino Real	AM	0.65	B	0.64	B	-0.01	NO
		PM	0.78	C	0.70	B	-0.08	NO
107	Red Hill Avenue and I-5 NB Ramps	AM	20.8	C	20.1	C	-0.7	NO
		PM	23.7	C	23.6	C	-0.1	NO
108	Red Hill Avenue and I-5 SB Ramps	AM	23.7	C	24.7	C	1.0	NO
		PM	22.2	C	21.8	C	-0.4	NO
109	Red Hill Avenue and Nisson Road	AM	0.65	B	0.66	B	0.01	NO
		PM	0.69	B	0.72	C	0.03	NO
110	Red Hill Avenue and Walnut Avenue	AM	0.64	B	0.64	B	0.00	NO
		PM	0.74	C	0.75	C	0.01	NO
111	Red Hill Avenue and Valencia Avenue	AM	0.65	B	0.68	B	0.03	NO
		PM	0.74	C	0.75	C	0.01	NO
112	Tustin Ranch Road and Warner Avenue North	AM	0.45	A	0.46	A	0.01	NO
		PM	0.89	D	0.92	E	0.03	YES
113	Tustin Ranch Road and Walnut Avenue	AM	1.27	F	1.31	F	0.04	NO
		PM	1.72	F	1.77	F	0.05	NO
114	SR-55 SB Ramps and Irvine Boulevard	AM	1.10	F	1.18	F	0.08	NO
		PM	0.92	E	0.93	E	0.01	NO
115	SR-55 NB Ramps and Irvine Boulevard	AM	0.91	E	0.82	D	-0.09	NO
		PM	0.93	E	0.84	D	-0.09	NO

Table 5: Intersection LOS Improvement Measures

ID	INTERSECTION	IMPROVEMENT
112	Tustin Ranch Road and Warner Avenue North	• Convert single NB-RT to dual right-turn with overlap control. • Fair-Share: 29.1% (PM)
113	Tustin Ranch Road and Walnut Avenue	• Modify WB-RT to be a channelized RT. • Modify EB approach to be: 2LT, 2T, and 1RT. • Fair-Share: 84.5% (AM) / 24.0% (PM)

Table 6: Future Year (2045) With Project – Mitigated Impact Summary

ID	INTERSECTION	PEAK HOUR	2045 No Project		2045 With Project		DELTA	IMPACT?	2045 With Project – Mit.		DELTA	IMPACT?
			V/C or Delay	LOS	V/C or Delay	LOS			V/C or Delay	LOS		
112	Tustin Ranch Road and Warner Avenue North	AM	0.45	A	0.46	A	0.01	NO	0.46	A	0.01	NO
		PM	0.89	D	0.92	E	0.03	YES	0.75	C	-0.14	NO
113	Tustin Ranch Road and Walnut Avenue	AM	1.27	F	1.31	F	0.04	YES	1.18	F	-0.09	NO
		PM	1.72	F	1.77	F	0.05	YES	1.59	F	-0.13	NO

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Conclusion

Ten (10) additional intersections were assessed in order to determine project-related impacts. In assessing the intersection LOS it was determined that an impact is expected to occur at one location. The impacted intersection is listed below:

- **INT 112 – Tustin Ranch Road and Warner Avenue North (PM / City of Tustin)**
    - An improvement measure was developed and proposed as part of this study; implementation of the measure is expected to improve intersection LOS and fully mitigate the impact. The fair-share contribution, based on the project's contribution to increased traffic volumes, was calculated to be 29.1% for the PM peak hour.
- **INT 113 – Tustin Ranch Road and Walnut Avenue (AM & PM / City of Tustin)**
    - An improvement measure was developed and proposed as part of this study; implementation of the measure is expected to improve intersection LOS and fully mitigate the impact. The fair-share contribution, based on the project's contribution to increased traffic volumes, was calculated to be 84.5% and 24.0% for the Am and PM peak hours, respectively.

Exhibit A - Study Intersection Locations



City of Santa Ana
20 Civic Center Plaza, Santa Ana, CA 92701
Staff Report
April 19, 2022

TOPIC: EIR No. 2020-03 and GPA No.2020-06 Santa Ana General Plan Update

---

AGENDA TITLE

Public Hearing - Final Recirculated Program Environmental Impact Report No. 2020-03 and General Plan Amendment No. 2020-06 for Santa Ana General Plan Update

RECOMMENDED ACTION

1. Adopt a resolution certifying Final Recirculated Program Environmental Impact Report No. 2020-03 (SCH No. 2020029087), including adoption of environmental findings of fact pursuant to the California Environmental Quality Act, adoption of a Statement of Overriding Considerations, and adoption of a Mitigation Monitoring and Reporting Program.

2. Adopt a resolution approving General Plan Amendment No. 2020-06.

3. Adopt a resolution of findings to overrule the John Wayne Airport Orange County Airport Land Use Commission's determination that the Proposed General Plan Update is inconsistent with the Airport Environs Land Use Plan.

BACKGROUND

On February 15, 2022, the City Council considered the adoption of the City of Santa Ana General Plan Update. While the City Council did not reach a final decision during the meeting, the City Council discussed and commented on the draft document as well as the proposed policies and implementation actions. The City Council also encouraged the public to submit written comments to the City. In summary, staff documented over 150 comments received from local environmental justice (EJ) stakeholders and from the various City Councilmembers regarding the draft General Plan Update after the February 15, 2022 City Council meeting. Exhibit 1 is a catalog of the documented comments with a City response to each.

After reviewing and responding to the comments, staff met on several occasions with the EJ stakeholders (MPNA, OCEJ, Rise Up Willowick, THRIVE Santa Ana, UCI) to provide the opportunity for follow-up clarifications and where appropriate, discussed further refinements of the draft policies and implementation actions related to the various environmental justice topics. At the conclusion of the most recent meeting held with the

group on April 4, 2022, the stakeholders expressed their support for the General Plan. Staff also followed up with each Councilmember to obtain final input on the draft Plan.

As a result of the additional input, over 60 modifications and refinements responsive to the comments received from the City Council and from the community are being recommended for incorporation into the draft General Plan Update. The recommended changes are as shown in Exhibit 2. Inclusive in the recommended changes are several clarifications and refinements put forth by staff. If the changes are approved and adopted as recommended, they will be incorporated into the April 2022 draft of the General Plan Update (Exhibit 3) to form the adopted City of Santa General Plan – Golden City and Beyond.

PUBLIC NOTIFICATION AND COMMUNITY OUTREACH

Project notifications were posted, published, and mailed in accordance with City and State regulations. General Plan interested parties were emailed and/ or mailed a notice of this public hearing to consider the General Plan Update and Program Environmental Impact Report (GPEIR). In addition, courtesy notices were mailed to property owners and occupants located within the five Land Use Focus Areas and within 500 feet of their boundaries.

EXHIBIT(S)

1. Catalog of Comments Received Post February 15, 2022
2. Recommended Clarifications to the Draft April 2022 General Plan Update
3. Draft April 2022 General Plan Updated - Web Link: https://www.santa-ana.org/general-plan/draft-documents
4. February 15, 2022 City Council Staff Report - Web Link: Item No. 26 - PrimGov Portal
5. EIR Resolution, including Findings of Fact and Statement of Overriding Considerations and Mitigation Monitoring and Reporting Program (MMRP)
6. General Plan Amendment Resolution
7. Orange County Airport Land Use Commission Override Resolution
8. Final Recirculated Environmental Impact Report - Web Link: https://www.santa-ana.org/general-plan/general-plan-environmental-documents
9. November 8, 2021 Planning Commission Report - Web Link: Item No. 3 – PrimeGov Portal
10. List of Parcel with General Plan Land Use Designation Changes

Submitted By: Minh Thai, Executive Director, Planning and Building Agency

Approved By: Kristine Ridge, City Manager



Mobility Element

Santa Ana General Plan

FINAL, APRIL 2022

A SHARED VISION

Santa Ana is a city that promotes the health and wellness of all residents, with a civic culture that actively embraces the power of diversity. Our city invests in resources that create economic opportunities for the next generation, and it is a community that celebrates our past while working together to create a sustainable future.

OUR CORE VALUES

H HEALTH

The people of Santa Ana value a physical environment that encourages healthy lifestyles, a planning process that ensures that health impacts are considered, and a community that actively pursues policies and practices that improve the health of our residents.

Eq Eq EQUITY

Our residents value taking all necessary steps to ensure equitable outcomes, expanding access to the tools and resources that residents need, and to balance competing interests in an open and democratic manner.

The value of equity that includes "EJ" in the upper corner indicates a policy related to environmental justice.

S SUSTAINABILITY

Santa Ana values land use decisions that benefit future generations, plans for the impacts of climate change, and incorporates sustainable design practices at all levels of the planning process.

C CULTURE

Our community values efforts that celebrate our differences as a source of strength, preserve and build upon existing cultural resources, and nurture a citywide culture of empowered residents.

Ed EDUCATION

We are a city that values the creation of lifelong learners, the importance of opening up educational opportunities to all residents and investing in educational programs that advance our residents' economic wellbeing.

MOBILITY VISION

Santa Ana envisions a balanced multimodal transportation system that supports community values. These include a vibrant local economy, healthy neighborhoods, health and wellness, and an attractive environment. Our transportation system connects major activity centers with regional labor, education, and goods markets. Context-sensitive design solutions strengthen the livability, vitality, and safety of our neighborhoods, districts, and corridors. Safe and pleasant bicycling and walking options encourage active lifestyles. While building a 21st century transportation system, the City employs best practices to protect our environment, natural resources, health, and safety.



▲ **OC Streetcar Visual Simulation [cover photo]**

OC Streetcar is the first modern streetcar project to be built in Orange County and will provide improved transit access to important employment, restaurant, and retail centers in Santa Ana, Garden Grove, and surrounding areas. The Streetcar will also provide a convenient "last mile" connection between Metrolink trains and other transportation modes at the Santa Ana Regional Transit Center.

Visual simulation by OCTA

MOBILITY
ELEMENT

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RELATED ITEMS UNDER SEPARATE COVER

TRAFFIC IMPACT STUDY, OCTOBER 2020 (APPENDIX K, R-DEIR)

EIR CHAPTER 5.16, TRANSPORTATION



SOMOS - Sunday on Main Open Streets. In 2014, the City of Santa Ana hosted Orange County's first ever ciclovia, an open streets event where the streets were closed to motorized vehicles and open for people to walk and bicycle. The route connected Santa Ana's vibrant downtown to its historic South Main Corridor, with plenty of family-friendly activities, games, and information booths along the three mile route.



MOBILITY

This Mobility Element is the City's blueprint for moving people, goods, and resources throughout the community. Moving beyond mere functionality, the City seeks to improve the quality of life in Santa Ana by providing more complete streets, offering ways to be more active, and conserving our natural resources. In planning the city's transportation system for the 21st century, the City is also making our community safer, more affordable, and more livable.

INTRODUCTION

Santa Ana is a city in motion. Santa Ana's circulation system of over 500 miles of roads keeps this thriving city of over 335,000 people on the move. Yet each of us thinks about our transportation choices in very different ways. For youth, it is about walking or biking to a school, a park, or a friend's home. For adults, it is about getting safely and conveniently around Santa Ana or making sure children are safe in their travels. For commerce, it is about ensuring access to goods, services, and customers to improve business opportunities.

Santa Ana's circulation system has been a vital part of its history, dating back to 1869 when the city was originally founded. At that time, the circulation system consisted primarily of dirt roads that connected agricultural fields and farms to the shops and post office. In the 1880s, the Southern Pacific Railroad and Santa Fe Railroad brought rail transportation to the community, opening it to commerce and housing development. Seventy-five years later, freeways were constructed and later expanded, which provided convenient access for Santa Ana residents and businesses to the greater metropolitan area.

Santa Ana's circulation system continued to evolve, with added commuter rail and transit routes not only offering options for getting around without a car, but also making Santa Ana the transit and rail hub of Orange County. Looking forward, the City will continue to advance mobility through the OC Streetcar and significant investments in bikeways and pedestrian infrastructure.

Other City planning documents related to circulation are the Alternative Transportation, Safe Mobility, Safe Routes to School, and Street Standard plans.



▲ **Crossing the Street in the Lacy Neighborhood**

A crossing guard helps a family safely cross Brown Street from Garfield Elementary School and its new Wellness Center (opened in 2020), which is housed in a historic Pacific Electric substation that once served the Red Car railways system.

COMMUNITY CONSIDERATIONS

Through the community engagement process for this General Plan, participants identified numerous circulation and mobility considerations and values that they believe should form the basis of and be addressed by this element. Specifically, participants highlighted the following topics, areas of concern, and community strengths:

- **Increase the amount of active transportation opportunities**
- **Alleviate parking congestion in commercial areas and neighborhoods**
- **Improve safety for bicyclists and pedestrians**
- **Expand the availability and frequency of transit**
- **Address high traffic speeds and congestion**





▲ **Programs and Activities to Promote Walking and Biking**

To make bicycling and walking safer, more fun, and easy to do, the City teams with transit, health, and other local organizations to organize and promote activities such as open streets events, family-friendly bike rides, walk-to-school days, winter evening walk and ride events (pictured at top), food-focused bike rides, female-focused bike rides (pictured above), and walking tours.



▲ **Community Input**

Santa Ana's engagement for transportation planning has been a progressive effort, starting in 2012 and extending through 2019. Multiple forums were held throughout the city on a variety of topics that began to set the stage for a transformation in how the City, its residents, and its business community think and plan for transportation. Efforts included a wide range of community open houses, workshops (pictured above), youth bike forum, health fairs, General Plan Advisory Group meetings, and many other venues to hear first-hand the concerns regarding the usability, safety, and desirability of the city's transportation system.

POLICY FRAMEWORK

GOAL M-1: Comprehensive Circulation

A comprehensive and multimodal circulation system that facilitates the safe and efficient movement of people, enhances commerce, and promotes a sustainable community.

POLICY M-1.1
SAFETY

Achieve zero fatalities from traffic collisions through education, enforcement, and infrastructure design.

H Eq Ed

POLICY M-1.2
BALANCED MULTIMODAL NETWORK

Provide a balanced and equitable multimodal circulation network that reflects current and changing needs.

H Eq(EJ) S

POLICY M-1.3
TRAFFIC MANAGEMENT SYSTEMS

Utilize technology to efficiently move people and vehicles and manage motor vehicle speeds.

S

POLICY M-1.4
MOTOR VEHICLE LEVEL OF SERVICE

Maintain at least a vehicle level of service "D" for intersections of arterial streets, except in areas planned for high intensity development or traffic safety projects.

H S

POLICY M-1.5
MULTIMODAL LEVEL OF SERVICE

Ensure that new development and City projects maintain or improve the current level of service for all modes of transportation.

H Eq S

POLICY M-1.6
COMPLETE STREETS

Transform travelways to accommodate all users through street design and amenities, such as sidewalks, trees, landscaping, street furniture, and bus shelters.

H Eq S

POLICY M-1.7
PROACTIVE MITIGATION

Proactively mitigate existing and new potential air quality, noise, congestion, safety, and other impacts from the transportation network on residents and business, especially in environmental justice communities.

H Eq(EJ) S

POLICY M-1.8
ENVIRONMENTAL SUSTAINABILITY

Consider air and water quality, noise reduction, neighborhood character, and street-level aesthetics when making improvements to travelways.

H Eq S

POLICY M-1.9
REGIONAL CONSISTENCY

Ensure the street network is consistent with standards set in the OCTA Master Plan of Arterial Highways and the Congestion Management Program.

S

POLICY M-1.10
INTERGOVERNMENTAL COORDINATION

Collaborate with federal, state, SCAG, OCTA, rail authorities, and other agencies to fund and improve the regional transportation system.

S

CONTINUED ON NEXT PAGE >>

POLICY M-1.11
EMERGING SERVICES

Promote the development of innovative and safe travel and delivery services through partnerships with business and industry leaders.

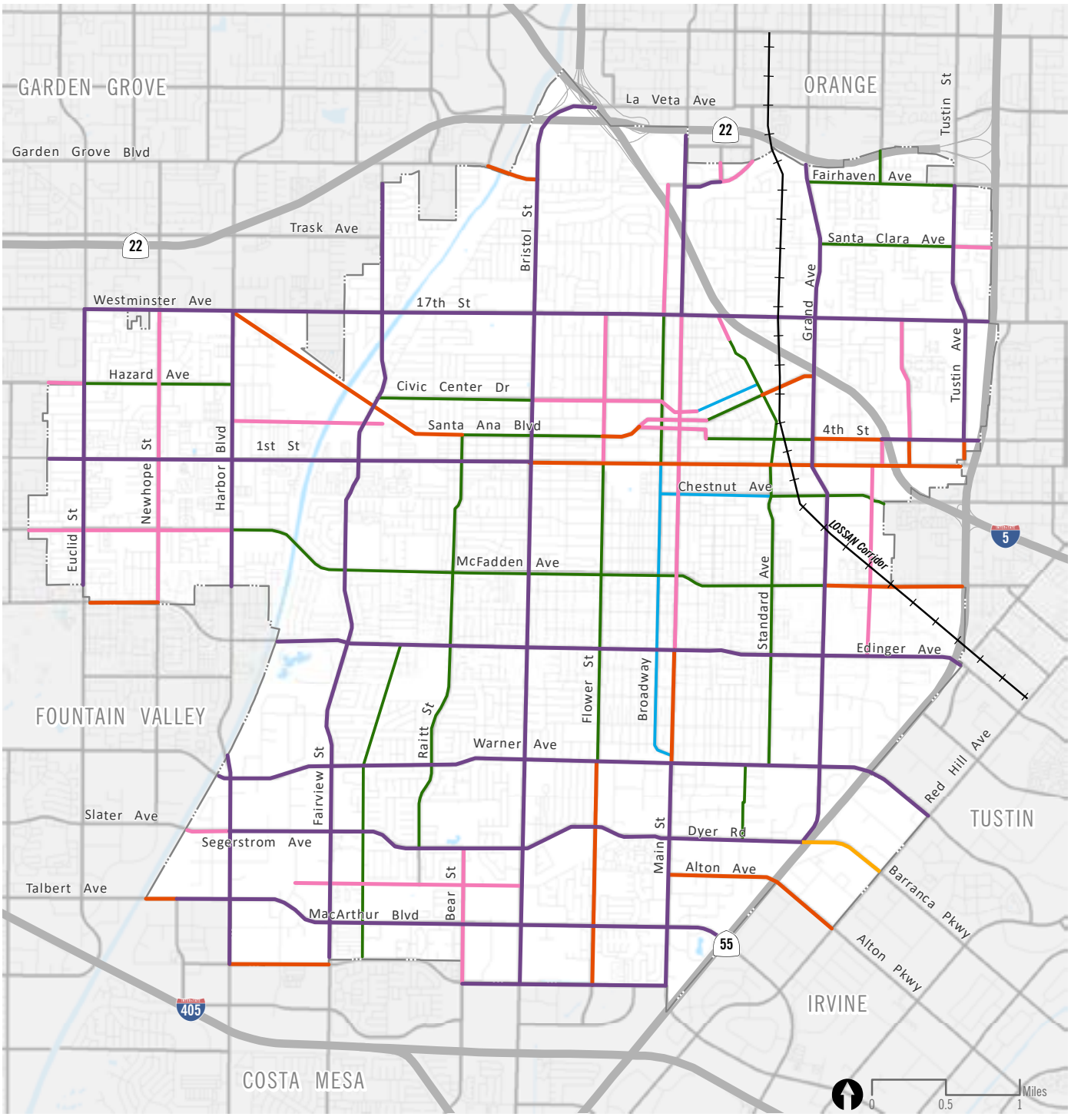
H Eq S



▲ **Complete Streets Improvements along Harbor Boulevard**

After the Harbor Corridor Specific Plan was adopted in 2014, the City began implementing improvements (painting, striping, and spacing for a Class 4 Cycle Track) and applying streetscape requirements to new development (wide sidewalks with street trees and lighting) to make Harbor Boulevard a more complete street and accommodate vehicles, transit users, bicyclists, and pedestrians in a safe, efficient, and attractive manner.

ABOUT THE MAP. This map displays the City's long-term plan for an integrated system of streets and highways, with classifications that correspond to the nature and purpose of each roadway. This map reflects the City's efforts to create and maintain a roadway system that fosters the safe and efficient movement of people and vehicles throughout Santa Ana. See Table M-1 for a description of each street classification. Within city limits, the thin grey lines represent local streets.



Source: OCTA Master Plan of Arterial Highways (06/20/2020) and the City of Santa Ana Date Published: 7/12/2021

- Principal Arterial
- Major Arterial
- Primary Arterial
- Secondary Arterial
- Divided Collector
- Collector

FIGURE M-1
MASTER PLAN OF STREETS AND HIGHWAYS

TABLE M-1. STREET CLASSIFICATIONS

Classification	Description	Examples
Principal Arterial	A street with eight travel lanes and a center median. Typically includes bus transit, pedestrian sidewalks, and bicycle lanes. *Typical ROW: 144' / 126' curb-to-curb / 14' median / 10' sidewalk*	Dyer Road
Major Arterial	A street with six travel lanes and a center median. Typically includes bus transit, pedestrian sidewalks, and bicycle lanes. *Typical ROW: 120' / 100' curb-to-curb / 14' median / 10' sidewalk*	Bristol Street, Harbor Boulevard, and Edinger Avenue
Primary Arterial	A street with four travel lanes and a center median. Typically includes pedestrian sidewalks and may include bus transit services and bicycle lanes. *Typical ROW: 100' / 84' curb-to-curb / 14' median / 10' sidewalk*	4th Street (between Grand Avenue and Interstate 5), and Sunflower Avenue (west of Raitt Street)
Secondary Arterial	A street with four travel lanes and no center median. Typically includes pedestrian sidewalks and may include bus transit and bicycle lanes. Serves more local traffic than a Primary Arterial. *Typical ROW: 80' / 64' curb-to-curb / 8' sidewalk*	Main Street (through Downtown), and Newhope Street
Divided Collector Arterial	A street with two travel lanes and a continuous center two-way left-turn lane, but may be divided by raised median, with an expanded right-of-way to accommodate bike lanes. *Typical ROW: 80' / 64' curb-to-curb / 8' sidewalk*	Raitt Street and Standard Avenue
Collector Street	A street with two travel lanes and no center median, typically includes pedestrian sidewalks, may include shared bicycle routes. *Typical ROW: 56' / 40' curb-to-curb / 10' sidewalk*	Broadway south of 1st Street (north of Civic Center)
Local Street	A street with two travel lanes serving residences and businesses. Typically includes pedestrian sidewalks and on-street parking. May include shared bicycle routes. Local streets are the most common street type. ** Not part of the City's MPSH.*	Lacy Street, Orange Avenue, Raitt Street, Santa Clara Avenue, Wilshire Avenue

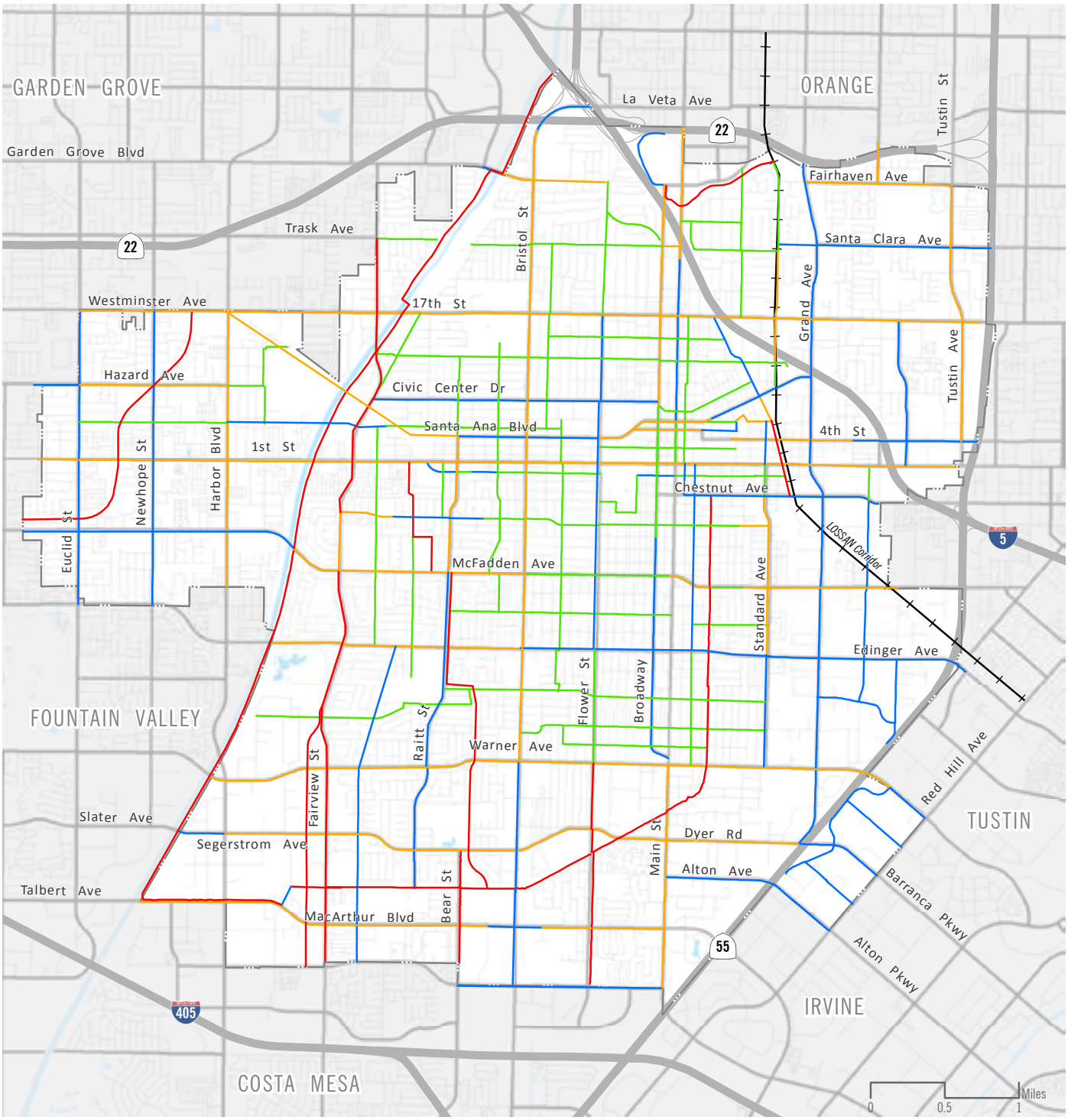


▲ **Local Streets in Wilshire Square**

Shown here is Russell Avenue at the intersection of Van Ness Avenue in the Wilshire Square neighborhood. Both streets offer two travel lanes, on-street parking, sidewalks, and pedestrian-scaled lighting. Russell Avenue offers wide-canopied street trees while Van Ness Avenue is lined with tall palm trees.

Photo courtesy of Lisandro Orozco

ABOUT THE MAP. This map displays the City's long-term plan for a comprehensive bicycle network, with a hierarchy of facilities that provide varying levels of design, signage, and separation from vehicles. The City intends to provide a safe and efficient system that reduces the reliance on the automobiles and facilitates an increase in bicycling by choice. Table M-2 describes each bicycle classification.



Source: City of Santa Ana (2020) Date Published: 11/8/2021

Class I Path

Class II Bike Lane

Class III Bike Route / Boulevard

Class IV Cycle Track

TABLE M-2. BIKEWAY CLASSIFICATIONS

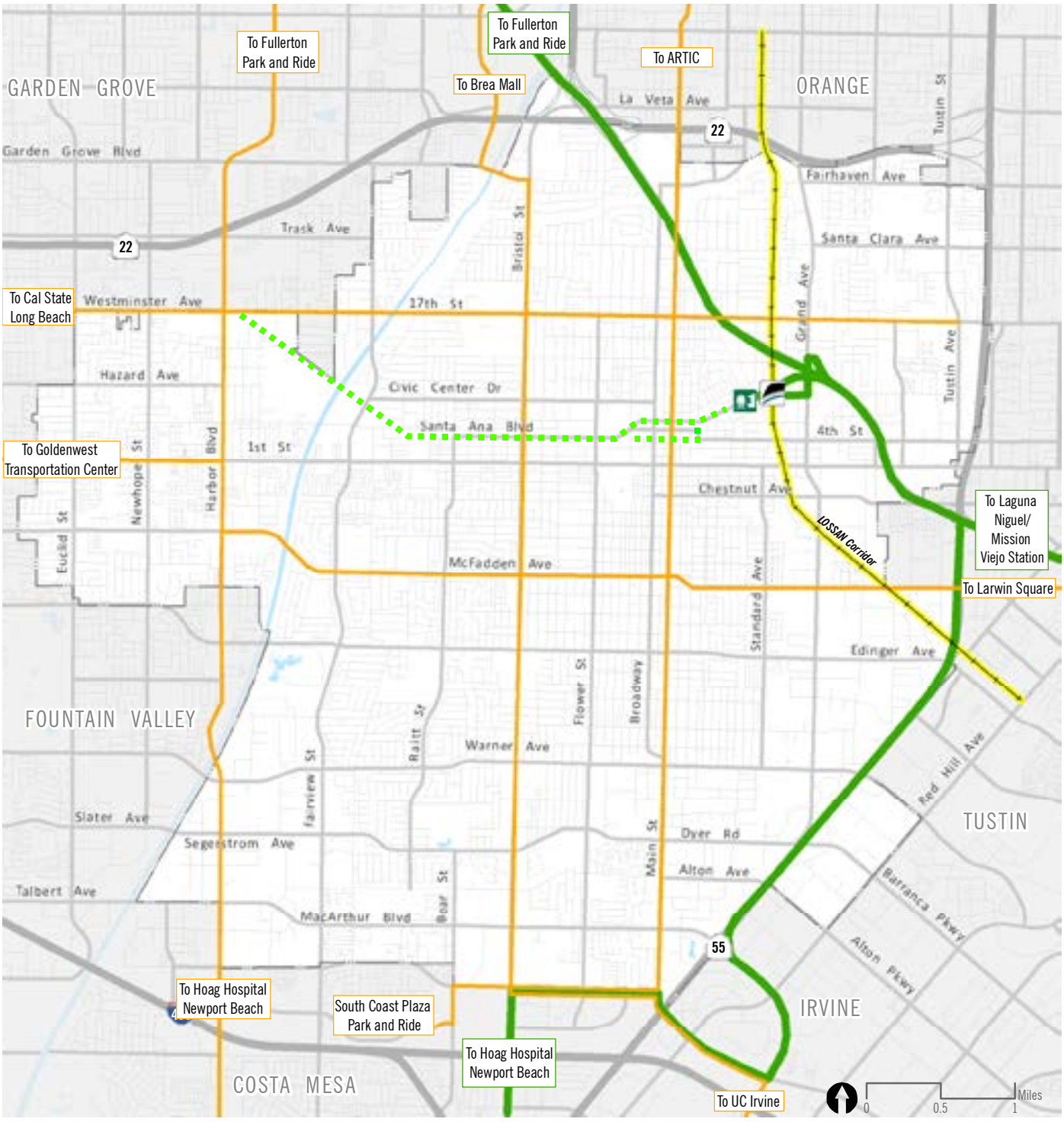
Classification	Description	Examples
Class I Bicycle Path	Paved rights-of-way for the exclusive use of bicyclists and pedestrians. Physically separated from vehicle traffic and generally built in locations not served by streets or where vehicular cross-flows are minimized.	Santa Ana River Trail and several segments of Alton Avenue/Maple Street, Santiago Creek Trail, Flower Street, Santa Ana Gardens Channel/Bear Street, and MacArthur Boulevard
Class II Bicycle Lane	One-way routes denoted by a striped lane on a roadway to delineate the rights-of-way assigned to vehicles and bikes. Can be striped adjacent to the curb where no parking exists or striped to the left side of on-street parking lanes.	Bristol Street, Greenville Street, Memory Lane, and Ross Street
Class III Bicycle Route	Bikeways where cyclists share the travel lane with motor vehicles. Typically on low-volume roadways, such as local streets in residential neighborhoods, and may be designated by signage or roadway markings (called sharrows).	Although not always designated by signage, most streets in low-traffic-volume residential neighborhoods are classified as Class 3 routes
Class IV Cycle Track	Local roads that have been enhanced with treatments that prioritize bicycle travel. These treatments might include wayfinding signage, bollards, and traffic-calming features that facilitate safe and convenient bicycle travel, slow vehicle speeds, and minimize vehicular traffic volumes.	Bristol Street and Edinger Avenue



▲ **Cycle Track along Bristol Street**

As part of the Bristol Street Specific Plan, the City constructed (in 2018) a six-foot-wide bike lane, a concrete curb with plantings separating the bike lane from general traffic lanes, and a greenway separating the bike lane from the sidewalk.

ABOUT THE MAP. This map shows the long-term plans of the City and regional transit operators to expand and enhance ways for people to travel within, to, and from Santa Ana by rail, streetcar, and bus. OCTA Transit and Freeway Transit Opportunity Corridors represent bus rapid transit lines; other OCTA bus lines (not shown) run along most major streets in the city.



Source: OCTA OCstreetcar Overview, OCTA Transit Vision Plan (June 2020) Date Published: 9/20/2020

OCTA Transit Opportunity Corridor

OCTA Freeway Transit Opportunity Corridor

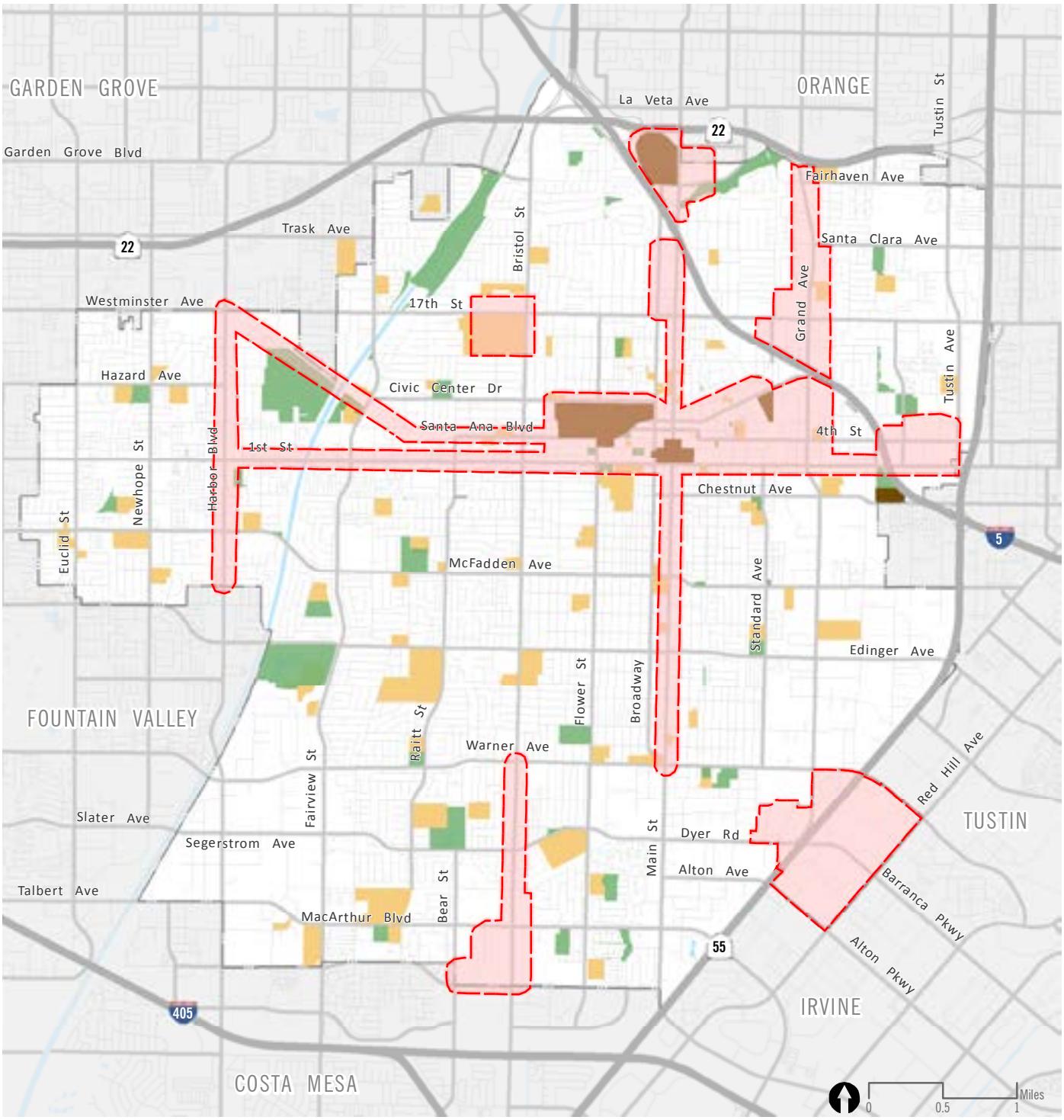
Future Alignment of OC Street Car

Santa Ana Regional Transportation Center

Metrolink and Amtrack Commuter Rail

Metrolink Station

ABOUT THE MAP. This map shows areas that currently or should support high levels of pedestrian activity based on proximity to activity centers, mixed-use development, and/or transit stops. The intent is to foster a more walkable and active public realm through improvements such as wider sidewalks, safer street crossings, and enhanced streetscapes.

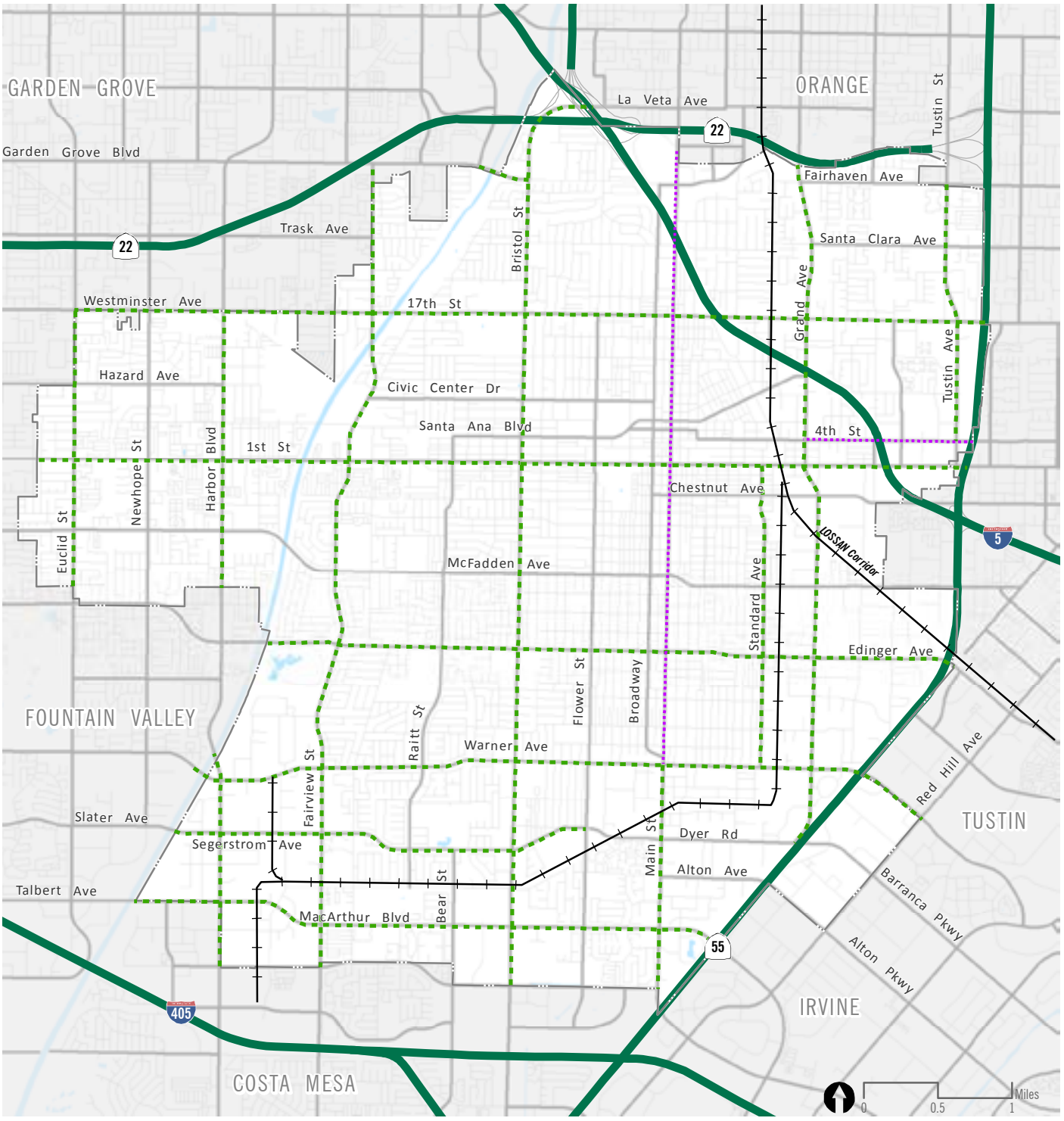


Source: City of Santa Ana 2020 Date Published: 9/20/2020

Pedestrian Opportunity Zone
Parks & Recreation
Landmark
School

FIGURE M-4
PEDESTRIAN OPPORTUNITY ZONES

ABOUT THE MAP. This map shows the network for transporting materials and goods to and from businesses in Santa Ana, and throughout southern California. The City's street system supports the national network and local businesses via designated truck routes, generally along major or primary arterials that connect to freeways. Except for local deliveries, trucks are prohibited from driving on residential streets or low-volume roadways.



Source: Truck Networks on State Highways District 12 (CalTrans 6/7/2018), California Rail Network (CalTrans 10/31/2018), U.S. Department of Transportation - Federal Highway Administration, Cityof Santa Ana.

Date Published: 9/21/2020

Truck/Freight Rail Routes

- National Network Route
- Local Truck Route
- Local Truck Route / Terminal Access Truck Route
- Freight Rail Line

Notes: National Network Routes are designated truck routes regulated by federal regulations (Code of Federal Regulations, Title 23, Section 658), and allow trucks that may exceed the limits established under state regulations. Local truck routes designated as a Terminal Access route allow vehicles that exceed the limits established under state regulations (California Vehicle Code Sections 35400/35401). Local truck routes allow any vehicle that exceeds 3 tons, but vehicles must meet other state regulations regarding length and width.



Santa Ana around 1920. Although much has changed in the world, the need for a multimodal transportation system remains constant. Shown here are people walking, driving, biking, and riding the Red Car along 4th Street in Santa Ana. Within the next couple of years, those living and working in Santa Ana will once again enjoy these options.

Photo courtesy of Orange County Archives

GOAL M-2: Regional Mobility

An integrated system of travelways that connects the city to the region, employment centers, and key destinations, making Santa Ana the leader in regional transportation.

POLICY M-2.1
INTERSTATE FREEWAYS

Support Caltrans and OCTA efforts to improve freeway safety, while addressing impacts to neighborhoods.

H Eq S

POLICY M-2.2
TRANSIT SERVICES

Support OCTA, Caltrans, and other regional and local transportation providers to enhance existing transit services to provide residents, workers and visitors with safe, affordable, accessible, convenient, reliable, and attractive transit services.

H Eq S

POLICY M-2.3
REGIONAL TRANSPORTATION CENTER

Continue to promote and develop the Santa Ana Regional Transportation Center (SARTC) as a major transportation hub linking Amtrak, Metrolink, the OC Streetcar, other regional systems, and first and last mile connections.

H S

POLICY M-2.4
COMMUTER RAIL

Support the expansion of commuter rail services and Santa Ana's role as a destination along the Los Angeles–San Diego–San Luis Obispo (LOSSAN) rail corridor.

H S

POLICY M-2.5
OC STREETCAR

Support development and expansion of the OC Streetcar project, connecting neighborhoods, employment centers, and Downtown Santa Ana to activity centers in Orange County.

H S

POLICY M-2.6
HIGH FREQUENCY TRANSIT CORRIDORS

Work with OCTA to support the improvement of transit opportunity corridors to facilitate high frequency transit (e.g., bus rapid transit and other modes) along designated corridors in Santa Ana.

H S

POLICY M-2.7
REGIONAL MOBILITY ACCESS

Enhance access to regional transit, including first and last mile connections, to encourage the use of public transit.

H Eq S

POLICY M-2.8
GRADE SEPARATIONS

Encourage the installation and improvement of grade separations at rail crossings that minimize impacts to adjacent properties and nonmotorized users.

H Eq S

POLICY M-2.9
GOODS MOVEMENT

Maintain a network of truck routes limited to arterial streets to allow for goods movement and protect residential neighborhoods from adverse impacts.

H Eq S

GOAL M-3: Active Transportation

A safe, balanced, and integrated network of travelways for nonmotorized modes of transportation that connects people to activity centers, inspiring healthy and active lifestyles.

POLICY M-3.1
NONMOTORIZED TRAVELWAY NETWORK

Expand and maintain a citywide network of nonmotorized travelways within both the public and private realms that create linkages between neighborhoods, recreational amenities, schools, employment centers, neighborhood serving commercial, and activity centers.

H Eq S

POLICY M-3.2
NONMOTORIZED TRAVELWAY AMENITIES

Enhance nonmotorized travelways with amenities such as landscaping, shade trees, lighting, benches, crosswalks, rest stops, bicycle parking, and support facilities that promote a pleasant and safe experience.

H Eq S

POLICY M-3.3
SAFE ROUTES TO SCHOOLS AND PARKS

Lead the development and implementation of safe routes to schools and parks by partnering with the school districts, residents, property owners, and community stakeholders.

H Eq (EJ) S

POLICY M-3.4
REGIONAL COORDINATION

Coordinate development of the City's active transportation and transit network with adjacent jurisdictions, OCTA, and other appropriate agencies.

H Eq S

POLICY M-3.5
EDUCATION AND ENCOURAGEMENT

Encourage active transportation choices through education, special events, and programs.

H Eq S Ed

POLICY M-3.6
TRANSIT CONNECTIVITY

Enhance first and last mile connectivity to transit facilities through safe, accessible, and convenient linkages.

H Eq S

POLICY M-3.7
COMPLETE STREETS DESIGN

Enhance streets to facilitate safe walking, bicycling, and other nonmotorized forms of transportation through community participatory design.

H Eq S

POLICY M-3.8
SANTA ANA RIVER AND GOLDEN LOOP

Proactively pursue the improvement and restoration of the Santa Ana River natural habitat and the completion of the Golden Loop to serve as a multiuse recreational amenity.

H S

POLICY M-3.9
NEIGHBORHOOD TRAFFIC

Develop innovative strategies to calm neighborhood traffic, increase safety, and eliminate collisions, while also maintaining access for emergency response.

H

GOAL M-4: Transportation, Land Use, and Design

Coordinated transportation planning efforts with land use and design strategies that encourage sustainable development and achieve broader community goals.

POLICY M-4.1
INTENSE DEVELOPMENT AREAS

Program multimodal transportation and public realm improvements that support new development in areas along transit corridors and areas planned for high intensity development.

H S

POLICY M-4.2
PROJECT REVIEW

Encourage active transportation, transit use, and connectivity through physical improvements and public realm amenities identified during the City's Development Review process.

H Eq S

POLICY M-4.3
TRANSPORTATION MANAGEMENT

Coordinate with OCTA, employers, and developers to utilize TDM (transportation demand management) strategies and education to reduce vehicle trips and parking demands.

H S

POLICY M-4.4
FAIR SHARE IMPACTS

Ensure that all development projects pay their fair share of the system improvements necessary to accommodate the transportation needs of their projects.

Eq S

POLICY M-4.5
LAND USE DEVELOPMENT DESIGN

Ensure that building placement and design features create a desirable and active streetscape, by prioritizing pedestrian access directly from the street and placing parking lots to the rear of a development site.

H S

POLICY M-4.6
ROADWAY CAPACITY ALTERNATIVES

Promote reductions in automobile trips and vehicle miles traveled by encouraging transit use and nonmotorized transportation as alternatives to augmenting roadway capacity.

H S

POLICY M-4.7
PARKING

Explore and implement a flexible menu of parking options and other strategies to efficiently coordinate the response to parking demands.

S

POLICY M-4.8
NOISE MITIGATION

Encourage physical and operational improvements to reduce noise levels around major roads, freeways, and rail corridors, in particular around sensitive land uses.

H Eq

POLICY M-4.9
AIR POLLUTION MITIGATION

Utilize land use, building, site planning, and technology solutions to mitigate exposure to transportation-related air pollution, especially in environmental justice focus areas.

H Eq EJ S

GOAL M-5: Sustainable Transportation Design

A transportation system that is attractive, safe, state-of-the-art, and supports community, environmental, and conservation goals.

POLICY M-5.1
ENHANCED STREET DESIGN

Improve the beauty, character, and function of travelways with amenities such as landscaped parkways and medians, bike lanes, public art, and other amenities.

H S

POLICY M-5.2
RAIL CORRIDORS

Coordinate with rail service providers to improve and maintain the aesthetics of rail corridors, reduce noise levels, and mitigate traffic conflicts and other environmental hazards.

H Eq S

POLICY M-5.3
TRAVEL VIEWS

Promote the undergrounding of utilities and the reduction of visual clutter along travelways.

S

POLICY M-5.4
GREEN STREETS

Leverage opportunities along streets and public rights-of-way to improve water quality through use of landscaping, permeable pavement, and other best management practices.

S

POLICY M-5.5
STREET DESIGN

Design and retrofit streets based on their combined land use context and road function to achieve safety objectives.

H Eq S

POLICY M-5.6
CLEAN FUELS AND VEHICLES

Encourage the use of alternative fuel vehicles and mobility technologies through the installation of supporting infrastructure.

S

POLICY M-5.7
INFRASTRUCTURE CONDITION

Enhance travelway safety by maintaining streets, alleys, bridges, sidewalks, lighting, and other transportation infrastructure in excellent condition.

S Eq EJ

POLICY M-5.8
TRAFFIC SAFETY

Prioritize the safety of all travelway users when designing transportation improvement and rehabilitation projects.

H S

Transit Hub. In 1985, the Santa Ana Regional Transportation Center (SARTC) was erected on the site of the former Atchison, Topeka and Santa Fe Railway depot that was built in 1933 and closed in 1982. The SARTC now serves as the hub of Amtrak's Pacific Surfliner and Metrolink's Orange County lines, and shares use of the railroad with the Burlington-Northern Santa Fe and Union Pacific, which serve the city's industrial sector. Santa Ana continues to lead the rail revolution—most importantly, the planned OC Streetcar, set to begin operations in 2022/23.



RELATED GENERAL PLAN POLICIES

Each policy in the City of Santa Ana General Plan is listed under the most related goal and element. Some policies, however, also reinforce other goals housed in different elements.

To provide a more complete picture of all of the policies that support the goals of this element, Table M-1 lists each Mobility goal in the far left column and, in columns to the right, identifies related policy numbers from other elements.

Goal M-2, for example, is supported not only by the policies in this element (M-1.1 through M-5.8), but also by Policy CN-3.11 in the Conservation Element, Policy N-1.3 in the Noise Element, Policy S-2.3 in the Safety Element, and Policy UD-7.5 in the Urban Design Element.

TABLE M-3. RELATED GENERAL PLAN POLICIES

	Volume 1 Services & Infrastructure				Volume 2 Natural Environment				Volume 3 Built Environment			
Mobility Goals	CM	M	EP	PS	CN	OS	N	S	LU	HE	HP	UD
M-1: Comprehensive Circulation A comprehensive and multimodal circulation system that facilitates the safe and efficient movement of people, enhances commerce, and promotes a sustainable community.	CM-1.1	Current Element	EP-3.4	PS-1.8	CN-1.9 CN-1.10 CN-1.14	OS-2.6 OS-2.14	N-2.1	-	LU-4.5	HE-1.13 HE-1.14 HE-1.8	-	-
M-2: Regional Mobility An integrated system of travelways that connects the city to the region, employment centers, and key destinations, making Santa Ana the leader in regional transportation.	-	Current Element	-	-	CN-3.11	-	N-1.3	S-2.3	-	-	-	UD-7.5
M-3: Active Transportation A safe, balanced, and integrated network of travelways for nonmotorized modes of transportation that connects people to activity centers, inspiring healthy and active lifestyles.	CM-3.4 CM-3.7	Current Element	-	-	-	OS-1.2 OS-1.6 OS-1.7 OS-2.3	-	-	LU-1.7	-	-	UD-3.6 UD-5.4

Notes:

CM: Community Element
M: Mobility Element
EP: Economic Prosperity Element
PS: Public Services Element
CN: Conservation Element
OS: Open Space Element
N: Noise Element
S: Safety Element
LU: Land Use Element
HE: Housing Element
HP: Historic Preservation Element
UD: Urban Design Element

TABLE M-3. RELATED GENERAL PLAN POLICIES

	Volume 1 Services & Infrastructure				Volume 2 Natural Environment				Volume 3 Built Environment			
Mobility Goals	CM	M	EP	PS	CN	OS	N	S	LU	HE	HP	UD
M-4: Transportation, Land Use, and Design Coordinated transportation planning efforts with land use and design strategies that encourage sustainable development and achieve broader community goals.	-	Current Element	-	-	CN-1.10	-	-	-	LU-1.6 LU-2.10 LU-3.6	HE-1.5	-	UD-3.4 UD-3.5
M-5: Sustainable Transportation A transportation system that is attractive, safe, state-of-the-art, and supports community, environmental, and conservation goals.	-	Current Element	-	-	CN-1.11 CN-1.12	-	-	-	-	-	-	UD-3.1 UD-3.2 UD-7.2

Notes:

CM: Community Element
M: Mobility Element
EP: Economic Prosperity Element
PS: Public Services Element
CN: Conservation Element
OS: Open Space Element
N: Noise Element
S: Safety Element
LU: Land Use Element
HE: Housing Element
HP: Historic Preservation Element
UD: Urban Design Element



▲ **Santa Ana River Trail**

Nearly four linear miles of trails run along the Santa Ana River through the city's western area. The City's vision for the river includes preserving and restoring natural habitat, acquiring land for improvements, protecting water quality, and promoting the Santa Ana River Trail as a nonmotorized transportation route to serve the region. This photo shows a bicyclist along the trail as it passes under the 1st Street bridge.

IMPLEMENTATION

An implementation plan is a coordinated series of actions the City desires to take in the future that are intended to advance, over the long term, the City's Shared Vision, Core Values, and the General Plan goals and policies. An implementation plan is thus a follow-up measure for this element. Taken as a whole, these programs represent the City's best thinking today on what actions should be taken to address the considerations and concerns of the community and make sure that the plan's aspirations are achieved.

Implementation is in large part contingent upon adequate funding. Many of these actions can be pursued through initiatives already underway. Other programs will require additional resources. Therefore, the exact mix and timing of programs the City may pursue will in part be opportunity driven, dependent on the availability of funding, staffing, and other necessary resources. The Time Frame in the Implementation Table below is the target for completion of the Action.

This element may be implemented by amendments to existing plans, ordinances, development standards and design guidelines; capital investments/projects; and interagency/interjurisdictional coordination. The following table identifies the implementation action, the responsible City agency, and targeted timeline for accomplishment.

TABLE M-4. MOBILITY ELEMENT IMPLEMENTATION

Ref #	Implementation Action	Agency / Time Frame
GOAL M-1: Comprehensive Circulation A comprehensive circulation system that facilitates the safe and efficient movement of people, enhances commerce, and promotes a sustainable community.		
1.1	**Cross-agency collaboration.** Coordinate with external agencies to address the impacts of new regional transportation projects on the local network and accommodate complete street practices.	PWA Ongoing
1.2	**MPAH.** Coordinate with external agencies to ensure the OCTA Master Plan of Arterial Highways accommodates current and future demand for all users while prioritizing the safety of people utilizing non-automobile modes of transportation.	PWA 2022-2035
1.3	**Complete streets design.** Update the City's standard plans to include complete streets design strategies.	PWA 2025
1.4	**Reduce collisions.** Minimize parking from arterial streets to reduce vehicular, bicycle, and pedestrian conflicts.	PWA Ongoing
1.5	**Capital Improvement Program.** Prepare the annual Capital Improvement Program that corresponds with the City's general plan goals and implementation actions.	PWA Annually
1.6	**Asset Management database.** Explore the benefits of an asset management database to coordinate ongoing maintenance of streets, parkway and the public realm.	PWA Ongoing
1.7	**Transportation network safety.** Continue ITS to provide enhanced safety and efficiency features on the transportation network, including traffic signal synchronization.	PWA Ongoing
1.8	**Impact fees.** Secure development impact fees and dedications for project-related transportation improvements during City review and approval processes.	PWA 2021-2035
GOAL M-2: Regional Mobility Integrated system of travelways that connects the City to the region, employment centers, and key destinations, making Santa Ana the leader in regional transportation.		
2.1	**Cross-agency planning.** Work with OCTA and regional transportation agencies on the Long-Range Transportation Plan and to expand bus and rail transit services, particularly transit priority corridors.	PWA/PBA- Ongoing

TABLE M-4. MOBILITY ELEMENT IMPLEMENTATION

Ref #	Implementation Action	Agency / Time Frame
2.2	**Cross-agency coordination.** Coordinate with OCTA and transportation agencies to identify a funding, operation, and maintenance plan for the OC Streetcar.	PWA Ongoing
2.3	**Bus turnouts.** Construct bus turnouts on arterial streets according to OCTA design standards.	PWA Ongoing
2.4	**Freeway improvement projects.** Participate in Caltrans Advisory Working Groups freeway improvement projects to evaluate benefits and impacts to the Santa Ana local streets.	PWA Ongoing
2.5	**Grade separation.** Pursue implementation of grade separation between rail crossings and roadways at Santa Ana Boulevard, Seventeenth Street, and Grand Avenue.	PWA 2022-2035
2.6	**Regional transit planning.** Develop the Santa Ana Regional Transportation Center (SARTC) Master Plan.	PWA/PBA/ CDA 2022-2035
2.7	**Wayfinding program.** Refine the City's wayfinding signage program to direct travelers to activity centers, Downtown, and Civic Center.	PWA 2022-2035
GOAL M-3: Active Transportation A safe, balanced, and integrated network of travelways for nonmotorized modes of transportation that connects people to activity centers, inspiring healthy and active lifestyles.		
3.1	**Active transportation planning.** Develop and pursue implementation of a comprehensive active transportation plan.	PWA 2022-2035
3.2	**Circulation connectivity.** Close the Golden Loop network between Memory Lane and Santiago Creek and between Santiago Park and Lincoln Avenue/Santiago Street.	PWA/PRCSA Ongoing
3.3	**Pedestrian accessibility.** Implement the City ADA Transition Plan to cost-effectively enhance pedestrian accessibility, with guidance from the Sidewalk Connectivity Plan.	PWA Ongoing
3.4 EJ	**Pedestrian opportunity zones.** Prepare public realm plans in pedestrian opportunity zones.	PWA/PBA 2022-2035
3.5	**Safe routes to schools and parks.** Develop and pursue implementation of a Safe Routes to School Plan and a Safe Routes to Parks Plan.	PWA/PRCSA Ongoing
3.6	**Drinking water access.** Create a network of public water fountains / bottle fill stations that promote the City's award-winning water, conservation, and substitution of bottled water for affordable public drinking water.	PWA 2022-2035
GOAL M-4: Transportation, Land Use, and Design Coordinated transportation planning efforts with land use and design strategies that encourage sustainable development and achieve broader community goals.		
4.1	**Municipal Code update.** Amend the code to require parking studies to evaluate requests for parking reductions in all development projects.	PBA 2024
4.2	**Downtown transportation planning.** Prepare comprehensive Downtown transportation and parking management plan that involves Downtown stakeholders and addresses downtown activity, economic growth, and operational improvements.	PWA/PBA/ CDA 2025
4.3	**Downtown transportation improvements.** Study the Downtown parking structure facilities, involving Downtown stakeholders, to identify potential operational improvements and monitor the program.	CDA/PWA 2025
4.4 EJ	**Residential parking.** Reevaluate the Residential Permit Parking Program to ensure it complies with state law and best practices.	PWA Ongoing
4.5	**Citywide Design Guidelines update.** Update the Citywide Design Guidelines to strengthen pedestrian and cyclist linkages to development centers and residential neighborhoods and coordinate on-site landscape with public realm landscaping.	PBA/PWA 2022-2027
4.6	**Safe travelways.** Provide City interagency review of physical improvements and related design standards within travelways and the public realm.	PWA Ongoing

TABLE M-4. MOBILITY ELEMENT IMPLEMENTATION

Ref #	Implementation Action	Agency / Time Frame
4.7	**Bike parking and amenities.** Update the City bike parking ordinance to require new major development to provide long-term bike locker parking and amenities, and incentives for inclusion in existing development.	PBA 2022-2027
4.8	**Ensure safety.** Utilize the City's project review processes to identify and maintain landscaped setbacks along public rights-of-way.	PWA Ongoing
4.9	**Trip reduction.** Continue to evaluate alternative trip reduction program best practices for City employees, and implement a program that is cost-effective.	HR Ongoing
4.10	**Vehicle miles traveled.** Maintain vehicle miles traveled (VMT) guidelines in compliance with SB 743.	PWA/PBA Ongoing
4.11	**Cross-agency coordination.** Maintain ongoing coordination of land use and transportation impacts through joint powers authority agreements with adjacent jurisdictions.	PWA Ongoing
4.12	**School partnerships.** Pursue partnerships with local school districts to improve coordination of review process for new and rehabilitated school facility improvements, to promote safe and well-designed student pick-up/drop-off.	PWA/PD Ongoing
GOAL M-5: Sustainable Transportation A transportation system that is attractive, safe, state-of-the-art, and supports community, environmental, and conservation goals.		
5.1	**Safe travelways.** Continue design practices that facilitate the safe use of the travelways.	PWA Ongoing
5.2	**Street designs.** Participate in state and regional transportation agency forums to affect policies for universal street design standards to ensure standards are user friendly, cost-effective, and sustainable.	PWA Ongoing
5.3	**Street improvements.** Incorporate low impact development (LID) strategies to infiltrate, treat, or harvest urban stormwater runoff in street improvement projects.	PWA Ongoing
5.4	**Municipal/development code update.** Update the City's design standards and municipal codes regarding landscaping and amenities in the public realm and street parkways, to promote aesthetically pleasing and sustainable corridors.	PWA 2025
5.5	**Tree preservation.** Re-evaluate the City's street tree maintenance and preservation programs to ensure fiscal sustainability and aesthetically pleasing trees over the long term.	PWA 2022-2035
5.6	**Traffic calming.** Develop or update neighborhood traffic management plans to facilitate traffic calming measures appropriate and reasonable for the area.	PWA Ongoing
5.7 EJ	**Parking management strategies.** Evaluate parking management strategies, such as parking assessment districts, to facilitate parking in areas programmed for future development.	CDA 2022
5.8	**Air quality improvements.** Participate in inter-jurisdictional efforts to promote improvements in air quality and to meet state and federal mandates through advanced technology and TDM programs.	PBA/PWA 2021-2035
5.9	**Rail service.** Coordinate with rail and transit service providers to address aesthetics, ongoing maintenance, safety, and noise concerns along rail corridors.	PWA Ongoing
5.10	**Street medians.** Complete construction of medians on major arterial streets.	PWA 2022-2035
5.11	**Underground utilities program.** Continue to implement the program to underground utilities on arterial streets.	PWA 2022-2035
5.12	**Transportation network.** Provide upkeep of the City's transportation network based upon an established maintenance schedule.	PWA Ongoing

Notes:
CDA - Community Development Agency
CMO - City Manager's Office
HR- Human Resources Department
PBA - Planning and Building Agency
PWA - Public Works Agency
PRCSA - Parks, Recreation and Community Services Agency
PD - Police Department
EJ associated with environmental justice policies


golden city beyond
A SHARED VISION FOR SANTA ANA

OCTA

November 2, 2020

To: Regional Planning and Highways Committee

From: Darrell E. Johnson, Chief Executive Officer

Subject: Amendments to the Master Plan of Arterial Highways

Overview

The Orange County Transportation Authority administers the Master Plan of Arterial Highways, including the review and approval of amendments requested by local agencies. The City of Santa Ana has requested multiple amendments to the Master Plan of Arterial Highways. These amendments are subject to approval by the Board of Directors and are recommended to be contingent on an executed memorandum of understanding to address potential impacts. A status update on the active Master Plan of Arterial Highways amendments is also provided.

Recommendations

A. Authorize the Chief Executive Officer, or his designee, to negotiate and execute a final memorandum of understanding specifying roles and responsibilities for implementation of proposed actions related to the Master Plan of Arterial Highways amendment request. Participating agencies include the cities of Fountain Valley, Santa Ana, Tustin, and the Orange County Transportation Authority.

B. Conditionally approve the following amendment to the Master Plan of Arterial Highways to:

1. Reclassify the following streets from a secondary (four-lane, undivided) arterial to a divided collector (two-lane divided):
   i. Cambridge Street between Fairhaven Avenue and State Route 22.
   ii. Santa Clara Avenue between Grand Avenue and Tustin Avenue.
   iii. Broadway Street between 1st Street and 17th Street.
   iv. Penn Way between Interstate 5 southbound on/off-ramps and Washington Avenue.

v. Santiago Avenue between Washington Avenue and 6th Street.
vi. Standard Avenue between 6th Street and Warner Avenue.
vii. Civic Center Drive between Fairview Street and Bristol Street.
viii. Hazard Avenue between Euclid Street and Harbor Boulevard.
ix. Raitt Street between Segerstrom Avenue and Santa Ana Boulevard.
x. McFadden Avenue between Harbor Boulevard and Grand Avenue.
xi. Flower Street between Warner Avenue and First Street.
xii. Halladay Avenue between Warner Avenue and Dyer Road.
xiii. Chestnut Avenue between Standard Avenue and Grand Avenue.

2. Reclassify Civic Center Drive between French Street and Santiago Street, from a secondary (four-lane, undivided) arterial to a collector (two-lane, undivided) arterial.
3. Reclassify 1st Street between Bristol Street and Tustin Avenue, from a major (six-lane, divided) to a primary (four-lane, divided) arterial.
4. Reclassify Chestnut Avenue between Grand Avenue the eastern city limit, from a primary (four-lane, divided) to a divided collector (two-lane, divided) arterial.
5. Remove the following facilities from the Master Plan of Arterial Highways:
   i. Flower Street between 17th Street and its northern terminus.
   ii. Logan Street between Stafford Street and Santa Ana Boulevard.
   iii. Stafford Street between proposed Logan Street and Santiago Street.

The proposed amendment will become final contingent upon the Orange County Transportation Authority (1) fully executing a final memorandum of understanding with the cities of Fountain Valley, Santa Ana, and Tustin, and (2) receiving documentation that the City of Santa Ana has complied with the requirements of the California Environmental Quality Act and have amended their general plan.

If the original proposed Master Plan of Arterial Highways amendment is modified as a result of the California Environmental Quality Act and/or general plan amendment process, the modified Master Plan of Arterial Highways amendment shall be returned to the Orange County Transportation Authority Board of Directors for consideration and action.

C. Conditionally approve the amendment to the Master Plan for Arterial Highways for Fairhaven Avenue between Grand Avenue to Tustin Avenue from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial. The proposed amendment will become final contingent upon the Orange County Transportation Authority receiving documentation that the cities of Santa Ana and Orange have complied with the requirements of the California Environmental Quality Act and have amended their respective general plans.

   If the cities of Santa Ana and Orange do not update their respective general plans within three years to reflect the Master Plan of Arterial Highway amendment, the contingent amendment will expire, but can be returned to the Orange County Transportation Authority Board of Directors for reconsideration and action.

   If the original proposed Master Plan of Arterial Highways amendment is modified as a result of the California Environmental Quality Act and/or general plan amendment process, the modified Master Plan of Arterial Highways amendment shall be returned to the Orange County Transportation Authority Board of Directors for consideration and action.

D. Direct the Executive Director of Planning, or his designee, to file a Notice of Exemption from the California Environmental Quality Act in support of the Master Plan of Arterial Highways amendment.

E. Receive and file a status report on the active Master Plan of Arterial Highways amendments.

Background

In January 2020, the City of Santa Ana (City) initiated the Circulation Element Update in combination with the overall General Plan Update. The proposed Circulation Element Update is the culmination of community outreach efforts undertaken by the City since 2011, input from neighboring local agencies, and various planning documents. The goal of these efforts is to provide active transportation options for residents through complete street improvements and vision zero policies. The City is requesting amendments to the Master Plan of Arterial Highways (MPAH) to reclassify 17 segments in order to accommodate complete street projects and remove three segments from the MPAH (Attachment A). Complete streets refer to street features that accommodate all users, including pedestrians, bicyclists, public transit users, and drivers. The 17 segments represent those arterials which require MPAH reclassifications in order to accommodate complete street improvements and are depicted in Attachment B.

Amendment to the MPAH require a review of the potential circulation implications of the change. The City utilized the General Plan Update Program Environmental Impact Report (PEIR)-Traffic Impact Study (TIS) for the MPAH amendment process. The TIS reviews existing and future traffic conditions of the current general plan and of the proposed land use and circulation element updates. Additional analysis was completed that focused on the identification of the impacts and mitigations associated with the changes to the MPAH, as opposed to the overall General Plan Update evaluated by the PEIR. The City plans to adopt the General Plan Update and PEIR in late fall 2020. The proposed MPAH amendments are recommended for conditional approval by the Orange County Transportation Authority (OCTA) Board of Directors (Board) contingent on compliance with the MPAH Guidance, and additional terms identified in the Recommendations.

Discussion

The 17 segments proposed for reclassification would result in a reduction of approximately 30 existing lane miles. Deletions and downgrades on the MPAH may be allowed if the increased traffic volumes in the affected agencies do not result in the unmitigated peak-hour intersection impacts (Guidance for Administration of the MPAH, Section 4.0 MPAH Amendment Policies). If impacts to the MPAH system are identified as a result of the proposed amendment, approval of an amendment may be subject to the execution of a memorandum of understanding (MOU) between OCTA and affected agencies, which specify roles and responsibilities for implementation of any identified mitigations. The TIS analyzed 105 intersections with 18 identified that could be impacted due to the MPAH amendment request (Attachment C). Of the 18 impacted intersections, four are located outside the City in the following jurisdictions: City of Fountain Valley (1), City of Orange (1), and the City of Tustin (2).

The City proposed a draft mitigation program to ensure that mitigations for impacted intersections, if needed in the future, would be implemented. The program would fully mitigate impacts at eight intersections (including the four intersections outside of the City) and partially mitigate impacts at two intersections. Feasible mitigations could not be developed at the remaining eight impacted intersections, all located within the City, due to right-of-way needs for proposed complete streets projects. The TIS also identified potential significant impacts to an additional five intersections due to the City's proposed Land Use Element Update. These impacts are not associated with the change to the MPAH; therefore, they are excluded from the MPAH amendment process.

Furthermore, potential impacts to high-quality transit corridors were identified. OCTA provides high-frequency (15-minute service intervals) fixed-route bus service during peak commute hours on two segments that are part of the MPAH amendment - McFadden Avenue (Route 66) and 1st Street (Route 64).

The City's proposal would remove existing and planned travel lanes to incorporate complete streets infrastructure. OCTA and City staff agreed that additional mitigation measures on these corridors are necessary to maintain or improve transit service performance.

An MOU was prepared to define the roles and responsibilities of the parties the mitigations for the proposed MPAH amendment (Attachment D). Currently, the City and the affected agencies are in agreement on a draft mitigation program. For the impacts located at the cities of Fountain Valley and Tustin, the City has agreed to pay, at minimum, their fair share cost of the mitigation measures. The proposed reclassification on Fairhaven Avenue, between Grand Avenue and Tustin Avenue, is shared with the City of Orange. For this reclassification on Fairhaven Avenue to become final, both the cities of Orange and Santa Ana will need to update their circulation elements. The reclassification results in an impact at the Tustin Avenue and Fairhaven Avenue intersection (City of Orange). The existing intersection can accommodate the proposed reclassification to a divided collector (two-lane, divided) arterial, and therefore, the City of Orange has requested not be a party to the MOU. Lastly, the City has also agreed to fund a cooperative study, led by OCTA. The study will identify feasible transit improvements for impacts on high-quality transit corridors. Roles and responsibilities for funding and implementation would be identified and coordinated with OCTA as well. The affected agencies have reviewed the TIS, addressed remaining questions with the City, and all have provided letters of support for the City's amendment request (attachments E, F, and G).

The City also shared the TIS with immediately adjacent agencies - the cities of Costa Mesa, Garden Grove, Irvine, Westminster, the County of Orange, and the California Department of Transportation. Except for the City of Garden Grove (Garden Grove), all immediately adjacent agencies have indicated their support for the City's amendment request (attachments H, I, J, K, and L). Garden Grove is the owner of the Willowick Golf Course property, which is near the proposed Hazard Avenue reclassification. Garden Grove would like to preserve existing vehicular access in the vicinity of the Willowick property while the City and Garden Grove solidify a vision for the property. Currently, the property remains classified as open space in the City's proposed Land Use Element Update. Moreover, the TIS did not identify any impacts in the vicinity of Hazard Avenue, and it is projected to operate at a segment link level of service "A" in the future year with reclassification. Therefore, there are no technical MPAH-related issues with the proposed reclassification to Hazard Avenue.

Further, the City has discussed the matter with City of Garden Grove, and there is an understanding that the parties will work to address this issue as the long-term vision for the property develops.

Based on the support from the affected agencies and technical analysis of the proposed reclassifications, staff recommends conditional approval of the MPAH amendments, authorization to negotiate and execute the final MOU, and a cooperative agreement for a transit cooperative study. If approved by the Board, the proposed amendments will not become final until OCTA receives: (1) a fully signed and executed MOU among OCTA and the cities of Fountain Valley, Santa Ana, and Tustin; and (2) documentation that the City has amended their general plan and have complied with the requirements of the California Environmental Quality Act (CEQA). Additionally, the City of Orange must also provide documentation that their general plan has been amended in compliance with CEQA before finalizing the reclassification of Fairhaven Avenue on the MPAH.

CEQA

Amendments to the MPAH are exempt from the CEQA review. As such, if the Board approves the recommendations, OCTA will file a Notice of Exemption from CEQA in support of the proposed amendment to the MPAH.

MPAH Status Update

As indicated in the status report in Attachment M, there are currently 22 active amendments proposed for the MPAH.

The City's General Plan Update also includes the conditionally-approved MPAH amendment in 2016 to support planned bikeways and accommodate the development of the OC Streetcar on Fourth Street from French Street to Grand Avenue, and on three segments of Santa Ana Boulevard:(1) Flower Street to Ross Street, (2) French Street to Santiago Street, and (3) Raitt Street to Flower Street. As indicated in Attachment A, the adoption of the General Plan Update will finalize the amendment on these four facilities.

In June 2020, OCTA received appropriate documentation to finalize and update the MPAH map to reflect conditionally-approved amendments within several other jurisdictions:

- Huntington Beach – Graham Street and Talbert Street (shared with the County of Orange), Delaware Street, 6th Street;
- Yorba Linda – Esperanza Road (shared with the County of Orange), Fairmont Boulevard Connector; and
- Westminster – Garden Grove Boulevard, Edwards Street, Trask Avenue, and Hoover Street.

Many of the other remaining amendments are awaiting local action to amend their respective general plans. Others are either under review, pending resolution of issues with other agencies, or awaiting refinement of development plans.

Summary

The City of Santa Ana has requested amendments to the Master Plan of Arterial Highways to reflect the City of Santa Ana's General Plan Update. The technical analysis indicates that -- with the recommended mitigations -- implementation of the amendments would not adversely impact the integrity of the Master Plan of Arterial Highways. Therefore, staff recommends Board of Directors' conditional approval of the requested amendments.

Attachments

A. Letter from Mr. Nabil Saba, P.E., Acting Executive Director, Public Works Agency, City of Santa Ana, to Mr. Charles Larwood, Manager of Transportation Planning, Orange County Transportation Authority, Dated January 21, 2020, re: Request for Amendment to the Master Plan of Arterial Highways in Santa Ana
B. City of Santa Ana Proposed MPAH Amendments Maps
C. City of Santa Ana General Plan Update, Amendment to the Master Plan of Arterial Highways, Intersection Impacts
D. Draft Memorandum of Understanding No. C-X-XXXX Between Orange County Transportation Authority and Cities of Santa Ana, Fountain Valley, Tustin for Amendment of the Master Plan of Arterial Highways
E. Letter from Ms. Hye Jin Lee, MS, PE, Director of Public Works, City of Fountain Valley, to Mr. Nabil Saba, P.E., Executive Director, Public Works Agency, City of Santa Ana, Dated September 8, 2020, re: City of Santa Ana Proposed Master Plan of Arterial Highways (MPAH) Reclassifications
F. Letter from Mr. Christopher S. Cash, Public Works Director, City of Orange, to Mr. Nabil Saba, P.E., Executive Director, Public Works Agency, City of Santa Ana, Dated September 17, 2020, re: City of Santa Ana Proposed Master Plan of Arterial Highways (MPAH) Reclassifications
G. Letter from Ms. Krys Saldivar, Public Works Manager - Traffic/ Transportation, City of Tustin, to Mr. Nabil Saba, P.E., Executive Director, Public Works Agency, City of Santa Ana, Dated October 6, 2020, re: City of Santa Ana Master Plan of Arterial Highways (MPAH) Reclassifications Letter of Support

H. Letter from Mr. Raja Sethuraman, Public Services Director, City of Costa Mesa, to Mr. Nabil Saba, P.E., Executive Director, Public Works Agency, City of Santa Ana, Dated September 3, 2020, re: City of Santa Ana Proposed Master Plan of Arterial Highways (MPAH) Reclassifications

I. Letter from Mr. Mark A. Steuer, Director of Public Works and Transportation, City of Irvine, to Mr. Nabil Saba, P.E., Executive Director, Public Works Agency, City of Santa Ana, Dated September 15, 2020, re: City of Santa Ana Proposed Master Plan of Arterial Highways (MPAH) Reclassifications

J. Letter from Mr. Marwan Youssef, Ph.D., P.E., Public Works Director/ City Engineer, City of Westminster, to Mr. Nabil Saba, P.E., Executive Director, Public Works Agency, City of Santa Ana, September 9, 2020, re: City of Santa Ana Proposed Master Plan of Arterial Highways (MPAH) Reclassifications

K. Letter from Ms. Nardy Khan, PE/PMP, Deputy Director, Infrastructure Programs, Orange County Public Works, to Mr. Nabil Saba, P.E., Executive Director, Public Works Agency, City of Santa Ana, Dated September 3, 2020, re: City of Santa Ana Proposed Master Plan of Arterial Highways (MPAH) Reclassifications

L. Letter from Mr. Scott Shelley, Branch Chief, Regional-IGR-Transit Planning, California Department of Transportation District 12, to Mr. Verny Carvajal, Principal Planner, City of Santa Ana, Dated August 17, 2020

M. Status Report on Active Master Plan of Arterial Highways Amendments

Prepared by:

Stephanie Chhan
Transportation Analyst
(714) 560-5572

Approved by:

Kia Mortazavi
Executive Director, Planning
(714) 560-5741

Agenda Item

Orange City Council

Item #: 10.1. 3/10/2026 **File #:** 26-0087

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Leslie Hardy, Community and Library Services Director**

1. SUBJECT

Agreement with The HUB OC for youth and teen summer day camp services

2. SUMMARY

Following a competitive Request for Proposals process, staff are recommending the approval of an agreement with The Hub OC to provide Youth and Teen Summer Day Camp services.

3. RECOMMENDED ACTION

1. Approve the agreement with The HUB OC for Youth and Teen Summer Day Camp Services; and authorize the Mayor and City Clerk to execute on behalf of the City.
2. Authorize the City Manager to execute necessary renewals as outlined in the agreement.

4. FISCAL IMPACT

None.

5. STRATEGIC PLAN GOALS

Goal 3: Enhance Public Communication Strategy and Quality of Life

3.7: Continue to offer high quality and efficient city led recreation programs

6. DISCUSSION AND BACKGROUND

Background

For several decades, the City has offered youth and teen summer day camp programs at various park locations throughout Orange. The program was typically budgeted at $390,000 and included part time staff costs for approximately 45 seasonal staff, a full-time Recreation Coordinator, uniforms, and supplies. To address challenges resulting from the City's structural budget deficit, significant reductions were made to the Community Services Department budget including the cancellation of Summer Youth and Teen Day Camps. As an alternate day camp option for the Orange community, the City partnered with the previous after-school day care provider, Youth Centers of Orange under The HUB OC (The HUB) umbrella. The HUB was able to implement a comparable summer day camp for youth and teens at Shaffer Park at no cost to the City in summer 2025. The HUB served approximately 120 children daily, offering a safe, enriching, and affordable summer day camp.

Discussion

Given the current budget constraints, the City did not budget funds nor hire seasonal, part-time staff

to reinstate a summer day camp program for Summer 2026. Using the model from summer 2025, the City publicly advertised a Request for Proposals (RFP) in accordance with procurement requirements on November 20, 2025, to identify a qualified provider of Youth and Teen Summer Day Camp programming for the 2026 summer season. The RFP sought experienced organizations capable of delivering a safe, engaging, and recreation-based program for youth and teens while minimizing fiscal impacts to the City.

The deadline for submissions was December 18, 2025 and the City received seven (7) proposals in response to the RFP.

A review panel evaluated the proposals in accordance with the criteria set forth in the RFP which included the firm's experience, qualifications of the proposer team, and overall response to the RFP. These criteria accounted for a total of 65 possible points. Proposals receiving a minimum score of 70% (46 points or higher) advanced to the next phase of the evaluation. The second phase included an assessment of references (maximum of 10 points).

Based on the evaluation results, The HUB was identified as the highest-scoring proposer as they demonstrated a strong program model, relevant experience, and the operational capacity necessary to successfully deliver the requested services (Attachment 1). In addition, the HUB indicated they can provide the program at no cost to the City. As noted in the Cost Proposal, the City will provide in-kind use of the Shaffer Park community building to the contractor for the duration of the program implementation.

The RFP outlined that submissions should be for an initial one-year program term and associated costs but also requested that proposals include pre-negotiated optional extension term costs. The HUB's proposal extended their no cost offering across three (3) additional optional future year extensions (at the City's sole discretion). As such, staff is recommending that Council authorize the City Manager to execute optional renewals as outlined in the Agreement for a total potential agreement length of four (4) years, should all renewal extensions be exercised (Attachment 2).

7. ATTACHMENTS

- Proposal Abstract Summary
- Professional Services Agreement

Agenda Item

Orange City Council

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THRU: **Jarad Hildenbrand, City Manager**

FROM: **Leslie Hardy, Community and Library Services Director**

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- Professional Services Agreement

Proposal Abstract Summary
Youth and Teen Summer Day Camp Provider
RFP 25-26.11

Date Advertised: 11/20/25
Proposal Due Date: 12/18/25

Company/Contractor	Athena Coding	CF Fitness	EdTech Enrichment	High Performance Academy	The HUB OC	OC YMCA	Rising Stars
City (Location of Company)		Fountain Valley, CA	Orange, CA	NA	Orange, CA	Tustin, CA	Los Angeles, CA
Initial Average Score	44.67	47.33	43.67	40.67	58.67	55.67	40.67
Cost					21.60	10.00	
References					9.00	8.00	
TOTAL OVERALL SCORES*	44.67	47.33	43.67	40.67	89.27	73.67	40.67

**Cost and References considered and added into total score for proposers with an initial passing score of 48 or more.*

PROFESSIONAL SERVICES AGREEMENT
[Youth & Teen Summer Day Camp Provider Services]

THIS PROFESSIONAL SERVICES AGREEMENT (the "Agreement") is made at Orange, California, on this _____ day of _____, 2026 (the "Effective Date") by and between the CITY OF ORANGE, a municipal corporation ("City"), and THE HUB OC, a California nonprofit corporation ("Contractor"), who agree as follows:

1. Services. Subject to the terms and conditions set forth in this Agreement, Contractor shall provide to the reasonable satisfaction of City the services set forth in Exhibit "A," which is attached hereto and incorporated herein by reference. As a material inducement to City to enter into this Agreement, Contractor represents and warrants that it has thoroughly investigated and considered the scope of services and fully understands the difficulties and restrictions in performing the work. The services which are the subject of this Agreement are not in the usual course of City's business and City relies on Contractor's representation that it is independently engaged in the business of providing such services and is experienced in performing the work. Contractor shall perform all services in a manner reasonably satisfactory to City and in a manner in conformance with the standards of quality normally observed by an entity providing such services to a municipal agency. All services provided shall conform to all federal, state and local laws, rules and regulations and to the best professional standards and practices. The terms and conditions set forth in this Agreement shall control over any terms and conditions in Exhibit "A" to the contrary.

Emily Bustamante, Assistant Community Services Director ("City's Project Manager"), shall be the person to whom Contractor will report for the performance of services hereunder. It is understood that Contractor's performance hereunder shall be under the supervision of City's Project Manager (or his/her designee), that Contractor shall coordinate its services hereunder with City's Project Manager to the extent required by City's Project Manager, and that all performances required hereunder by Contractor shall be performed to the satisfaction of City's Project Manager and the City Manager.

2. Compensation and Fees.

a. Contractor's total compensation for all services performed under this Agreement, shall not exceed ZERO DOLLARS and 00/100 ($0.00) without the prior written authorization of City.

b. The compensation for services performed under this Agreement shall be limited to in-kind use of Shaffer Park Community Building, as specified in Exhibit "B" which is attached hereto and incorporated herein by reference.

c. The above compensation shall include all costs, including, but not limited to, all clerical, administrative, overhead, insurance, reproduction, telephone, travel, auto rental, subsistence and all related expenses.

2.1 Term and Extension(s).

a. The Initial Term of this Agreement is one (1) year (the "Initial Term"), commencing April 1, 2026, and terminating on March 31, 2027 (the "Expiration Date"); provided, however, that City has the right to extend the term of this Agreement for the following extensions and upon the following terms:

First Extension (the "First Extension Term") commencing April 1, 2027, and terminating on March 31, 2028.

Second Extension (the "Second Extension Term") commencing April 1, 2028, and terminating on March 31, 2029.

Third Extension (the "Third Extension Term") commencing July 1, 2029, and terminating on March 31, 2030.

b. The City Manager is hereby authorized on behalf of City to give written notice to Contractor of City's intention to exercise each Extension (if at all) no later than thirty (30) days prior to the Expiration Date of the then-current term; provided, however, that City's notice of its intention to extend the term of this Agreement for each Extension shall be expressly conditioned upon and subject to the approval by the City Council, in its sole and absolute discretion, of an amount sufficient to pay the compensation set forth herein for each Extension as part of its annual budget approval process prior to the beginning of each Extension.

While the parties acknowledge that City is required to give its notice of intention to extend the term of this Agreement not later than thirty (30) days prior to the Expiration Date of the then-current term, it is possible that the City Council's approval of its annual budget and appropriation of funds for the Extension in question may occur thereafter. Accordingly, if the City Council fails to approve and appropriate funds sufficient to pay the amount of compensation set forth herein for an Extension, this Agreement shall terminate and be of no further force and effect as of the expiration of the then-current term.

Notwithstanding anything in this provision to the contrary, in the event City gives Contractor written notice exercising an Extension and City receives notice that appropriation of funds for the Extension in question are not available after Contractor has performed services under the Extension, City agrees that Contractor will be equitably compensated for all services performed under any portion of an Extension through the date of termination of the Agreement.

Except as specifically set forth herein, the terms and conditions of each Extension will be the same as the Initial Agreement.

c. Any Extension, if properly exercised, shall be memorialized in the form of an amendment to this Agreement. The City Manager is hereby authorized to approve and execute amendments to this Agreement reflecting the exercise of each Extension and the amount of compensation (including the amount of funds to be made available for additional work or services) payable to Contractor for each respective Extension.

3. Reserved.

4. Change Orders. No payment for extra services caused by a change in the scope or complexity of work, or for any other reason, shall be made unless and until such extra services and a price therefor have been previously authorized in writing and approved by City as an amendment to this Agreement. City's Project Manager is authorized to approve a reduction in the services to be performed and compensation therefor. All amendments shall set forth the changes of work, extension of time, and/or adjustment of the compensation to be paid by City to Contractor and shall be signed by the City's Project Manager, City Manager or City Council, as applicable.

5. Licenses. Contractor represents that it and any subcontractors it may engage, possess any and all licenses which are required under state or federal law to perform the work contemplated by this Agreement and that Contractor and its subcontractors shall maintain all appropriate licenses, including a City of Orange business license, at its cost, during the performance of this Agreement.

6. Independent Contractor. At all times during the term of this Agreement, Contractor shall be an independent contractor and not an employee of City. City shall have the right to control Contractor only insofar as the result of Contractor's services rendered pursuant to this Agreement. City shall not have the right to control the means by which Contractor accomplishes services rendered pursuant to this Agreement. Contractor shall, at its sole cost and expense, furnish all facilities, materials and equipment which may be required for furnishing services pursuant to this Agreement. Contractor shall be solely responsible for, and shall indemnify, defend and save City harmless from all matters relating to the payment of its subcontractors, agents and employees, including compliance with social security withholding and all other wages, salaries, benefits, taxes, exactions, and regulations of any nature whatsoever. Contractor acknowledges that it and any subcontractors, agents or employees employed by Contractor shall not, under any circumstances, be considered employees of City, and that they shall not be entitled to any of the benefits or rights afforded employees of City, including, but not limited to, sick leave, vacation leave, holiday pay, Public Employees Retirement System benefits, or health, life, dental, long-term disability or workers' compensation insurance benefits.

7. Contractor Not Agent. Except as City may specify in writing, Contractor shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent. Contractor shall have no authority, express or implied, to bind City to any obligation whatsoever.

8. Designated Persons. Only those qualified persons authorized by City's Project Manager, or as designated in Exhibit "A," shall perform work provided for under this Agreement. It is understood by the parties that clerical and other nonprofessional work may be performed by persons other than those designated.

9. Assignment or Subcontracting. No assignment or subcontracting by Contractor of any part of this Agreement or of funds to be received under this Agreement shall be of any force or effect unless the assignment has the prior written approval of City. City may terminate this

Agreement rather than accept any proposed assignment or subcontracting. Such assignment or subcontracting may be approved by the City Manager or his/her designee.

10. **Time of Completion**. Except as otherwise specified in Exhibit "A," Contractor shall commence the work provided for in this Agreement within five (5) days of the Effective Date of this Agreement and diligently prosecute completion of the work in accordance with the time period set forth in Exhibit "A" hereto or as otherwise agreed to by and between the representatives of the parties.

11. **Time Is of the Essence**. Time is of the essence in this Agreement. Contractor shall do all things necessary and incidental to the prosecution of Contractor's work.

12. **Reserved**.

13. **Delays and Extensions of Time**. Contractor's sole remedy for delays outside its control, other than those delays caused by City, shall be an extension of time. No matter what the cause of the delay, Contractor must document any delay and request an extension of time in writing at the time of the delay to the satisfaction of City. Any extensions granted shall be limited to the length of the delay outside Contractor's control. If Contractor believes that delays caused by City will cause it to incur additional costs, it must specify, in writing, why the delay has caused additional costs to be incurred and the exact amount of such cost at the time the delay occurs. No additional costs can be paid that exceed the not to exceed amount stated in Section 2.a, above, absent a written amendment to this Agreement.

14. **Products of Contractor**. The documents, studies, evaluations, assessments, reports, plans, citations, materials, manuals, technical data, logs, files, designs and other products produced or provided by Contractor for this Agreement shall become the property of City upon receipt. Contractor shall deliver all such products to City prior to payment for same. City may use, reuse or otherwise utilize such products without restriction.

15. **Equal Employment Opportunity**. During the performance of this Agreement, Contractor agrees as follows:

a. Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Contractor shall ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Such actions shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, a notice setting forth provisions of this non-discrimination clause.

b. Contractor shall, in all solicitations and advertisements for employees placed by, or on behalf of Contractor, state that all qualified applicants will receive consideration

for employment without regard to race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law.

c. Contractor shall cause the foregoing paragraphs (a) and (b) to be inserted in all subcontracts for any work covered by this Agreement, provided that the foregoing provisions shall not apply to subcontracts for standard commercial supplies or raw materials.

16. Conflicts of Interest. Contractor agrees that it shall not make, participate in the making, or in any way attempt to use its position as a consultant to influence any decision of City in which Contractor knows or has reason to know that Contractor, its officers, partners, or employees have a financial interest as defined in Section 87103 of the Government Code.

17. Indemnity.

a. To the fullest extent permitted by law, Contractor agrees to indemnify, defend and hold City, its City Council and each member thereof, and the officers, officials, agents and employees of City (collectively the "Indemnitees") entirely harmless from all liability arising out of:

(1) Any and all claims under workers' compensation acts and other employee benefit acts with respect to Contractor's employees or Contractor's subcontractor's employees arising out of Contractor's work under this Agreement, including any and all claims under any law pertaining to Contractor or its employees' status as an independent contractor and any and all claims under Labor Code section 1720 related to the payment of prevailing wages for public works projects; and

(2) Any claim, loss, injury to or death of persons or damage to property caused by any act, neglect, default, or omission of Contractor, or person, firm or corporation employed by Contractor, either directly or by independent contract, including all damages due to loss or theft sustained by any person, firm or corporation including the Indemnitees, or any of them, arising out of, or in any way connected with the work or services which are the subject of this Agreement, including injury or damage either on or off City's property; but not for any loss, injury, death or damage caused by the active negligence or willful misconduct of City. Contractor, at its own expense, cost and risk, shall indemnify any and all claims, actions, suits or other proceedings that may be brought or instituted against the Indemnitees on any such claim or liability covered by this subparagraph, and shall pay or satisfy any judgment that may be rendered against the Indemnitees, or any of them, in any action, suit or other proceedings as a result of coverage under this subparagraph.

b. To the fullest extent permitted by law, and as limited by California Civil Code 2782.8, Contractor agrees to indemnify and hold Indemnitees harmless from all liability arising out of any claim, loss, injury to or death of persons or damage to property to the extent caused by its negligent professional act or omission in the performance of professional services pursuant to this Agreement.

c. Except for the Indemnitees, the indemnifications provided in this Agreement shall not be construed to extend any third party indemnification rights of any kind to any person or entity which is not a signatory to this Agreement.

d. The indemnities set forth in this section shall survive any closing, rescission, or termination of this Agreement, and shall continue to be binding and in full force and effect in perpetuity with respect to Contractor and its successors.

18. Insurance.

a. Contractor shall carry workers' compensation insurance as required by law for the protection of its employees during the progress of the work. Contractor understands that it is an independent contractor and not entitled to any workers' compensation benefits under any City program.

b. Contractor shall maintain during the life of this Agreement the following minimum amount of comprehensive general liability insurance or commercial general liability insurance: the greater of Two Million Dollars ($2,000,000) per occurrence; or (2) all the insurance coverage and/or limits carried by or available to Contractor. Said insurance shall cover bodily injury, death and property damage and be written on an occurrence basis.

c. Contractor shall maintain during the life of this Agreement, the following minimum amount of automotive liability insurance: the greater of (1) a combined single limit of One Million Dollars ($1,000,000) or (2) all the insurance coverage and/or limits carried by or available to Contractor. Said insurance shall cover bodily injury, death and property damage for all owned, non-owned and hired vehicles and be written on an occurrence basis.

d. Any insurance proceeds in excess of or broader than the minimum required coverage and/or minimum required limits which are applicable to a given loss shall be available to City. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of Contractor under this Agreement.

e. Each policy of general liability and automotive liability shall provide that City, its officers, officials, agents, and employees are declared to be additional insureds under the terms of the policy, but only with respect to the work performed by Contractor under this Agreement. A policy endorsement to that effect shall be provided to City along with the certificate of insurance. In lieu of an endorsement, City will accept a copy of the policy(ies) which evidences that City is an additional insured as a contracting party. The minimum coverage required by Subsection 18.b and c, above, shall apply to City as an additional insured. Any umbrella liability insurance that is provided as part of the general or automobile liability minimums set forth herein shall be maintained for the duration of the Agreement.

f. Contractor shall maintain during the life of this Agreement professional liability insurance covering errors and omissions arising out of the performance of this Agreement with a minimum limit of One Million Dollars ($1,000,000) per claim. Contractor agrees to keep

such policy in force and effect for at least five (5) years from the date of completion of this Agreement.

g. The insurance policies maintained by Contractor shall be primary insurance and no insurance held or owned by City shall be called upon to cover any loss under the policy. Contractor will determine its own needs in procurement of insurance to cover liabilities other than as stated above.

h. Before Contractor performs any work or prepares or delivers any materials, Contractor shall furnish certificates of insurance and endorsements, as required by City, evidencing the aforementioned minimum insurance coverages on forms acceptable to City, which shall provide that the insurance in force will not be canceled or allowed to lapse without at least ten (10) days' prior written notice to City.

i. Except for professional liability insurance coverage that may be required by this Agreement, all insurance maintained by Contractor shall be issued by companies admitted to conduct the pertinent line of insurance business in California and having a rating of Grade A or better and Class VII or better by the latest edition of Best Key Rating Guide. In the case of professional liability insurance coverage, such coverage shall be issued by companies either licensed or admitted to conduct business in California so long as such insurer possesses the aforementioned Best rating.

j Contractor shall immediately notify City if any required insurance lapses or is otherwise modified and cease performance of this Agreement unless otherwise directed by City. In such a case, City may procure insurance or self-insure the risk and charge Contractor for such costs and any and all damages resulting therefrom, by way of set-off from any sums owed Contractor.

k. Contractor agrees that in the event of loss due to any of the perils for which it has agreed to provide insurance, Contractor shall look solely to its insurance for recovery. Contractor hereby grants to City, on behalf of any insurer providing insurance to either Contractor or City with respect to the services of Contractor herein, a waiver of any right to subrogation which any such insurer may acquire against City by virtue of the payment of any loss under such insurance.

l. Contractor shall include all subcontractors, if any, as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor to City for review and approval. All coverages for subcontractors shall be subject to all of the requirements stated herein.

m. Contractor shall maintain during the life of this Agreement insurance covering Sexual Abuse and Molestation arising out of the performance of this Agreement with a minimum limit of One Million Dollars ($1,000,000) per occurrence and One Million Dollars ($1,000,000) in the aggregate for sexual abuse and molestation insurance that shall protect the Contractor and the City from any and all claims of any nature for damages related to sexual abuse and molestation arising from performing any portion of the Services by Contractor. A separate additional

insured endorsement shall be provided to include the City and its officers, officials, employees, agents, and volunteers as additional insured in the policy.

19. Termination. City may for any reason terminate this Agreement by giving Contractor not less than five (5) days' written notice of intent to terminate. Upon receipt of such notice, Contractor shall immediately cease work, unless the notice from City provides otherwise. Upon the termination of this Agreement, City shall pay Contractor for services satisfactorily provided and all allowable reimbursements incurred to the date of termination in compliance with this Agreement, unless termination by City shall be for cause, in which event City may withhold any disputed compensation. City shall not be liable for any claim of lost profits.

20. Maintenance and Inspection of Records. In accordance with generally accepted accounting principles, Contractor and its subcontractors shall maintain reasonably full and complete books, documents, papers, accounting records, and other information (collectively, the "records") pertaining to the costs of and completion of services performed under this Agreement. City and its authorized representatives shall have access to and the right to audit and reproduce any of Contractor's records regarding the services provided under this Agreement. Contractor shall maintain all such records for a period of at least three (3) years after termination or completion of this Agreement. Contractor agrees to make available all such records for inspection or audit at its offices during normal business hours and upon three (3) days' notice from City, and copies thereof shall be furnished if requested.

21. Compliance with all Laws/Immigration Laws.

a. Contractor shall be knowledgeable of and comply with all local, state and federal laws which may apply to the performance of this Agreement.

b. If the work provided for in this Agreement constitutes a "public works," as that term is defined in Section 1720 of the California Labor Code, for which prevailing wages must be paid, to the extent Contractor's employees will perform any work that falls within any of the classifications for which the Department of Labor Relations of the State of California promulgates prevailing wage determinations, Contractor hereby agrees that it, and any subcontractor under it, shall pay not less than the specified prevailing rates of wages to all such workers. The general prevailing wage determinations for crafts can be located on the website of the Department of Industrial Relations (www.dir.ca.gov/DLSR). Additionally, to perform work under this Contract, Contractor must meet all State registration requirements and criteria, including project compliance monitoring.

c. Contractor represents and warrants that it:

(1) Has complied and shall at all times during the term of this Agreement comply, in all respects, with all immigration laws, regulations, statutes, rules, codes, and orders, including, without limitation, the Immigration Reform and Control Act of 1986 (IRCA); and

(2) Has not and will not knowingly employ any individual to perform services under this Agreement who is ineligible to work in the United States or under the terms of this Agreement; and

(3) Has properly maintained, and shall at all times during the term of this Agreement properly maintain, all related employment documentation records including, without limitation, the completion and maintenance of the Form I-9 for each of Contractor's employees; and

(4) Has responded, and shall at all times during the term of this Agreement respond, in a timely fashion to any government inspection requests relating to immigration law compliance and/or Form I-9 compliance and/or worksite enforcement by the Department of Homeland Security, the Department of Labor, or the Social Security Administration.

d. Contractor shall require all subcontractors or subconsultants to make the same representations and warranties as set forth in Subsection 21.c.

e. Contractor shall, upon request of City, provide a list of all employees working under this Agreement and shall provide, to the reasonable satisfaction of City, verification that all such employees are eligible to work in the United States. All costs associated with such verification shall be borne by Contractor. Once such request has been made, Contractor may not change employees working under this Agreement without written notice to City, accompanied by the verification required herein for such employees.

f. Contractor shall require all subcontractors or sub-consultants to make the same verification as set forth in Subsection 21.e.

g. If Contractor or subcontractor knowingly employs an employee providing work under this Agreement who is not authorized to work in the United States, and/or fails to follow federal laws to determine the status of such employee, that shall constitute a material breach of this Agreement and may be cause for immediate termination of this Agreement by City.

h. Contractor agrees to indemnify and hold City, its officers, officials, agents and employees harmless for, of and from any loss, including but not limited to fines, penalties and corrective measures City may sustain by reason of Contractor's failure to comply with said laws, rules and regulations in connection with the performance of this Agreement.

22. **Governing Law and Venue**. This Agreement shall be construed in accordance with and governed by the laws of the State of California and Contractor agrees to submit to the jurisdiction of California courts. Venue for any dispute arising under this Agreement shall be in Orange County, California.

23. **Integration**. This Agreement constitutes the entire agreement of the parties. No other agreement, oral or written, pertaining to the work to be performed under this Agreement shall be of any force or effect unless it is in writing and signed by both parties. Any work performed

which is inconsistent with or in violation of the provisions of this Agreement shall not be compensated.

24. **Notice**. Except as otherwise provided herein, all notices required under this Agreement shall be in writing and delivered personally, by e-mail, or by first class U.S. mail, postage prepaid, to each party at the address listed below. Either party may change the notice address by notifying the other party in writing. Notices shall be deemed received upon receipt of same or within three (3) days of deposit in the U.S. Mail, whichever is earlier. Notices sent by e-mail shall be deemed received on the date of the e-mail transmission.

"CONTRACTOR"	"CITY"
The HUB OC 1439 West Chapman Ave., Ste. 196 Orange, CA 92868	City of Orange 300 E. Chapman Avenue Orange, CA 92866-1591
Attn.: Holiday Zimmerman	Attn.: Emily Bustamante
Telephone: (949) 466-2505 E-Mail: holiday@thehuboc.org	Telephone: (714) 744-7287 E-Mail: ebustamante@cityoforange.org

25. **Counterparts**. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Signatures transmitted electronically shall have the same effect as original signatures.

[Remainder of page intentionally left blank; signatures on next page]

IN WITNESS of this Agreement, the parties have entered into this Agreement as of the year and day first above written.

"CONTRACTOR"	**"CITY"**
THE HUB OC, a California nonprofit corporation	CITY OF ORANGE, a municipal corporation
*By:_____ Printed Name:_____ Title:_____	By:_____ Daniel R. Slater, Mayor
*By:_____ Printed Name:_____ Title:_____	ATTEST: _____ Pamela Coleman, City Clerk
	APPROVED AS TO FORM: _____ Nathalie Adourian, City Attorney

***NOTE:** **City requires the following signature(s) on behalf of the Contractor:**

-- **(1) the Chairman of the Board, the President or a Vice-President, AND (2) the Secretary, the Chief Financial Officer, the Treasurer, an Assistant Secretary or an Assistant Treasurer. If only one corporate officer exists or one corporate officer holds more than one corporate office, please so indicate. OR**

-- **The corporate officer named in a corporate resolution as authorized to enter into this Agreement. A copy of the corporate resolution, certified by the Secretary close in time to the execution of the Agreement, must be provided to City.**

√

IN WITNESS of this Agreement, the parties have entered into this Agreement as of the year and day first above written.

"CONTRACTOR"

THE HUB OC

*By: _____
Printed Name: Holly Zimmerman
Title: CEO

*By: _____
Printed Name: Kevin Ritchie
Title: Treasurer

"CITY"

CITY OF ORANGE, a municipal corporation

By: _____

Daniel R. Slater, Mayor

ATTEST:

_____
Pamela Coleman, City Clerk

APPROVED AS TO FORM:

_____
Nathalie Adourian, City Attorney

***NOTE:** **City requires the following signature(s) on behalf of the Contractor:**

-- **(1) the Chairman of the Board, the President or a Vice-President, AND (2) the Secretary, the Chief Financial Officer, the Treasurer, an Assistant Secretary or an Assistant Treasurer. If only one corporate officer exists or one corporate officer holds more than one corporate office, please so indicate. OR**

-- **The corporate officer named in a corporate resolution as authorized to enter into this Agreement. A copy of the corporate resolution, certified by the Secretary close in time to the execution of the Agreement, must be provided to City.**

√

EXHIBIT "A"

SCOPE OF SERVICES

The scope of services for Youth & Teen Day Camp Provider Services shall include "Contractor's Proposal" for RFP No. 25-26.11, included as Pages A-2 through A-32 of this Exhibit. The scope of services shall also include any requirements included in the City's referenced "RFP No. 25-16.11" (Youth & Teen Day Camp Provider Services) and associated addenda. In the event of a discrepancy between these contract documents, Exhibit A shall govern.

[CONTINUED ON FOLLOWING PAGE]

YOUTH CENTERS of orange

YOUTH & TEEN SUMMER DAY CAMP PROVIDER

REQUEST FOR PROPOSAL (RFP)

NO. 25-26.11

THE Hub OC

Cover Letter

Dear Members of the Selection Committee,

On behalf of The Hub OC and the Youth Centers of Orange, thank you for the opportunity to submit this proposal to partner with the City of Orange in providing summer camp programming for the children and teens of our community.

At its core, our work has always been about more than child care. We believe summer camp should be a place where young people are safe, supported, challenged, and inspired. A place where children can explore new interests, build confidence, form meaningful relationships, and experience the joy of belonging. Our goal is to create environments that serve as a launchpad for growth, helping students become more confident, compassionate, and engaged members of their community.

The Youth Centers of Orange was created here, in the City of Orange, for the families who live here. From the beginning, our programs have been shaped by the values, relationships, and needs of this city. Because we have grown alongside Orange and in partnership with the City, Orange Unified School District, and local organizations, our programs reflect what makes this community special: a strong sense of connection, shared responsibility, and care for one another. This hyper-local foundation allows us to operate not just as a service provider, but as a true community partner.

We believe that summer camp is a powerful opportunity to help students discover who they are and who they can become. Through engaging activities, enrichment, leadership development, and opportunities to give back, students are encouraged to be courageous, to try new things, and to grow in confidence. Just as importantly, they learn how to care for others, work as part of a team, and see themselves as contributing members of their city. Our programs are intentionally designed to be equitable and inclusive, bringing together students from different backgrounds and experiences and reinforcing the belief that we all belong and we all have something valuable to offer.

This same philosophy extends to our staff and partners. We are committed to building teams who lead with integrity, compassion, and professionalism, and who model the values we hope to instill in our students. By creating consistent, relationship-driven environments, we ensure that children and teens feel known, supported, and excited to show up each day.

We are honored to submit this proposal and to share not only how we would operate a summer camp program, but why this work matters so deeply to us. We look forward to the opportunity to continue serving the City of Orange and to help create a summer experience that reflects the heart, values, and community spirit of this city.

Thank you for your consideration.

With gratitude,

Holiday Zimmerman
Chief Executive Officer
holiday@thehuboc.org
949-466-2505
1439 West Chapman Ave. Ste. 196
Orange, CA 92868

Please find included in this package, the full application for RFP NO. 25-26.11: Youth & Teen Summer Day Camp Provider. Included in this package are the following items:

I. Cover Letter (page 1)

II. Firm Information (page 4)

III. Program Proposal (page 6)

IV. Firm Experience (page 22)

V. Cost Proposal (in separate sealed envelope)

VI. Appendix B:

a) Proposer's Compliance with Insurance Requirements

b) Proposer's Compliance with Provisions for Professional Services

c) Noncullusion Affidavit

d) Certification of Proposal

VII. Appendix C

a) Summer Camp Marketing & Registration Timeline

b) Examples of Media and Outreach from Summer 2025

Firm Information

1. **Legal name:** The Hub OC
2. **Type of organization:** Non-profit 501(c)3 and fiscal sponsor to Youth Centers of Orange (YCO)
3. **Number of employees:** 50 employees
4. **Business address:** 1439 West Chapman Ave. Ste. 196 Orange, CA 92868
5. **Years in operation:** 8.5 years

6. **Description of the firm's experience in youth, teen, or recreation programming:**

The Youth Centers of Orange ("YCO"), is a subsidiary of the parent organization and fiscal sponsor Hub OC, a family of programs that empower, encourage and support change for individuals, families, and communities. The Youth Centers of Orange (YCO), seeks to create a better tomorrow for youth in the city of Orange by providing mentoring, community engagement opportunities, enriching activities, and leadership and life skills development for the youth of today.

The Youth Center was originally located in historic Old Towne Orange, which has a rich history of youth development at the YMCA and YWCA since the 1940's and where YCO has operated until only just recently. In April of 2017, the youth center opened their doors to hundreds of eager youth and families. Originally established as the Old Towne Boys & Girls Club in 2017, the youth center opened in partnership with the Tustin Club, which had been running programs at Handy Park since 2013. Then, in 2018, the Youth Centers of Orange was born, and became an independent after school program serving the youth and families of Orange. By being Orange-centered, "For Orange, By Orange, In Orange," YCO is ensuring this resource will be sustained for future generations. In June 2020, The Hub OC was able to come alongside the YCO as a fiscal sponsor to help it continue to grow and serve the families and youth of Orange.

(Firm experience continued)

YCO currently serves 350 students ages 5-13 on a daily basis with more than 500 unique children served over the course of the calendar year. YCO offers a sweeping range of enriching programming that includes art, music, sports, outdoor recreation, tutoring, structured and unstructured play. Within all areas of the program, students learn interpersonal skills, teamwork, and to respect themselves and others. Because the parents of most of our youth work long hours, these out-of-school enrichment opportunities are critical to our youth. Many do not have an adult to greet them at home after school, to play with them, ask about their day or help them with their homework. YCO fills this gap for youth, as well as for their working parents.

The Youth Centers of Orange is a female-led nonprofit, with two women filling the executive level roles of CEO and HUB Program Director. The extended leadership team includes two Hispanic staff members serving as Director of The Youth Centers of Orange and YCO Director of Programming. Employees report to a Director, the Directors report to the HUB Director of Programs, the HUB Director of Programs reports to the CEO, the CEO reports to the board of directors. Between the CEO, HUB Program Director, Director of the YCO, and YCO Director of Programming, the staff bring 71+ collective years of experience providing structured programming and training in social work and education. From the beginning, YCO has been a strong, trusted partner with the City of Orange and Orange Unified School District.

After starting a sports-based ELOP program bringing targeted enrichment to students, the YCO has expanded to now serve five schools with 14 enrichment programs ranging from tutoring, sports, art, STEM, gaming, anime, and more. In the Fall of 2022, YCO won the Orange Chamber of Commerce's "Nonprofit of the Year" award for providing a safe place for youth ages five and up, among other services.

Program Proposal

1. Description of proposed camp model, themes, activities, and daily structure.

The Youth Centers of Orange, fiscally sponsored by The Hub OC, proposes a full-day summer camp program that will provide a safe, inclusive, and enriching day camp environment for over 200 youth and teen participants across the City of Orange. The program is designed to meet all City requirements, including appropriate staffing ratios, required certifications, training, background checks, and consistent communication and reporting with City staff throughout the contract term. Built on a proven, rotation-based camp model that balances active play, creative enrichment, and relationship-building, this approach has been successfully implemented through prior collaboration with the City of Orange and Orange Unified School District, including the successful operation of the City's summer camp program in the previous year.

Campers are grouped by age to ensure activities are developmentally appropriate while still fostering a strong sense of community across the full camp. Younger and older groups rotate through activities at different paces, allowing staff to tailor instruction, games, and expectations while maintaining a unified camp experience. Programming is organized around weekly themes that unify games, crafts, challenges, and special activities. Camp themes will be released as part of the program's marketing and outreach efforts and will remain to be determined until that time. Theme development will be informed by feedback from families who participated in the previous summer program, along with new ideas designed to keep programming fresh, creative, and engaging for returning and new campers alike. While themes may vary from year to year, each week is fully planned in advance and integrated consistently throughout the daily schedule.

Daily activities are intentionally balanced to keep students active, engaged, and supported. Each day includes large-group games that promote teamwork and physical activity, small-group rotation stations offering arts and crafts, structured games, STEM-style challenges, and enrichment activities, as well as supervised choice-based time that allows students to participate in board games, card games, and guided free-play options within clear expectations. Weekly field trips are incorporated to provide students with enriching off-site experiences and serve as

highlights of the summer program. Camp operates from 7:00 a.m. to 6:00 p.m Monday through Friday with field trips on Wednesdays, providing families with reliable, full-day care. Each day follows a predictable rhythm that supports smooth transitions and positive behavior. Mornings begin with open arrival, followed by a camp meeting where expectations are set, themes are introduced, and students connect with staff and peers. The remainder of the day alternates between group games, rotation blocks, meals, open club time, and afternoon programming, concluding with supervised end-of-day activities and structured cleanup and dismissal. Families will be asked to provide lunch for their children each day. A daily snack will be provided by the program, and students will have consistent access to water throughout the day. In addition, the program will maintain a small reserve of lunches to support students whose families may be unable to provide a meal on a given day. These reserve meals will be made available through the program's existing partnership with Second Harvest, ensuring that all students are supported and able to fully participate in camp.

Primary camp operations will be based at Shaffer Park, consistent with the previous summer's successful programming. The YCO will provide all necessary staffing, equipment, and program supplies required to operate the camp safely and effectively at this location. Friends Church will continue to serve as a secondary site for specialty programming, special gatherings, or targeted experiences such as teen-focused activities, with staffing and materials provided by the YCO as needed. Unlike the prior year, field trips will depart directly from Shaffer Park, allowing for more streamlined supervision and logistics. Friends Church will be reserved for intentional program use rather than serving as a primary field trip staging location. At all program sites, YCO staff will ensure daily cleanup of all utilized areas and the proper storage of materials and equipment at the end of each day, maintaining clean, organized, and respectful use of City and partner facilities. This camp model emphasizes consistency, creativity, and care, ensuring that students experience a safe, engaging, and well-organized summer environment while families receive dependable, high-quality child care.

The Youth Centers of Orange regularly leverages long-standing relationships within the City to create unique and meaningful experiences for students. Through ongoing partnerships with the Orange Police Department and Orange Fire Department, officers and firefighters regularly visit

programs to play games, participate in activities, and build positive, trust-based relationships with students. These connections, developed over several years, help foster mutual respect and community pride. In addition, partnerships with organizations such as the Elks Lodge, the Orange Community Foundation, Assistance League, and other local partners allow the program to offer special activities, events, and enrichment opportunities that reflect the strength of community collaboration in the City of Orange.

Teen Program Overview

The Youth Centers of Orange will offer a dedicated teen program designed to build leadership skills, strengthen relationships, and provide meaningful enrichment experiences for older youth. Building on the success of last year's highly effective teen program, this model creates a structured yet engaging environment where teens are encouraged to grow as leaders while still enjoying a fun and social camp experience. Programming is intentionally designed to support mentorship, leadership development, values-based decision-making, and positive peer relationships, all led by a highly trained staff team with extensive experience working with teens.

Teen programming balances structured activities with appropriately supervised unstructured time, allowing students to relax, connect with peers, and build community in a healthy way. Activities include team-building challenges, organized games, arts and crafts, STEM-style projects, and special group experiences designed specifically for teens. In addition, the program incorporates service and giving-back opportunities, including supporting younger campers, leading games and activities, and participating in community-based service projects such as cleanups and other hands-on initiatives. This approach encourages responsibility, confidence, and a sense of contribution while keeping teens active, engaged, and off their phones.

The teen program is designed to be highly relational, active, and purpose-driven, ensuring that participants experience a summer that is both enjoyable and impactful. Through consistent staff support, intentional programming, and opportunities for leadership and service, teens are provided with a positive space to grow, connect, and contribute to their community.

2. Staffing plan and training approach.

The summer camp program will be overseen by a Camp Director who is responsible for overall program operations, staff supervision, family communication, and coordination with City partners. The Camp Director provides consistent on-site leadership, ensures program quality and safety, and serves as the primary point of contact for daily operations and decision-making.

Supporting the Camp Director will be Program Coordinators, who manage daily schedules, activity rotations, materials, and student group organization. Coordinators play a key role in maintaining smooth transitions, supporting program staff, and ensuring that activities are delivered consistently and in an age-appropriate manner. They also assist with behavior support, staff coaching, and real-time problem solving throughout the day.

Program Staff are responsible for directly supervising students and facilitating daily activities, including group games, rotation stations, enrichment activities, and open club time. Whenever possible, staff are assigned to consistent groups to promote relationship-building, stability, and a positive camp culture. Staffing levels are structured to maintain appropriate supervision ratios at all times in alignment with state guidelines and best practice standards, including a 1:20 staff-to-student ratio for general programming and a more supportive 1:10 ratio for kindergarten-aged students. These ratios are maintained during all aspects of the camp day, including outdoor activities, meals, transitions, and field trips, to ensure consistent supervision and student safety. The teen camp will operate under the same staffing framework and quality standards. The teen camp will be overseen by a dedicated Camp Director, supported by Program Coordinators and Program Staff, to ensure age-appropriate programming, supervision, and engagement for older youth. This parallel leadership structure allows for intentional programming while maintaining consistency across the overall summer camp experience.

All staff members are background checked and livescanned and participate in a comprehensive pre-camp training process prior to the start of the summer program. Required training includes mandated reporter training, CPR and First Aid certification, food safety training, and all standard childcare and youth supervision requirements. Staff are also trained on camp policies and

procedures, behavior management strategies, emergency and safety protocols, professional conduct expectations, and the daily rotation-based program model. Staff recruitment and hiring prioritize individuals who are committed to youth development and interested in long-term work with children, including those pursuing careers in education, psychology, coaching, and related fields. The Youth Centers of Orange actively recruits through community partnerships and higher education institutions, including Chapman University, Santiago Canyon College, and other local programs, working directly with academic departments to identify candidates seeking meaningful summer employment working with youth.

The program also partners with individuals currently working within the Orange Unified School District academic environment to supplement summer staffing, ensuring strong alignment with school-year expectations and student needs. In addition, YCO intentionally leverages its full-time and school-year staff during the summer months, creating continuity for students who are already familiar with program leaders and staff.

The Youth Centers of Orange maintains a high staff retention rate, with more than 60% of summer staff returning from school-year programming. This continuity allows the program to operate with experienced team members who are already familiar with program operations, safety expectations, and the organization's values and approach to serving students and families. This consistent staffing model strengthens relationships, improves program quality, and ensures a stable and supportive environment for students year after year.

Training and support continue throughout the summer through on-site coaching, daily check-ins, and regular staff meetings. This ongoing approach allows leadership to address challenges in real time, reinforce expectations, and provide additional guidance as needed, ensuring consistency, accountability, and high-quality care throughout the program. This staffing and training model prioritizes student safety, staff preparedness, and program quality, while creating a supportive environment where children and youth feel known, supported, and engaged each day.

3. Key personnel assigned to the program, including program lead.

Joanna Fermin: Director, Youth Centers of Orange

Joanna Fermin serves as the Director overseeing all Youth Centers of Orange programs and brings more than a decade of experience working directly with elementary-age students in both classroom and out-of-school-time settings. She has worked with students since 2014 and has been part of the Youth Centers of Orange team since 2017, providing consistent leadership and program oversight across multiple sites and initiatives. Joanna holds a Master's degree in Special Education from Chapman University and has extensive experience supporting students with diverse learning needs. Her background in special education informs her leadership approach, ensuring that programs are inclusive, structured, and responsive to a wide range of student abilities and behavioral needs.

In her current role, Joanna oversees programming at approximately five elementary school sites, managing more than a dozen individual programs each semester and supporting services for over 400 students during a typical program cycle. Her responsibilities include staff supervision, program design and implementation, safety oversight, and coordination with school and community partners.

In addition to her professional training, Joanna brings a strong cultural competency to her work. Drawing from her own lived experience and deep understanding of the communities served, she is able to build trust with families, connect meaningfully with students, and design programs that reflect the cultural realities and needs of the families YCO serves. This perspective strengthens family engagement and ensures programming is both relevant and supportive. Joanna's combination of educational expertise, operational leadership, and relational approach makes her a key leader in delivering high-quality, safe, and impactful youth programming, including large-scale summer camp operations.

Lauren Bethencourt: Sports Coordinator, Youth Centers of Orange

Lauren Bethencourt serves as the Sports Coordinator for the Youth Centers of Orange and brings nearly a decade of experience working with children through coaching, physical education, and youth development programming. She has been working with students since 2016 and holds an academic background in Kinesiology, Coaching, and Education, which informs both her instructional approach and curriculum development. Lauren has over eight years of coaching experience, during which she has developed a strong foundation in relationship-building, youth motivation, discipline, and team development. Her coaching background has shaped her ability to create positive group culture, encourage participation from students of all skill levels, and support social-emotional growth alongside physical development.

In her current role with YCO, Lauren leads sports programming at Palmyra Elementary and is responsible for building and implementing sports curriculum that emphasizes inclusion, teamwork, and confidence-building. She works directly with students throughout the day and is highly relationship-oriented, focusing on helping students feel seen, supported, and capable regardless of prior athletic experience. Lauren played a key role in the growth and expansion of YCO's sports programming. What began as a small after-school offering serving approximately 10–11 students has grown under her leadership into a robust program serving over 200 students daily at Palmyra Elementary, with sports programming expanding to additional school sites. This growth reflects her ability to design engaging curriculum, build trust with students and families, and scale programming while maintaining quality and consistency.

Drawing from her experience as both an athlete and a coach, Lauren integrates team-based learning, discipline, time management, and collaboration into her programming. She emphasizes that sports serve not only as physical activity, but as a vehicle for teaching life skills, leadership, and perseverance. Her curriculum and leadership play a key role in creating safe, engaging, and developmentally appropriate programming for students during both the school year and summer camp.

Edgar Garnica: Program Director, Youth Centers of Orange

Edgar Garnica brings more than 16 years of experience in youth development, program coordination, and site leadership, making him a foundational leader within the Youth Centers of Orange. Over the course of his career, Edgar has supported generations of students, watching children grow into young adults and, in many cases, return to youth service as mentors and leaders themselves as a direct result of his influence. Edgar has served as a mentor to hundreds of students, providing consistent guidance, encouragement, and structure throughout their formative years. He is widely known for his deep personal investment in the children and families he serves. Edgar regularly shows up for students beyond program hours, attending baseball games, spelling bees, school performances, and community events, reinforcing trust and connection with both students and families.

Professionally, Edgar is highly skilled in youth supervision, activity facilitation, behavior management, and program operations. He is an experienced leader of large groups and is equally effective working one-on-one with students and families navigating challenging circumstances. His ability to balance structure with compassion allows him to manage environments while still ensuring that individual children feel seen and supported.

Edgar currently plays a key leadership role at Palmyra Elementary, helping oversee programming for more than 200 students each day. He leads morning programming and multiple ELOP clubs, including sports programming and run club, and supports staff across programs through coaching, training, and mentorship. He is also experienced in overseeing large-scale field trips, ensuring student safety, clear supervision, and smooth operations at all times. What sets Edgar apart is his ability to bring joy, stability, and trust into youth spaces. His presence creates environments where students feel safe, staff feel supported, and families feel confident in the care their children receive. Edgar continues to mentor and develop staff, helping grow the next generation of youth professionals within the Youth Centers of Orange.

Kenna "KP" Pettaway: Director, Youth Centers of Orange

Kenna "KP" Pettaway brings more than 10 years of experience working with youth across elementary, middle school, high school, and teen populations. Since 2012, he has served students through mentorship, coaching, teaching, and program leadership, building strong relationships grounded in trust, consistency, and personal growth. KP's background includes work in student safety and campus support in a high school setting, where he focused on maintaining safe environments while serving as a trusted mentor to students. He has also supported computer literacy instruction, helping students build practical skills, and has led enrichment activities including sports, music, and group-based learning.

Throughout his career, KP has led large-scale youth programs and events, including supervising groups of up to 80 students at off-site camps and experiences and supporting events serving hundreds of students. These roles required detailed planning, logistics coordination, supervision, and risk management comparable to large-scale camp and field trip operations. KP joined the Youth Centers of Orange as a Sports Coordinator, where he successfully launched and scaled a new sports program at a school new to YCO. What began as a program serving five students grew within a year to 25 students, and has since expanded to 40 students, with waitlists reflecting strong family and student engagement. In addition to sports programming, KP has supported the development and expansion of ELOP enrichment programs, building relationships across elementary, middle, and high schools to support long-term student engagement. He also designed and led the Youth Centers of Orange's first teen summer camp program, which was highly successful and generated interest from additional school partners.

KP's leadership is defined by his ability to connect with students, manage complex programs, and build trust with families and staff. His experience in mentorship, safety-focused environments, and program development makes him a strong leader within the Youth Centers of Orange and a valuable asset to the summer camp program.

4. Subcontractors/subconsultants intended to be utilized as a part of the program.

The Hub OC and the Youth Centers of Orange will not utilize subcontractors for the operation or delivery of the summer camp program. All core programming, supervision, and daily operations will be led and managed directly by Hub OC/YCO staff to ensure consistency, accountability, and alignment with program standards. From time to time, the program may host special guest activities led by volunteer individuals or community organizations who offer unique skills or experiences that enhance the camp experience. These activities are not part of ongoing service agreements and are not subcontracted services. Instead, they are one-time or occasional enrichment opportunities designed to expose students to new experiences and community resources.

Examples may include volunteer-led activity days such as animal education experiences, arts demonstrations, sports clinics, or special interest workshops. These opportunities are dependent on availability and community partnerships and are offered as supplemental programming rather than core camp services. All guest activities are supervised by the Hub OC/YCO staff and held to the same safety and behavioral expectations as regular camp programming. This approach allows the program to maintain full operational control while also creating opportunities for meaningful community engagement and unique learning experiences for students.

5. Safety and supervision plan

The safety and well-being of all participants is a core priority of the summer camp program. The Hub OC, fiscal sponsor to the Youth Centers of Orange, maintains clear safety protocols, strong supervision practices, and consistent staff oversight to ensure a safe, structured, and supportive environment for every child. Students are supervised at all times by trained staff, with clear staff-to-student ratios maintained throughout the day, including during outdoor play, activity rotations, meals, transitions, and field trips. Camp spaces are intentionally organized to allow for clear lines of sight, controlled movement, and effective supervision. Staff are assigned to consistent student groups whenever possible to promote familiarity, accountability, and strong relationships. Daily operations follow a predictable schedule that supports safety and reduces

behavioral challenges. Transitions between activities are structured and led by staff, with clear expectations communicated to students. Attendance is tracked throughout the day, including during arrivals, departures, transitions, and off-site activities, to ensure accurate accountability at all times.

All staff are trained in mandated reporter responsibilities, CPR and First Aid, food safety, and standard youth supervision and childcare requirements. The Youth Centers of Orange maintains clear and consistent procedures for emergency response, injury and incident reporting, and weather-related contingencies to ensure the safety of all participants at all times. These procedures align with City requirements and best practice standards for youth programming. Each program location operates under a site-specific disaster preparedness plan. Once final camp locations are confirmed, detailed emergency and evacuation plans will be reviewed and implemented for each site. If Shaffer Park and Friends Church are approved as program locations, the YCO has established disaster readiness plans already in place for both environments, which will be reviewed with staff prior to the start of camp.

The program utilizes a structured injury and incident reporting process, managed through its digital family management platform. This system allows staff to document incidents in real time and ensures that parents and guardians are notified as promptly as possible. Incident reports are tracked internally to support follow-up, communication, and ongoing safety oversight. Clear emergency procedures are in place and reviewed with staff during pre-camp training. Staff are trained on appropriate response protocols, communication procedures, and escalation processes to ensure student safety and timely coordination with leadership and emergency services if needed. The program also maintains weather contingency plans to ensure continuity of programming and safety during changing conditions. Daily schedules are designed to be flexible, allowing programming to shift indoors or adjust activities as needed in response to heat, rain, or other weather-related concerns. Field trips and outdoor activities include backup plans to ensure student safety while maintaining a positive camp experience.

To support on-site and off-site safety, first aid kits and safety supplies are available at all times. During field trips, designated safety backpacks remain with program coordinators and staff. Multiple backpacks are assigned per group to ensure that necessary supplies, emergency

information, and first aid materials are readily accessible throughout the day. Field trips are planned and supervised with the same level of care and structure as on-site programming. Staff conduct headcounts before departure, during transport, upon arrival, throughout the activity, and prior to returning to camp. Students are grouped with designated staff, and clear expectations are communicated before each trip to ensure student safety and smooth operations.

All guest activities and volunteer-led enrichment experiences are supervised by camp staff and must follow established safety and behavior expectations. Volunteers and guest presenters do not assume supervisory responsibility for students and operate under staff oversight at all times. Through consistent supervision, trained staff, clear procedures, and strong leadership, the program creates a safe environment where students can participate confidently and families can trust that their children are well cared for throughout the summer.

6. Marketing and outreach plan.

The Youth Centers of Orange will implement a clear, organized, and accessible marketing and outreach plan designed to ensure broad community awareness, equitable access, and strong enrollment for the City of Orange summer camp program. This strategy reflects both proven outreach methods and expanded digital engagement, demonstrating the organization's capacity to successfully market and operate a large-scale City program. Marketing efforts will follow a phased timeline, beginning with internal preparation and moving through registration launch, sustained outreach, and final enrollment. A detailed Marketing and Registration Timeline is included as an attachment to this proposal (Appendix C) and outlines specific goals and action steps from January through the start of camp. This timeline demonstrates readiness to implement and ensures outreach efforts are timely, coordinated, and effective.

The outreach plan prioritizes direct communication with families through trusted and established channels. The Youth Centers of Orange maintains deep, long-standing partnerships with Orange Unified School District, including school administrators, after-school program families, and community school teams. These relationships allow information to be shared directly with families who already participate in City and school-based programming, supporting early awareness and strong return enrollment. Flyers and digital materials will be distributed through

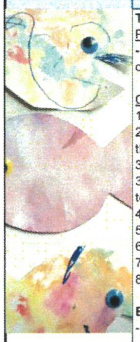
schools and program sites, ensuring families receive accurate and consistent information. The program will also leverage strong partnerships with the City of Orange and local community organizations to broaden outreach beyond school-based families. Community centers, partner organizations, and City-supported spaces will serve as additional access points for families across the City, ensuring the program reaches a wide and diverse population. Digital outreach is a central component of the marketing strategy and will be used consistently throughout the enrollment period. Social media platforms will be utilized to share regular updates, reminders, and program highlights, with increased frequency as registration progresses. In addition to established social media practices, the organization will expand its digital presence through increased website engagement, ensuring camp information is easy to locate, clearly presented, and directly connected to registration links.

All marketing and outreach materials will be provided in English and Spanish, supporting equitable access for families across the City. Materials will be designed to be clear and user-friendly, including the use of QR codes that link directly to the registration platform. Outreach will also include listings on online camp directories, family resource platforms, and submissions to local newspapers and community calendars, further expanding visibility. Registration and ongoing communication will be supported through an established online registration and family management system, which allows families to register, submit required forms, manage payments, and receive timely updates. This system ensures accurate recordkeeping, efficient communication, and responsive customer support throughout the registration and camp season. By combining trusted community relationships, structured outreach planning, bilingual materials, and expanded digital engagement, the Youth Centers of Orange demonstrates a clear and effective approach to marketing the summer camp program.

To support clear implementation and accountability, the Youth Centers of Orange has developed a detailed Marketing and Registration Timeline that outlines month-by-month goals and action steps beginning in January, with registration opening in late February and outreach continuing through the start of camp. This timeline demonstrates the program's readiness to launch, its ability to coordinate outreach across multiple channels, and its commitment to timely, equitable access for families. It also provides the City with a clear view of when key marketing activities,

enrollment pushes, and communication milestones will occur, ensuring transparency and alignment with City expectations.

7. Example program schedule and timeline.

	SUMMER CAMP 2025 Week 5 - Theme: Under the Sea	Thursday	
TIME	**ACTIVITY**	**MATERIALS AND PREP**	**STAFF**
7:00 AM	Open	Materials and Prep	Staff
	1. Turn lights on 2. Check entire building/complete a walk through, don't forget the patio, kitchen, and restrooms 3. **Turn on site phone, turn on tablet**, set up areas, play music 4. Exactly at 7AM (not sooner) unlock, open the doors		Sam Luli
8-8:30 AM	Breakfast	Materials and Prep	Staff
	1. Put gloves on, prepare area, set up breakfast items on the counter 2. Announce breakfast, kids must be cleaned up, dismiss students in groups to form a line		
8:30-9:20AM	Open Club		Staff
	board games, card games, free time		
9:20-9:35AM	Club Meeting		Staff
	Organize the kids by grade level and lines (assembly style) 1. **Hype up the kids! Give a big welcome to their day!** 2. Talk about the themed week and exciting things that are happening like trips and visitors 3. Go over expectations and rules (have kids participate, raise their hands and answer)		Ms. Serena
9:35-10:15AM	Group Game	Materials and Prep	Staff
	SPLIT grades 3-6 and grades K-2 Grades 3-6 are playing kickball Grades K-2 Ocean Relay Race 1. Make 2-3 teams. They each will have their own racing lane. 2. 1st race: Mermaid Tails - Use the potato sacks and hop down to the cone and back. Switch with the next person in line. They must sit in a single file line when they finish. The first team fully sitting in a line, wins. 3. 2nd race: Seahorse gallop - Each team will have one pool noodle and gallop on it like a "sea horse" down to the far cone and back. They must sit in a single file line when they finish. The first team fully sitting in a line, wins. 4. 3rd race: Jellyfish jumping - Place rings on the ground and have kids hop from ring to ring. They must sit in a single file line when they finish. The first team fully sitting in a line, wins. 5. 4th race: Shark race - Place their hands on their head like a shark fin. Run down to the cone and back. They must sit in a single file line when they finish. The first team fully sitting in a line, wins.	- buckets (one for each team) - one big bucket of water - plastic cups - spoons - plastic fish - pool noodles Prep: - set up race lines for the 5 teams, about 20 feet long - 1st race: place an empty bucket at the start cones for each team. place a big bucket of water in the middle of all the racing lanes - 2nd race: pour the buckets of water back into the big bucket. place all of the plastic fish in the big bucket of water. give each team one spoon - 3rd race: each team will get a pool noodle	Ms. Serena
10:15-10:50AM	1st Rotation	Materials and Prep	Staff
	**Tie-Dye Fish** Prep: - Shred/rip/cut the crepe paper into pieces about 2 inches big. Keep them organized by color in piles Craft 1. Each student will get a fish template and cut it out with scissors (we can prep this too) 2. Once they have their fish cut out, they can choose 20 pieces of crepe paper, any colors that they would like 3. Next, place the fish on a newspaper/placemat and wet it with the spray bottle 3. Then lay out the crepe paper on the fish so that the whole fish is covered. Pay attention to the colors and patterns you create 4. Use the spray bottle and spray the crepe paper onto the fish 5. Let it rest for about a minute 6. Peel off the tissue paper to reveal the creative design 7. Let the fish dry a little, then glue a googly eye on the fish (optional) 8. Lastly, use the markers to draw fins or make any other design that they want (optional) **BACK-UP - Build a shark template** - design and color their own shark - cut it out and assemble	Fish template: https://suncatcherstudio.com/uploads/patterns/fish/pdf-png/simple-fish-pattern-fffff.png Scissors Crepe paper/streamers/tissue paper: https://a.co/d/7fWbeK5 Spray bottle with water Googly eyes Markers News paper or placemats to keep the tables from getting messy	Ms. Desi Ms. Amy
10:50-11:25AM	2nd Rotation	Materials and Prep	Staff

	**Crab Walk Soccer** 1. Divide the group into 2 even teams. Assign them each to defend a side/goal 2. Demonstrate how to crab walk. Let the kids try it. Tell them they will be crab walking and playing soccer. 3. Go over the rules: Only kick the ball, you must be crabwalking (if you get tired, you can sit criss-cross where you are), no chipping it in the air because we don't want to hit anyone in the face, no one can touch the ball with their hands, even the goalie is in crab position 4. Give them time to organize their team and get into positions 5. On the "tweet," the game can begin. Keep score 6. For differentiation: the teams can be switched if there is clearly an uneven advantage.	- Soccer pug goals - cones - soccer balls Prep: - make a small soccer field with the cones and the pug goals	Ms. Jenny
11:25AM-12PM	3rd Rotation	Materials and Prep	Staff
	**Turtle Craft** 1. Each student will get a turtle template 2. Students will color the turtle however they would like 3. When done coloring, they will cut out the turtle 4. Once cut, they will glue the flaps of the turtle together to create a pointy shell	- turtle template sheet - markers/colored pencils/crayons - scissors - glue/tape	Coach Luli
12-12:30PM	Lunch	Materials and Prep	Staff
	1. Sit all students in designated area 2. Go over expectations and rules for lunch - all kids must be sitting down while eating lunch - no other activites should be happening 3. Dismiss kids by table groups/areas		
12:30-1:45PM	Open Club/ Pit rotation		Staff
	board games, card games, free time		
1:45-2:20PM	1st Rotation	Materials and Prep	Staff
	**Beach Pudding Cups** 1. Students can divide themselves amongst the tables. Once they are seated, each student will recieve a pudding cup and a clear cup. 2. Once the students have their cups, dismiss them by table to take their pudding cups to get a drop of blue food coloring. give them a spoon to mix it up to color their pudding. set this aside. 3. When all students have mixed their pudding to make it blue, hand out the bowl of crumbs to each table with 1 spoon. nstruct them to scoop a little bit of graham cracker crumbs to fill the bottom of the clear cup. This is the sand. 4. Next, instruct them to scoop their pudding into their cup, leaving some space at the top (there WILL be left over pudding in their cups) 5. Then, instruct students to add a little bit of sand on the top 6. When they are done, they can raise their hands to recieve 2-3 sweedish fish to put in their pudding 7. Lastly, hand out the umbrellas once they are done and they can add it on their finished pudding. 8. They can eat it when they are finished.	- Smashed graham cracker crumbs - vanilla pudding - blue food coloring to make it blue - sweedish fish - small pudding cups - spoons - mini drink umbrellas: https://a.co/d/7BKCQoX - spoons Prep: - prepare a small bowl of graham gracker crumbs for each table	Coach Luli (till 2) Ms. Desi Ms. Jenny
2:20-2:55PM	2nd Rotation	Materials and Prep	Staff
	**Tentacale Toss** 1. Have the kids divide themselves among the different toss stations 2. Tell them that the tall cones are worth three points, while the cups are worth 1 point. 3. The one at the front of the line will go first. They will get 3 tosses. 4. Each group will assign a catcher. This person will be the one getting the hula hoop and bringing it back to the person tossing. 5. Rotate after the 3 tosses and until everyone has went. Make sure to keep track of their scores. 6. Those with the highest scores can move up a station, while those with lower scores will move a station (optional)	- Hula hoops or rings - tall cones or pool noodles standing upright - flat cones to make the starting line Prep: - create 3 stations of ring toss by having 5-6 tall cones and 1-2 noodles if they can stand upright - make sure to make a line of cones that students have to stand behind - each stations has 1 hula hoop	Coach Aidan Ms. Serena (till 3)
2:55-3:30PM	3rd Rotation	Materials and Prep	Staff
	Starfish/Shark Headbands - COMPETITION 1. Each student will get a choice of a starfish or a shark headband 2. Design their headband 3. Cut out their headband 4. Assemble the headband	Templates Coloring Materials Scissors Tape/staples	Ms. Cozy Ms. Amy
3:30-4PM	Snack	Materials and Prep	Staff

4-4:30PM	Open Rotation 1	Materials and Prep	Staff
	Dolphin Relay Race 1. Split the group into 4 teams. They each will have their own lane, but divide kids on both ends of their lane 2. Give 1 beach ball to each team 3. 1st race: kids must race down to the other side pushing the beach ball with only their noses. Their teammate on the other side will do the same until everyone has gone. Sit behind your cone when you are done. First team to finish, wins. 4. 2nd race: same set up with students on both sides of their lane. students will have to balance the beach ball with their head all the way down. If it falls, they can restart from where it fell. first team to finish, wins. 5. 3rd race: gather all students back at the starting line on one side. in pairs, students will have to race around the far cone and back, holding up the ball together without using their arms. if the ball falls, restart where it dropped. first team to finish wins	- 4 beach balls: https://a.co/d/4y3oX2v - cones	Ms. Amy Ms. Cozy
4:30-5PM	Open Rotation 2	Materials and Prep	Staff
	Under the sea bingo 1. each student will get a bingo card and a pen. (there WILL be students who have the same card) 2. Using the calling cards, the leader will call the card and the students will cross it off of their card if they have it 2. first student to get bingo across, diagonal, or horizontal will win 3. continue playing until someone gets "full bingo"	- bingo cards (11 different cards) - calling cards	Mr. Aidan Ms. Jenny
5-5:30PM	Open Club	Materials and Prep	Staff
	board games, card games, free time		
5:30-6PM	Clean Up/Closing	Materials and Prep	Staff

Firm Experience

1. Comparable programs delivered within the past ten years.

The Youth Centers of Orange brings extensive experience operating large-scale, high-quality youth programs that closely align with the scope, structure, and expectations of the City of Orange summer camp.

After School Education and Safety (ASES) and Expanded Learning Opportunities Program (ELOP) – Orange Unified School District: The Youth Centers of Orange currently serves as an ASES and ELOP after-school program provider across multiple Orange Unified School District campuses. Through these programs, YCO serves up to 400 students daily during the school year, offering a wide range of enrichment opportunities including sports, art, language, music, STEM, tutoring, and character-building activities. Over the past two years, this work has grown significantly. What began as a single ELOP program in 2023 has expanded to ten active ELOP programs by 2025, demonstrating YCO's ability to scale programming while maintaining quality, consistency, and strong relationships with school partners. In addition, YCO serves as the ASES provider at Palmyra Elementary School, where programming supports more than 200 students each day. These programs require daily supervision, structured scheduling, staff training, safety oversight, family communication, and coordination with district and site leadership, all of which directly parallel the operational demands of a full-day summer camp.

City of Orange Summer Camp Program: In the summer of the previous year, the Youth Centers of Orange successfully operated the City of Orange's summer camp program, serving approximately 120 students daily and more than 300 students over the course of the summer. Programming included both elementary-age students and teens and featured full-day supervision, structured enrichment, outdoor games, themed activities, and weekly field trips. This program demonstrated YCO's ability to manage large enrollment numbers, deliver engaging and age-appropriate programming, coordinate transportation and field trips, and provide consistent care throughout the summer months.

The camp received strong participation and positive feedback from families, reinforcing YCO's capacity to deliver a safe, fun, and well-organized summer experience for City families. Together, these programs reflect YCO's proven ability to operate complex youth programs at scale, manage staffing and safety requirements, and deliver engaging enrichment experiences across both school-year and summer settings. This experience directly positions the organization to successfully operate the City of Orange's summer camp program.

2. Client references and contact information

A) Adolfo Herrera, Administrator
Innovative & Expanded Learning Opportunities
714-628-5360
adolfo.herrera@orangeusd.org
2345 E. Palmyra Ave. Orange, CA 92869

B) Leslie Hardy, Community and Library Services Director
City of Orange
714-744-7276
lhardy@cityoforange.org
300 E. Chapman Ave.
Orange, CA 92866

PROPOSER'S ACKNOWLEDGEMENT OF COMPLIANCE

WITH INSURANCE REQUIREMENTS FOR

AGREEMENT FOR PROFESSIONAL SERVICES

Proposer agrees, acknowledges, understands and is fully aware of the insurance requirements as specified in Section 18, Insurance (Requirements) of the attached sample Agreement for Professional Services and hereby accepts all conditions and requirements as contained therein.

Proposer: Holiday Zimmerman

Name (Please Print or Type)

By: Holiday Zimmerman Executive Director

Proposer's Signature & Title

Date: 12/9/25

PROPOSER'S ACKNOWLEDGEMENT OF COMPLIANCE

WITH PROVISIONS FOR

AGREEMENT FOR PROFESSIONAL SERVICES

Proposer agrees, acknowledges, understands and is fully aware of the sample contract form as specified in Appendix A, attached sample Agreement for Professional Services. Proposer acknowledges conditions and requirements as contained therein. Contractor/Proposer must note any exceptions to the City's standard form professional services agreement as a part of their proposal submission for consideration by the City as part of the proposal, and warrants that the City may utilize proposed exceptions as a grounds for rejection of a proposal.

Proposer: Holiday Zimmerman

Name (Please Print or Type)

By: Holiday Zimmerman Executive Director

Proposer's Signature & Title

Date: 12/9/25

******CONTRACTOR MUST ATTACH PROPOSED EXCEPTIONS TO THE CITY'S STANDARD/SAMPLE PROFESSIONAL AGREEMENT FORM – IF ANY- TO PROPOSAL FOR CONSIDERATION (AFTER THIS PAGE)******

No exceptions to note.

Noncollusion Affidavit

(Title 23 United States Code Section 112 and
Public Contract Code Section 7106)

To the CITY OF ORANGE – DEPARTMENT OF PUBLIC WORKS

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Noncollusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Noncollusion Affidavit.
Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution

DEBARMENT AND SUSPENSION CERTIFICATION TITLE 2, CODE OF FEDERAL REGULATIONS, PARTS 180 & 1200

The Proposer, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal. Exceptions will not necessarily result in denial of award but will be considered in determining proposer responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action. Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

Holiday Zimmerman

Print or Type Name of Proposer

Signature of Proposer

12/9/25

Date

This executed form must be submitted with proposal.

CERTIFICATION OF PROPOSAL

TO THE CITY OF ORANGE

The undersigned hereby submits its proposal and agrees to be bound by the terms and conditions of this Request for Proposal (RFP). By signing the Certification of Proposal and submitting a proposal to the City in response to this Request for Proposals, the Proposer hereby represents and certifies that:

A) No elected or appointed official, officer, or employee of the City has been or shall be compensated, directly or indirectly, in connection with this proposal or for any work connected with this proposal; should any agreement be approved in connection with this Request for Proposals ("Agreement") no elected or appointed official, officer, or employee of the City, during the term of his/her service with the City, shall have any direct or indirect financial interest in the Agreement, or obtain any present anticipated, or future financial interest or other material benefit arising therefrom;

B) No elected or appointed official, officer, or employee of the City shall have any financial interest, direct or indirect, in the Agreement nor shall any such official, officer, or employee participate in any decision relating to the Agreement which effects his/her personal financial interest or the financial interest of any corporation, partnership, or association in which they are, directly or indirectly, interested in violation of state law;

C) The Proposer and its principals do not have now, nor shall it acquire any financial or business interest that would conflict with the performance of services under the Agreement;

D) Proposer shall represent and certify that it does not and will not discriminate against any employee or applicant for employment because of race, religion, gender, color, national origin, sexual orientation, ancestry, material status, physical condition, pregnancy or pregnancy related conditions, political affiliation or opinion, age or medical condition;

E) By submitting the response to this request, Proposer agrees, if selected, to furnish services to the City in accordance with this RFP;

F) Proposer has carefully reviewed its proposal and understands and agrees that the City is not responsible for any errors or omissions on the part of the Proposer and that the Proposer is responsible for them;

G) It is understood and agreed that the City reserves the right to accept or reject any or all proposals and to waive any informality or irregularity in any proposal received by the Cit

H) The proposal response includes all of the commentary, figures and data required e Request for Proposal, dated 12/9/25. The proposal shall be valid for 180 days from the due date of this RFP.

Name of Proposing Firm (Contractor Entity Name): The Hub OC

By: Holiday Zimmerman Executive Director

(Authorized Signature)

Type Name (of Authorized Signer): Holiday Zimmerman **Date:** 12/9/25

Appendix C

Summer Camp Marketing & Registration Timeline

Timeframe	Primary Goal	Key Marketing Actions
January – Early February	Prepare for launch	• Finalize camp dates, pricing, hours, and age groups with the City, if under contract • Re-engage existing registration platform and payment system • Update and translate all marketing materials (English and Spanish) • Generate QR codes linked directly to registration • Finalize website content and registration language • Reach out to local newspapers in Orange County to plan coverage
Late February	Registration launch	• Open official summer camp registration • Launch website registration page • Release initial social media announcements across platforms • Send direct emails to returning families from prior summer camps and school-year programs • Distribute flyers at YCO program sites • Share flyers digitally with Orange Unified schools
March	Build awareness and early enrollment	• Post weekly social media content highlighting camp structure, safety, and hours • Submit camp information to local newspapers and community calendars • Publish listings on online camp directories and family resource platforms • Promote scholarship availability and registration support • Leverage City and community partner networks for outreach

April	Expand community reach	• Increase social media frequency to multiple posts per week • Begin releasing camp themes as they are finalized • Share success messaging and highlights from prior summer camps • Re-distribute flyers through schools, community centers, and partners • Continue bilingual outreach and registration assistance
May	Drive commitment and fill spots	• Promote pay-in-full options and early commitment messaging • Communicate limited availability as sessions begin to fill • Conduct a second round of newspaper and online platform outreach • Follow up with families who started but did not complete registration • Increase direct communication through the registration platform
Early June	Finalize enrollment and prepare families	• Send final registration reminders across all channels • Confirm rosters and manage waitlists • Share "What to Expect" communications with enrolled families • Confirm completion of waivers, emergency forms, and required documents
During Camp	Maintain engagement and visibility	• Share weekly social media highlights showcasing activities and themes • Provide ongoing updates and reminders through the registration platform • Collect informal interest for future programs
Post-Camp	Build future enrollment	• Send thank-you communications to families • Share program highlights and outcomes • Collect family feedback to inform future programming and marketing

Exhibit B

The cost table shown below is illustrative of planned costs to be borne by contractor in service of this contract. NO COST, including those described in this table, will be billed to the City for services under this agreement scope. The City shall provide in-kind use of Shaffer Park as described in this Exhibit to contractor.

Cost Proposal Table

Youth & Teen Summer Day Camp Program

Years 2–4 reflect an 8% annual escalation applied to the Year 1 baseline.

Service Type	Annual Cost (Year 1)	*Annual Cost (Year 2)	*Annual Cost (Year 3)	*Annual Cost (Year 4)	Notes / Breakdown (if applicable)
Staffing	$110,725.96	$119,583.03	$129,149.67	$139,481.64	Camp Director, Site Supervisors/Coordinators, Program Staff; includes payroll taxes, workers' comp, training, certifications, and insurance
Program Delivery	$36,116.67	$39,006.00	$42,126.48	$45,496.60	Enrichment activities, weekly themed programming, guaranteed weekly field trips, plus additional trips throughout the summer
Supplies & Equipment	$9,461.07	$10,217.96	$11,035.40	$11,918.23	Program materials, activity supplies, games, crafts, limited reusable equipment
Utilities (if Contractor-provided)	$0.00	$0.00	$0.00	$0.00	Utilities provided by the City as part of in-kind facility use
Administrative / Overhead Costs	$5,200.00	$5,616.00	$6,065.28	$6,550.50	Program administration, registration management, payroll processing, reporting, insurance administration
Other (Specify)	$0.00	$0.00	$0.00	$0.00	Not applicable
TOTAL ANNUAL COST	$161,503.70	$174,422.99	$188,376.83	$203,446.97	

Cost Proposal Narrative

Youth & Teen Summer Day Camp Program
Sections C & D: Alternative and Innovative Cost Model

The Youth Centers of Orange proposes an alternative and innovative cost model that allows the City of Orange to offer a high-quality Youth and Teen Summer Day Camp program at **zero cash cost to the City**, while ensuring affordability, equity, and sustainability for participating families.

Overview of the Cost Model

The total estimated annual cost to operate the Summer Day Camp program is detailed in the CP-1 Cost Proposal Table and reflects all staffing, program delivery, supplies, administrative, and operational costs required to successfully manage and operate the program. The City's only contribution under this model is the in-kind use of Shaffer Park at no cost, including access to on-site storage. No City funds are requested to operate the program.

Rather than relying on City funding, the Youth Centers of Orange utilizes a community-supported, access-driven financial model that combines affordable participant fees, intentional scholarship allocation, and strong philanthropic partnerships. This approach shifts financial risk away from the City while preserving program quality and expanding access for families across income levels.

Affordable Participant Fee Structure and Planned Revenue

The program operates with a flat weekly fee of $180 per participant, intentionally priced to remain affordable for working families while covering the full scope of program operations. This fee includes all aspects of the summer camp experience, including full-day supervision, enrichment programming, supplies, and field trips. Families do not incur additional costs for special activities or off-site trips. A 10% sibling discount is offered to further support families with multiple children enrolled.

Based on historical attendance trends, the Youth Centers of Orange anticipates serving an average of approximately 120 students per day during the nine-week summer camp program. At this enrollment level, estimated gross revenue generated through participant fees is approximately $194,400 over the course of the summer. However, we provide heavy scholarships to families that bring our total revenue to just under cost.

Participant fees alone are not intended to fully fund the program or generate surplus revenue. Instead, all participant-generated revenue is reinvested into program operations and access expansion, ensuring the focus remains on program quality and community impact rather than profitability.

Scholarships, Sponsorships, and Equity-Centered Access

To ensure the Summer Day Camp program remains both accessible and financially sustainable, the Youth Centers of Orange has intentionally designed a scholarship strategy that balances affordability, equity, and fiscal responsibility.

Based on the proposed weekly fee of $180 and a nine-week program, the organization plans to provide 60 need-based scholarships through a blended model consisting of approximately 25 full scholarships, 25 half scholarships, and 10 quarter scholarships. This mix allows the program to offer a meaningful number of fully sponsored placements while also extending partial support to a broader group of families who may not require full assistance but would still benefit from reduced costs.

Under this model, the total scholarship investment is approximately $64,800 for the summer season. The Youth Centers of Orange plans to cover this amount through a combination of program revenue and targeted fundraising, allowing the overall program to remain revenue neutral while maintaining program quality.

Specifically, the organization anticipates applying approximately $35,000 of participant-generated revenue toward scholarships and securing an additional $30,000 in philanthropic support from community partners and individual donors. This approach mirrors the organization's prior summer camp experience, during which approximately $30,000 in scholarship funding was successfully raised through partnerships and community support.

By intentionally pairing earned revenue with philanthropic investment, the Youth Centers of Orange is able to ensure that scholarship support does not create a financial gap in program operations. All remaining participant revenue is reinvested directly into staffing, enrichment activities, supplies, and field trips, allowing the program to deliver a high-quality summer camp experience without generating surplus revenue or requiring financial support from the City.

Building on this proven model, the organization will again leverage its strong partner network, including the Community Foundation of Orange (KidsPlay initiative), Friends Church Orange, the Women's Club of Orange, the Orange Chamber Foundation, as well as the Hub OC's network of individual donors and other civic and community partners to supplement program revenue and expand access.

This model allows the organization to say yes to more families, prioritize access for those with the greatest need, and maintain a financially balanced program that aligns with the City's goals of providing safe, engaging summer programming for children and youth.

Leveraging In-Kind Community Assets

In addition to the City's in-kind support of Shaffer Park, the Youth Centers of Orange also leverages donated indoor space from Friends Church Orange, which provides access to facilities five days per week. This space supports teen programming, special events, and indoor activities and represents an estimated $40,000 in additional in-kind value annually.

By strategically leveraging community-donated facilities, the program reduces operational costs, increases flexibility, and enhances the overall camp experience without additional financial burden to the City.

Benefits to the City and the Community

This alternative cost model allows the City of Orange to offer a comprehensive summer camp program without committing operational funds, while still ensuring families have access to safe, structured, and enriching childcare during the summer months. For participants, the model ensures affordability, transparency, and access regardless of income level. For the Youth Centers of Orange, it allows all available resources to be directed toward delivering the highest possible program quality rather than generating surplus revenue.

By combining affordable fees, strong partnerships, and in-kind community support, this model creates a sustainable, equitable, and scalable summer camp program that benefits families, strengthens community connections, and aligns closely with the City's goals for youth engagement and support.

THE CITY OF ORANGE RESERVES THE RIGHT, AND IS HEREBY GRANTED THE RIGHT, TO REJECT ANY AND ALL PROPOSALS, TO ACCEPT OTHER THAN THE LOWEST PROPOSAL, AND TO WAIVE ANY INFORMALITY IN THE PROPOSAL.

Authorized Signature_____

Printed Name: Holiday Zimmerman

Title: CEO

Name of Company: The Hub OC

State License Number and Classification Designation: 82-1345313 - 501(c)(3) Corporation

Executed this 18th day of December, 2025 at 10AM, Orange, California.

Agenda Item

Orange City Council

Item #: 10.2. 3/10/2026 **File #:** 26-0086

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Leslie Hardy, Community and Library Services Director**

1. SUBJECT

Agreement with Premier Aquatic Services, LLC for Hart Park Pool Operations and Aquatic Programming Services

2. SUMMARY

Following a competitive Request for Proposals process, staff recommends approval of an agreement with Premier Aquatic Services, LLC to provide Hart Park Pool Operations and Aquatic Programming Services beginning in 2026.

3. RECOMMENDED ACTION

1. Approve the agreement with Premier Aquatic Services, LLC for Hart Park Pool Operations and Aquatic Programming Services in the amount of $227,424.00 plus a 10% contingency of $22,742.40 for a total of $250,166.40; and authorize the Mayor and City Clerk to execute on behalf of the City.
2. Authorize the appropriation of $62,600.00 from the General Fund (100) undesignated fund balance to fund the prorated FY2025-26 portion of agreement services:
   100-7103-55000 Contractual Services
3. Authorize the City Manager to execute optional renewals as outlined in the agreement.

4. FISCAL IMPACT

The prorated FY 2025-26 portion of the agreement (April - June 2026) is not-to-exceed $62,600 and will be funded through the General Fund (100):

100-7103-55000 Contractual Services

The undesignated General Fund balance after this appropriation will be $106,574.

5. STRATEGIC PLAN GOALS

Goal 3: Enhance Public Communication Strategy and Quality of Life

3.7: Continue to offer high quality and efficient city led recreation programs

6. DISCUSSION AND BACKGROUND

Background

For several decades, and up until summer 2025, the City has traditionally offered an eight-week summer aquatics program at the historic Hart Park Pool which included learn-to-swim lessons, recreational swim, and water exercise. The eight-week program was typically budgeted around $420,000 and included part time staff costs for approximately 45 seasonal staff, a full-time Recreation Coordinator, required certifications and trainings, equipment, supplies, and uniforms. In 2025, in response to the City's structural budget deficit, significant reductions were made to the Community Services budget. As such, modifications were made to the summer 2025 aquatics which included reducing the program to six weeks, limiting offerings to lower level learn-to-swim lessons delivered by a small team of approximately 15 existing part-time staff, operating only one pool, and eliminating recreational swim and water exercise, which helped reduce the overall cost of the program.

In addition, the City continues to maintain the pool facility year round. From April 1, 2025 - March 31, 2026, the cost to maintain the pool is approximately $51,000. The cost will increase to $54,620 from April 1, 2026 - March 31, 2027.

Discussion

Based on feedback from the Orange community and City Council, restoring the aquatics program to its pre-2025 service levels has been identified as a priority. However, the Recreation Coordinator position remains frozen, and funding was not allocated in the budget cycle to support the hiring of seasonal, part-time staff necessary to reinstate the program under the existing model (the hiring process typically starts in January/February). Under the City-operated model, restoring full programming would require hiring and managing seasonal staff and reinstating the Recreation Coordinator position; the contract model restores services while shifting staffing, training, and day-to-day operations to the contractor and maintaining a predictable cost to the City. In light of these constraints, staff evaluated alternative service delivery options and determined that transitioning to a contract service model would enable the City to reestablish aquatics programming while maintaining fiscal responsibility.

In preparation for Summer 2026, the City publicly advertised Request for Proposals No. 25-26.10 (RFP) on November 20, 2025, in accordance with procurement requirements, to identify a qualified provider of Hart Park Pool Operations and Aquatics Programming Services beginning in 2026. The RFP sought experienced organizations capable of delivering a quality, safe aquatics program, with the minimum requirements of offering swim lessons and recreational swim during the summer season.

The proposal deadline was December 18, 2025. The City received eight (8) proposals in response to the RFP.

A review panel evaluated the proposals in accordance with the criteria set forth in the RFP, which included:

- Firm experience
- Qualifications of the project team
- Overall responsiveness to the RFP

These criteria accounted for a total of 65 possible points. Proposals receiving a minimum score of 70% (46 points or higher) advanced to the next phase of the evaluation. The second phase included an assessment of references (maximum of 10 points) and an evaluation of a separately sealed cost

proposal (maximum of 25 points).

Based on the results, Premier Aquatic Services, LLC (Premier) was identified as the highest-scoring proposer (Attachment 1). Premier demonstrated a strong program model, relevant experience, and the operational capacity necessary to deliver both the traditional eight-week summer program and expanded year-round aquatics services.

A sampling of Premier's proposed programs and fees include:

Perpetual Group Swim Lesson	$15 (billed monthly based on frequency)
Swim Team	$150 per month
Recreational Swim	$2/$3/$5 for Seniors/Children/Adults
Water Aerobics	$5 per class

Premier has proposed a Management Fee model under which the City would pay a fixed annual management fee of $186,000. In return, Premier would be responsible for all staffing, programming, training, uniforms, materials, and administrative costs necessary to operate Hart Park Pool and deliver a comprehensive aquatics program on a year-round basis (May through April).

An additional $30,000 is allocated for routine annual pool maintenance. Through contract negotiations, it was determined that Premier would also be responsible for the purchase and application of pool chemicals at an amount not-to-exceed $11,424. As a result, the City anticipates a corresponding reduction in costs under its current pool maintenance provider agreement. The City would remain responsible for utilities, janitorial services, larger pool equipment repairs, and capital improvements projects.

The proposed agreement establishes a four-year structure consisting of an initial one-year term with three optional one-year extensions. The City Manager is authorized to execute the optional extensions provided sufficient funds are approved in the applicable fiscal year budget.

It should be noted that the amount listed in the Fiscal Impact section of this report pertains to the necessary appropriation required to fund the prorated Fiscal Year 2025-26 (FY26) portion of the agreement (April, May and June of 2026) in an amount of $62,600, including a prorated contingency. The not-to-exceed agreement total for the first term of the agreement (twelve-month period from April 1, 2026 to March 30, 2027) spanning portions of FY26 and Fiscal year 2026-27 (FY27) is $250,166.40, inclusive of contingency. The remaining balance left on the agreement for the first year will be included in the FY27 budget.

Premier would manage all program registration and collect program revenues. Because Premier is responsible for all program staffing, administration, and operational costs, the agreement allows Premier to collect program revenues, while the City benefits through a revenue-sharing structure once established participation thresholds are met. The agreement includes a revenue-sharing model under which the City receives a percentage of program revenues once specified thresholds are met:

Program Revenue Share:

Revenue:	**City's Revenue Share:**
$125,000.00	15%
$150,000.00	15%

$175,000.00	15%
$200,000.00	15%
$225,000.00	20%
$250,000.00	20%
$275,000.00	20%
$301,000.00+	22.5%

The proposed agreement includes performance standards, insurance requirements, background checks, required aquatic certifications, and a termination clause. The City retains oversight authority and approval of programming schedules and fees (Attachment 2).

7. ATTACHMENTS

- Attachment 1 Proposal Abstract Summary
- Attachment 2 Professional Services Agreement with Premier Aquatic Services LLC

Agenda Item

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7. ATTACHMENTS

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Proposal Abstract Summary
Aquatics Provider
RFP 25-26.10

Date Advertised: 11/20/25
Proposal Due Date: 12/18/25

Company/ Contractor	Aquatics Management, LLC	Blue Ray Aquatics, LLC	Nance Family Swim School, LLC	Pool Management	Premier Aquatics, LLC	Swan Aquatics, LLC	USA Pools of California	Orange County YMCA
City (Location of Company)	NA	Fountain Valley, CA	Orange, CA	NA	Aliso Viejo, CA	Fallbrook, CA	Los Angeles, CA	Tustin, CA
Initial Average Score	13.00	52.67	35.33	14.00	54.67	60.33	23.33	55.33
Cost		23.00			23.00	11.30		15.00
References		1.00			10.00	9.00		5.00
TOTAL OVERALL SCORES*	13.00	76.67	35.33	14.00	87.67	80.63	23.33	75.33

**Cost and References considered and added into total score for proposers with an initial passing score of 48 or more.*

PROFESSIONAL SERVICES AGREEMENT
[Hart Park Pool Operations and Aquatics Programming Services]

THIS PROFESSIONAL SERVICES AGREEMENT (the "Agreement") is made at Orange, California, on this _____ day of _____, 2026 (the "Effective Date") by and between the CITY OF ORANGE, a municipal corporation ("City"), and PREMIER AQUATIC SERVICES LLC, a California limited liability company ("Contractor"), who agree as follows:

1. Services. Subject to the terms and conditions set forth in this Agreement, Contractor shall provide to the reasonable satisfaction of City the services set forth in Exhibit "A," which is attached hereto and incorporated herein by reference. As a material inducement to City to enter into this Agreement, Contractor represents and warrants that it has thoroughly investigated and considered the scope of services and fully understands the difficulties and restrictions in performing the work. The services which are the subject of this Agreement are not in the usual course of City's business and City relies on Contractor's representation that it is independently engaged in the business of providing such services and is experienced in performing the work. Contractor shall perform all services in a manner reasonably satisfactory to City and in a manner in conformance with the standards of quality normally observed by an entity providing such services to a municipal agency. All services provided shall conform to all federal, state and local laws, rules and regulations and to the best professional standards and practices. The terms and conditions set forth in this Agreement shall control over any terms and conditions in Exhibit "A" to the contrary.

Emily Bustamante, Assistant Community Services Director ("City's Project Manager"), shall be the person to whom Contractor will report for the performance of services hereunder. It is understood that Contractor's performance hereunder shall be under the supervision of City's Project Manager (or his/her designee), that Contractor shall coordinate its services hereunder with City's Project Manager to the extent required by City's Project Manager, and that all performances required hereunder by Contractor shall be performed to the satisfaction of City's Project Manager and the City Manager.

2. Compensation and Fees.

a. Contractor's total compensation for all services performed under this Agreement, shall not exceed TWO HUNDRED TWENTY-SEVEN THOUSAND FOUR HUNDRED TWENTY-FOUR DOLLARS and 00/100 ($227,424.00) without the prior written authorization of City.

b. In addition to the scheduled services to be performed by the Contractor, the parties recognize that additional, unforeseen work and services may be required by City's Project Manager. In anticipation of such contingencies, the sum of TWENTY-TWO THOUSAND SEVEN HUNDRED FORTY-TWO DOLLARS and 40/100 ($22,742.40) has been added to the total compensation of this Agreement. City's Project Manager may approve the additional work and the actual costs incurred by the Contractor in performance of additional work or services in accordance with such amount as City's Project Manager and the Contractor may agree upon in

advance. Said additional work or services and the amount of compensation therefor, up to the amount of the authorized contingency, shall be memorialized in the form of an Amendment to Agreement approved by the City Manager on a form acceptable to the City Attorney. The Contractor agrees to perform only that work or those services that are specifically requested by the City's Project Manager. Any and all additional work and services performed under this Agreement shall be completed in such sequence as to assure their completion as expeditiously as is consistent with professional skill and care in accordance with a cost estimate or proposal submitted to and approved by City's Project Manager prior to the commencement of such services.

c. The total amount of compensation under this Agreement, including contingencies, shall not exceed TWO HUNDRED FIFTY THOUSAND ONE HUNDRED SIXTY-SIX DOLLARS and 40/100 ($250,166.40).

d. The compensation for services performed under this Agreement shall be paid as specified in Exhibit "B" which is attached hereto and incorporated herein by reference.

e. The above compensation shall include all costs, including, but not limited to, all clerical, administrative, overhead, insurance, reproduction, telephone, travel, auto rental, subsistence and all related expenses.

2.1 <u>Term and Extension(s)</u>.

a. The Initial Term of this Agreement is one (1) year (the "Initial Term"), commencing April 1, 2026, and terminating on March 31, 2027 (the "Expiration Date"); provided, however, that City has the right to extend the term of this Agreement for the following extensions and upon the following terms:

- First Extension (the "First Extension Term") commencing April 1, 2027, and terminating on March 31, 2028, in an amount not to exceed TWO HUNDRED SIXTY THOUSAND TWO HUNDRED NINETY-EIGHT DOLLARS and 72/100 ($260,298.72), inclusive of contingency, without the prior written authorization of City.

- Second Extension (the "Second Extension Term") commencing April 1, 2028, and terminating on March 31, 2029, in an amount not to exceed TWO HUNDRED SEVENTY THOUSAND EIGHT HUNDRED FORTY-TWO DOLLARS and 62/100 ($270,842.62), inclusive of contingency, without the prior written authorization of City.

- Third Extension (the "Third Extension Term") commencing July 1, 2029, and terminating on March 31, 2030, in an amount not to exceed TWO HUNDRED EIGHTY-ONE THOUSAND EIGHT HUNDRED FOUTEEN DOLLARS and 86/100 ($281,814.86), inclusive of contingency, without the prior written authorization of City.

b. The City Manager is hereby authorized on behalf of City to give written notice to Contractor of City's intention to exercise each Extension (if at all) no later than thirty (30) days prior to the Expiration Date of the then-current term; provided, however, that City's notice of its intention to extend the term of this Agreement for each Extension shall be expressly conditioned upon and subject to the approval by the City Council, in its sole and absolute discretion, of an

amount sufficient to pay the compensation set forth herein for each Extension as part of its annual budget approval process prior to the beginning of each Extension.

While the parties acknowledge that City is required to give its notice of intention to extend the term of this Agreement not later than thirty (30) days prior to the Expiration Date of the then-current term, it is possible that the City Council's approval of its annual budget and appropriation of funds for the Extension in question may occur thereafter. Accordingly, if the City Council fails to approve and appropriate funds sufficient to pay the amount of compensation set forth herein for an Extension, this Agreement shall terminate and be of no further force and effect as of the expiration of the then-current term.

Notwithstanding anything in this provision to the contrary, in the event City gives Contractor written notice exercising an Extension and City receives notice that appropriation of funds for the Extension in question are not available after Contractor has performed services under the Extension, City agrees that Contractor will be equitably compensated for all services performed under any portion of an Extension through the date of termination of the Agreement.

Except as specifically set forth herein, the terms and conditions of each Extension will be the same as the Initial Agreement.

c. Any Extension, if properly exercised, shall be memorialized in the form of an amendment to this Agreement. The City Manager is hereby authorized to approve and execute amendments to this Agreement reflecting the exercise of each Extension and the amount of compensation (including the amount of funds to be made available for additional work or services) payable to Contractor for each respective Extension.

3. Payment.

a. As scheduled services are completed, Contractor shall submit to City an invoice for the services completed, authorized expenses and authorized extra work actually performed or incurred.

b. All such invoices shall state the basis for the amount invoiced, including services completed, the number of hours spent and any extra work performed.

c. City will pay Contractor the amount invoiced within thirty (30) days after the approval of the invoice.

d. Payment shall constitute payment in full for all services, authorized costs and authorized extra work covered by that invoice.

4. Change Orders. No payment for extra services caused by a change in the scope or complexity of work, or for any other reason, shall be made unless and until such extra services and a price therefor have been previously authorized in writing and approved by City as an amendment to this Agreement. City's Project Manager is authorized to approve a reduction in the services to be performed and compensation therefor. All amendments shall set forth the changes

of work, extension of time, and/or adjustment of the compensation to be paid by City to Contractor and shall be signed by the City's Project Manager, City Manager or City Council, as applicable.

5. Licenses. Contractor represents that it and any subcontractors it may engage, possess any and all licenses which are required under state or federal law to perform the work contemplated by this Agreement and that Contractor and its subcontractors shall maintain all appropriate licenses, including a City of Orange business license, at its cost, during the performance of this Agreement.

6. Independent Contractor. At all times during the term of this Agreement, Contractor shall be an independent contractor and not an employee of City. City shall have the right to control Contractor only insofar as the result of Contractor's services rendered pursuant to this Agreement. City shall not have the right to control the means by which Contractor accomplishes services rendered pursuant to this Agreement. Contractor shall, at its sole cost and expense, furnish all facilities, materials and equipment which may be required for furnishing services pursuant to this Agreement. Contractor shall be solely responsible for, and shall indemnify, defend and save City harmless from all matters relating to the payment of its subcontractors, agents and employees, including compliance with social security withholding and all other wages, salaries, benefits, taxes, exactions, and regulations of any nature whatsoever. Contractor acknowledges that it and any subcontractors, agents or employees employed by Contractor shall not, under any circumstances, be considered employees of City, and that they shall not be entitled to any of the benefits or rights afforded employees of City, including, but not limited to, sick leave, vacation leave, holiday pay, Public Employees Retirement System benefits, or health, life, dental, long-term disability or workers' compensation insurance benefits.

7. Contractor Not Agent. Except as City may specify in writing, Contractor shall have no authority, express or implied, to act on behalf of City in any capacity whatsoever as an agent. Contractor shall have no authority, express or implied, to bind City to any obligation whatsoever.

8. Designated Persons. Only those qualified persons authorized by City's Project Manager, or as designated in Exhibit "A," shall perform work provided for under this Agreement. It is understood by the parties that clerical and other nonprofessional work may be performed by persons other than those designated.

9. Assignment or Subcontracting. No assignment or subcontracting by Contractor of any part of this Agreement or of funds to be received under this Agreement shall be of any force or effect unless the assignment has the prior written approval of City. City may terminate this Agreement rather than accept any proposed assignment or subcontracting. Such assignment or subcontracting may be approved by the City Manager or his/her designee.

10. Time of Completion. Except as otherwise specified in Exhibit "A," Contractor shall commence the work provided for in this Agreement within five (5) days of the Effective Date of this Agreement and diligently prosecute completion of the work in accordance with the time period set forth in Exhibit "A" hereto or as otherwise agreed to by and between the representatives of the parties.

11. **Time Is of the Essence**. Time is of the essence in this Agreement. Contractor shall do all things necessary and incidental to the prosecution of Contractor's work.

12. **Reserved**.

13. **Delays and Extensions of Time**. Contractor's sole remedy for delays outside its control, other than those delays caused by City, shall be an extension of time. No matter what the cause of the delay, Contractor must document any delay and request an extension of time in writing at the time of the delay to the satisfaction of City. Any extensions granted shall be limited to the length of the delay outside Contractor's control. If Contractor believes that delays caused by City will cause it to incur additional costs, it must specify, in writing, why the delay has caused additional costs to be incurred and the exact amount of such cost at the time the delay occurs. No additional costs can be paid that exceed the not to exceed amount stated in Section 2.a, above, absent a written amendment to this Agreement.

14. **Products of Contractor**. The documents, studies, evaluations, assessments, reports, plans, citations, materials, manuals, technical data, logs, files, designs and other products produced or provided by Contractor for this Agreement shall become the property of City upon receipt. Contractor shall deliver all such products to City prior to payment for same. City may use, reuse or otherwise utilize such products without restriction.

15. **Equal Employment Opportunity**. During the performance of this Agreement, Contractor agrees as follows:

a. Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Contractor shall ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law. Such actions shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places, available to employees and applicants for employment, a notice setting forth provisions of this non-discrimination clause.

b. Contractor shall, in all solicitations and advertisements for employees placed by, or on behalf of Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, mental or physical disability, or any other basis prohibited by applicable law.

c. Contractor shall cause the foregoing paragraphs (a) and (b) to be inserted in all subcontracts for any work covered by this Agreement, provided that the foregoing provisions shall not apply to subcontracts for standard commercial supplies or raw materials.

16. **Conflicts of Interest**. Contractor agrees that it shall not make, participate in the making, or in any way attempt to use its position as a consultant to influence any decision of City in which Contractor knows or has reason to know that Contractor, its officers, partners, or employees have a financial interest as defined in Section 87103 of the Government Code.

17. **Indemnity**.

a. To the fullest extent permitted by law, Contractor agrees to indemnify, defend and hold City, its City Council and each member thereof, and the officers, officials, agents and employees of City (collectively the "Indemnitees") entirely harmless from all liability arising out of:

(1) Any and all claims under workers' compensation acts and other employee benefit acts with respect to Contractor's employees or Contractor's subcontractor's employees arising out of Contractor's work under this Agreement, including any and all claims under any law pertaining to Contractor or its employees' status as an independent contractor and any and all claims under Labor Code section 1720 related to the payment of prevailing wages for public works projects; and

(2) Any claim, loss, injury to or death of persons or damage to property caused by any act, neglect, default, or omission of Contractor, or person, firm or corporation employed by Contractor, either directly or by independent contract, including all damages due to loss or theft sustained by any person, firm or corporation including the Indemnitees, or any of them, arising out of, or in any way connected with the work or services which are the subject of this Agreement, including injury or damage either on or off City's property; but not for any loss, injury, death or damage caused by the active negligence or willful misconduct of City. Contractor, at its own expense, cost and risk, shall indemnify any and all claims, actions, suits or other proceedings that may be brought or instituted against the Indemnitees on any such claim or liability covered by this subparagraph, and shall pay or satisfy any judgment that may be rendered against the Indemnitees, or any of them, in any action, suit or other proceedings as a result of coverage under this subparagraph.

b. To the fullest extent permitted by law, and as limited by California Civil Code 2782.8, Contractor agrees to indemnify and hold Indemnitees harmless from all liability arising out of any claim, loss, injury to or death of persons or damage to property to the extent caused by its negligent professional act or omission in the performance of professional services pursuant to this Agreement.

c. Except for the Indemnitees, the indemnifications provided in this Agreement shall not be construed to extend any third party indemnification rights of any kind to any person or entity which is not a signatory to this Agreement.

d. The indemnities set forth in this section shall survive any closing, rescission, or termination of this Agreement, and shall continue to be binding and in full force and effect in perpetuity with respect to Contractor and its successors.

18. Insurance.

a. Contractor shall carry workers' compensation insurance as required by law for the protection of its employees during the progress of the work. Contractor understands that it is an independent contractor and not entitled to any workers' compensation benefits under any City program.

b. Contractor shall maintain during the life of this Agreement the following minimum amount of comprehensive general liability insurance or commercial general liability insurance: the greater of Two Million Dollars ($2,000,000) per occurrence; or (2) all the insurance coverage and/or limits carried by or available to Contractor. Said insurance shall cover bodily injury, death and property damage and be written on an occurrence basis.

c. Contractor shall maintain during the life of this Agreement, the following minimum amount of automotive liability insurance: the greater of (1) a combined single limit of One Million Dollars ($1,000,000) or (2) all the insurance coverage and/or limits carried by or available to Contractor. Said insurance shall cover bodily injury, death and property damage for all owned, non-owned and hired vehicles and be written on an occurrence basis.

d. Any insurance proceeds in excess of or broader than the minimum required coverage and/or minimum required limits which are applicable to a given loss shall be available to City. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of Contractor under this Agreement.

e. Each policy of general liability and automotive liability shall provide that City, its officers, officials, agents, and employees are declared to be additional insureds under the terms of the policy, but only with respect to the work performed by Contractor under this Agreement. A policy endorsement to that effect shall be provided to City along with the certificate of insurance. In lieu of an endorsement, City will accept a copy of the policy(ies) which evidences that City is an additional insured as a contracting party. The minimum coverage required by Subsection 18.b and c, above, shall apply to City as an additional insured. Any umbrella liability insurance that is provided as part of the general or automobile liability minimums set forth herein shall be maintained for the duration of the Agreement.

f. Contractor shall maintain during the life of this Agreement professional liability insurance covering errors and omissions arising out of the performance of this Agreement with a minimum limit of One Million Dollars ($1,000,000) per claim. Contractor agrees to keep such policy in force and effect for at least five (5) years from the date of completion of this Agreement.

g. The insurance policies maintained by Contractor shall be primary insurance and no insurance held or owned by City shall be called upon to cover any loss under the policy. Contractor will determine its own needs in procurement of insurance to cover liabilities other than as stated above.

h. Before Contractor performs any work or prepares or delivers any materials, Contractor shall furnish certificates of insurance and endorsements, as required by City, evidencing the aforementioned minimum insurance coverages on forms acceptable to City, which shall provide that the insurance in force will not be canceled or allowed to lapse without at least ten (10) days' prior written notice to City.

i. Except for professional liability insurance coverage that may be required by this Agreement, all insurance maintained by Contractor shall be issued by companies admitted to conduct the pertinent line of insurance business in California and having a rating of Grade A or better and Class VII or better by the latest edition of Best Key Rating Guide. In the case of professional liability insurance coverage, such coverage shall be issued by companies either licensed or admitted to conduct business in California so long as such insurer possesses the aforementioned Best rating.

j Contractor shall immediately notify City if any required insurance lapses or is otherwise modified and cease performance of this Agreement unless otherwise directed by City. In such a case, City may procure insurance or self-insure the risk and charge Contractor for such costs and any and all damages resulting therefrom, by way of set-off from any sums owed Contractor.

k. Contractor agrees that in the event of loss due to any of the perils for which it has agreed to provide insurance, Contractor shall look solely to its insurance for recovery. Contractor hereby grants to City, on behalf of any insurer providing insurance to either Contractor or City with respect to the services of Contractor herein, a waiver of any right to subrogation which any such insurer may acquire against City by virtue of the payment of any loss under such insurance.

l. Contractor shall include all subcontractors, if any, as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor to City for review and approval. All coverages for subcontractors shall be subject to all of the requirements stated herein.

m. Contractor shall maintain during the life of this Agreement insurance covering Sexual Abuse and Molestation arising out of the performance of this Agreement with a minimum limit of One Million Dollars ($1,000,000) per occurrence and One Million Dollars ($1,000,000) in the aggregate for sexual abuse and molestation insurance that shall protect the Contractor and the City from any and all claims of any nature for damages related to sexual abuse and molestation arising from performing any portion of the Services by Contractor. A separate additional insured endorsement shall be provided to include the City and its officers, officials, employees, agents, and volunteers as additional insured in the policy.

19. **Termination**. City may for any reason terminate this Agreement by giving Contractor not less than five (5) days' written notice of intent to terminate. Upon receipt of such notice, Contractor shall immediately cease work, unless the notice from City provides otherwise. Upon the termination of this Agreement, City shall pay Contractor for services satisfactorily provided and all allowable reimbursements incurred to the date of termination in compliance with

this Agreement, unless termination by City shall be for cause, in which event City may withhold any disputed compensation. City shall not be liable for any claim of lost profits.

20. Maintenance and Inspection of Records. In accordance with generally accepted accounting principles, Contractor and its subcontractors shall maintain reasonably full and complete books, documents, papers, accounting records, and other information (collectively, the "records") pertaining to the costs of and completion of services performed under this Agreement. City and its authorized representatives shall have access to and the right to audit and reproduce any of Contractor's records regarding the services provided under this Agreement. Contractor shall maintain all such records for a period of at least three (3) years after termination or completion of this Agreement. Contractor agrees to make available all such records for inspection or audit at its offices during normal business hours and upon three (3) days' notice from City, and copies thereof shall be furnished if requested.

21. Compliance with all Laws/Immigration Laws.

a. Contractor shall be knowledgeable of and comply with all local, state and federal laws which may apply to the performance of this Agreement.

b. If the work provided for in this Agreement constitutes a "public works," as that term is defined in Section 1720 of the California Labor Code, for which prevailing wages must be paid, to the extent Contractor's employees will perform any work that falls within any of the classifications for which the Department of Labor Relations of the State of California promulgates prevailing wage determinations, Contractor hereby agrees that it, and any subcontractor under it, shall pay not less than the specified prevailing rates of wages to all such workers. The general prevailing wage determinations for crafts can be located on the website of the Department of Industrial Relations (www.dir.ca.gov/DLSR). Additionally, to perform work under this Contract, Contractor must meet all State registration requirements and criteria, including project compliance monitoring.

c. Contractor represents and warrants that it:

(1) Has complied and shall at all times during the term of this Agreement comply, in all respects, with all immigration laws, regulations, statutes, rules, codes, and orders, including, without limitation, the Immigration Reform and Control Act of 1986 (IRCA); and

(2) Has not and will not knowingly employ any individual to perform services under this Agreement who is ineligible to work in the United States or under the terms of this Agreement; and

(3) Has properly maintained, and shall at all times during the term of this Agreement properly maintain, all related employment documentation records including, without limitation, the completion and maintenance of the Form I-9 for each of Contractor's employees; and

(4) Has responded, and shall at all times during the term of this Agreement respond, in a timely fashion to any government inspection requests relating to immigration law compliance and/or Form I-9 compliance and/or worksite enforcement by the Department of Homeland Security, the Department of Labor, or the Social Security Administration.

d. Contractor shall require all subcontractors or subconsultants to make the same representations and warranties as set forth in Subsection 21.c.

e. Contractor shall, upon request of City, provide a list of all employees working under this Agreement and shall provide, to the reasonable satisfaction of City, verification that all such employees are eligible to work in the United States. All costs associated with such verification shall be borne by Contractor. Once such request has been made, Contractor may not change employees working under this Agreement without written notice to City, accompanied by the verification required herein for such employees.

f. Contractor shall require all subcontractors or sub-consultants to make the same verification as set forth in Subsection 21.e.

g. If Contractor or subcontractor knowingly employs an employee providing work under this Agreement who is not authorized to work in the United States, and/or fails to follow federal laws to determine the status of such employee, that shall constitute a material breach of this Agreement and may be cause for immediate termination of this Agreement by City.

h. Contractor agrees to indemnify and hold City, its officers, officials, agents and employees harmless for, of and from any loss, including but not limited to fines, penalties and corrective measures City may sustain by reason of Contractor's failure to comply with said laws, rules and regulations in connection with the performance of this Agreement.

22. **Governing Law and Venue**. This Agreement shall be construed in accordance with and governed by the laws of the State of California and Contractor agrees to submit to the jurisdiction of California courts. Venue for any dispute arising under this Agreement shall be in Orange County, California.

23. **Integration**. This Agreement constitutes the entire agreement of the parties. No other agreement, oral or written, pertaining to the work to be performed under this Agreement shall be of any force or effect unless it is in writing and signed by both parties. Any work performed which is inconsistent with or in violation of the provisions of this Agreement shall not be compensated.

24. **Notice**. Except as otherwise provided herein, all notices required under this Agreement shall be in writing and delivered personally, by e-mail, or by first class U.S. mail, postage prepaid, to each party at the address listed below. Either party may change the notice address by notifying the other party in writing. Notices shall be deemed received upon receipt of same or within three (3) days of deposit in the U.S. Mail, whichever is earlier. Notices sent by e-mail shall be deemed received on the date of the e-mail transmission.

"CONTRACTOR"	"CITY"
Premier Aquatic Services LLC 6 Journey, Suite 200 Aliso Viejo, CA 92656	City of Orange 300 E. Chapman Avenue Orange, CA 92866-1591
Attn.: Daniel Berzansky	Attn.: Emily Bustamante
Telephone: (949) 433-0555 E-Mail: dan@swimoc.com	Telephone: (714) 744-7287 E-Mail: ebustamante@cityoforange.org

25. **Counterparts**. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Signatures transmitted electronically shall have the same effect as original signatures.

[Remainder of page intentionally left blank; signatures on next page]

IN WITNESS of this Agreement, the parties have entered into this Agreement as of the year and day first above written.

"CONTRACTOR"	**"CITY"**
PREMIER AQUATIC SERVICES LLC, a California limited liability company	CITY OF ORANGE, a municipal corporation
*By:_____ Printed Name:_____ Title:_____	By:_____ Daniel R. Slater, Mayor
*By:_____ Printed Name:_____ Title:_____	ATTEST: _____ Pamela Coleman, City Clerk
	APPROVED AS TO FORM: _____ Nathalie Adourian, City Attorney

***<u>NOTE</u>:** **City requires the following signature(s) on behalf of the Contractor:**

-- **(1) the Chairman of the Board, the President or a Vice-President, <u>AND</u> (2) the Secretary, the Chief Financial Officer, the Treasurer, an Assistant Secretary or an Assistant Treasurer. If only one corporate officer exists or one corporate officer holds more than one corporate office, please so indicate. <u>OR</u>**

-- **The corporate officer named in a corporate resolution as authorized to enter into this Agreement. A copy of the corporate resolution, certified by the Secretary close in time to the execution of the Agreement, must be provided to City.**

√

IN WITNESS of this Agreement, the parties have entered into this Agreement as of the year and day first above written.

"CONTRACTOR"	**"CITY"**
PREMIER AQUATIC SERVICE, LLC.	CITY OF ORANGE, a municipal corporation
*By: _____ Printed Name: Daniel Bertolucy Title: CEO	By: _____ **Daniel R. Slater, Mayor**
*By: _____ Printed Name: _____ Title: _____	ATTEST: _____ Pamela Coleman, City Clerk
	APPROVED AS TO FORM: _____ Nathalie Adourian, City Attorney

***NOTE:** **City requires the following signature(s) on behalf of the Contractor:**

-- **(1) the Chairman of the Board, the President or a Vice-President, AND (2) the Secretary, the Chief Financial Officer, the Treasurer, an Assistant Secretary or an Assistant Treasurer. If only one corporate officer exists or one corporate officer holds more than one corporate office, please so indicate. OR**

-- **The corporate officer named in a corporate resolution as authorized to enter into this Agreement. A copy of the corporate resolution, certified by the Secretary close in time to the execution of the Agreement, must be provided to City.**

√

EXHIBIT "A"

SCOPE OF SERVICES

The scope of services for Hart Park Pool Operations and Aquatics Programming shall include "Contractor's Proposal" for RFP No. 25-26.10, included as Pages A-2 through A-28 of this Exhibit. The scope of services shall also include any requirements included in the City's referenced "RFP No. 25-16.10" (Hart Park Pool Operations and Aquatics Programming) and associated addenda. In the event of a discrepancy between these contract documents, Exhibit A shall govern. Proposal clarifications listed on this page A-1 shall supersede latter portions of this Exhibit.

Scope of Work Clarifications:

1. City, not the Contractor, shall provide necessary Janitorial Services under separate contract during the initial term of the Agreement, especially as it pertains to the Hart Park Pool interior restrooms. City shall provide reasonable notice to Contractor regarding planned regular janitorial maintenance.

2. Contractor will not be expected to provide any Capital Improvements at Hart Park Pool under this agreement. Capital Improvements, if any, shall be undertaken by the City or it's agents and the City will provide Contractor reasonable notice of improvement schedules that may impact aquatic programming.

3. Contactor will be responsible for performing regular pool maintenance services as described in Exhibit A. City shall be responsible for performing any non-routine maintenance services or major repairs to Pool equipment.

4. Contractor shall not be responsible for the cost of utilities (i.e., water, electricity) reasonably necessary for the operation of the Hart Park Pool aquatics program. City may, but shall not be required to, provide limited internet services at the Hart Park Pool facility.

5. Contractor shall obtain City approval (in advance) prior to implementing any aquatics programming changes or modifications to fees charged to participants for aquatics programs (i.e. lessons, classes, open swim).

6. Contractor shall submit to the City's Project Manager seasonal program schedules for City review and approval not less than twelve (12) weeks in advance of advertisement.

PREMIER
AQUATICS

Cover Letter – RFP 25-26.10
December 18, 2025

City of Orange
Community Services Department
230 E. Chapman Avenue
Orange, CA 92866

RE: Hart Park Pool Operations and Aquatics Programming – RFP No. 25-26.10

Dear Selection Committee,

Premier Aquatic Service LLC is pleased to submit this proposal in response to the City of Orange's Request for Proposals for Hart Park Pool Operations and Aquatics Programming. We are a professional aquatics management firm with extensive experience operating municipal aquatic facilities throughout Southern California.

All correspondence regarding this proposal should be directed to:

Ryan Larson, COO
Premier Aquatic Service LLC
Phone: (949) 226-3560
Email: ryan@swimoc.com

The individual authorized to bind the firm contractually is:

Dan Berzansky, Owner
Premier Aquatic Service LLC
Phone: (949) 433-0555
Email: dan@swimoc.com

Sincerely,

Dan Berzansky
Owner
Premier Aquatic Service LLC

Firm Information
Premier Aquatic Service LLC
Company Overview
Legal Name of Firm: Premier Aquatic Service LLC
DBA: Premier Aquatics
Type of Organization: Limited Liability Company (LLC)
State of Formation: California
Year Established: 2011

Corporate Office:
6 Journey, Suite 200
Aliso Viejo, CA 92656

Website: www.swimoc.com

Company Mission
Passionately Dedicated to Creating a Safer Experience, In and Around the Water.
Leadership & Key Personnel
Owner / Authorized Signer:
Dan Berzansky, MBA – Owner & President

Chief Operating Officer / Project Manager:
Ryan Larson, MBA – Chief Operating Officer

Ryan Larson will serve as the primary Project Manager and point of contact for the City of Orange, overseeing contract fulfillment, staffing, safety, and program delivery at Hart Park Pool.

Management Support Team
Premier Aquatics maintains a robust management and administrative support structure that directly supports all municipal contracts, including:

- Amber Beesley- Director of People and Culture
- Jessica Dopudja- Director of Talent Acquisition
- Michael Scott- Director of Quality Assurance
- Bert Bergen- Division Manager
- David Jaramillo- Director of Regional Operations
- Madeline Andrews- Director of Marketing

This experienced leadership team provides direct support in staffing, training, safety oversight, marketing, compliance, and operational excellence.

PREMIER
AQUATICS

Staffing Capacity
Premier Aquatics employs approximately 260 year-round staff members and over 750 seasonal employees. The company currently provides aquatics staffing and management services to more than 40 public and private clients across California, Arizona, and Utah, representing over 100 aquatic facilities.

Licensing, Certifications & Compliance
Premier Aquatics maintains all required business licenses and complies with all local, county, state, and federal regulations governing aquatic facilities. In coordination with the Pool Pros, a second division of service within the Safer Swimmer ecosystem. Key certifications and compliance measures include:

- StarGuard Elite Lifeguard Certification
- CPR/AED and First Aid Certifications
- Lifeguard Management Certification
- Certified Pool Operator (CPO), as requested
- Live Scan background screening
- Sexual Harassment Training
- Workplace Violence Prevention Training
- Licensed C-53 contractor

Insurance Coverage
Premier Aquatics carries comprehensive insurance coverage that meets or exceeds municipal requirements:

- General Liability: $3,000,000 / $5,000,000 aggregate
- Workers' Compensation: $1,000,000
- Employment Practices Liability Insurance (EPLI): $1,000,000

Certificates of insurance listing the City of Orange as additionally insured will be provided upon award.

Legal & Contract History
Since its founding in 2011, Premier Aquatics has maintained a clean and unblemished record. The company has never been subject to litigation, bankruptcy, or failure to perform under a contract. Premier Aquatics has never lost a contract due to service-related issues.

PREMIER
AQUATICS

Program Approach
City of Orange – Hart Park Pool
Premier Aquatic Service LLC (Premier Aquatics) is pleased to present the following Program Approach for the City of Orange's Hart Park Pool. This approach is tailored

specifically to the operational goals, historic nature, and community needs of Hart Park Pool and is informed by Premier's 14+ years of successfully managing municipal aquatic facilities throughout Southern California.

Year-Round Operations Overview
Premier Aquatics proposes to operate Hart Park Pool on a year-round basis, providing consistent access to aquatic programming and services for the community throughout the calendar year. This approach aligns with community demand, staffing availability, and program participation trends, allowing the City of Orange to maximize the value of the facility while delivering high-quality, safe, and engaging aquatic programs.

Year-round operations enable Premier Aquatics to offer expanded programming opportunities, maintain consistent staffing and training standards, and provide reliable access to swim lessons, fitness programming, recreational swim, and special events for residents of all ages. By operating continuously throughout the year, Premier Aquatics will enhance program continuity, customer satisfaction, and overall utilization of Hart Park Pool.

PREMIER AQUATICS

Proposed Schedule

City of Orange 2026-27 Pool Schedule

May	
Monday- Thursday: Evening Swim Programs	4:00pm- 7:00pm
Saturday: Saturday Swim Programs	9:00am- 12:00pm

June- August	
Monday- Thursday: Morning Swim Programs	9:00am- 12:00pm
Monday/Wednesday: Senior Water Aerobics	10:00am- 11:00am
Monday- Thursday: Evening Swim Programs & Swim Team	4:00pm- 7:00pm
Saturday: Saturday Swim Lessons	9:00am- 12:00pm
Monday- Thursday: Rec Swim	12:30pm- 3:45pm
Friday- Sunday: Rec Swim	11:00am- 4:00pm

September- April	
Monday- Thursday: Evening Swim Programs & Swim Team	4:00pm- 7:00pm
Monday/Wednesday: Senior Water Aerobics	10:00am- 11:00am
Saturday: Saturday Swim Programs	9:00am- 12:00pm

Program Philosophy

Premier Aquatics' program philosophy is centered on four core principles:

- Safety of all guests and program participants
- Exceptional customer service
- High-quality, well-attended aquatic programs
- Safe, professional, and welcoming facility operations

Our goal is to create a vibrant community hub at Hart Park Pool—one that residents look forward to visiting, families trust, and participants recommend to others.

PREMIER
AQUATICS

Core Program Offerings
Premier Aquatics will develop, manage, and deliver a comprehensive suite of aquatic programs designed to serve all ages and abilities within the Orange community. Initial programming will include:

- Recreational Swim – Open swim opportunities for individuals and families.
- Learn-to-Swim Programs – Group lessons, parent and me, and private lessons for youth and adults, emphasizing water safety and skill progression.
- Youth Summer Swim Team – A community-focused swim team program designed to build skills, confidence, and sportsmanship.
- Water Aerobics & Fitness – Low-impact aquatic fitness classes targeted toward adults and seniors.
- Facility Use Rentals – Pool rentals for private parties, group reservations, additional programs and special events.

Program Development & Growth
Programs will be evaluated regularly based on participation, customer feedback, and operational performance, with adjustments made as needed to ensure success and sustainability.

Customer Service Focus
Customer service is a cornerstone of Premier Aquatics' operations. All staff—from lifeguards to program instructors and managers—are trained to deliver professional, friendly, and responsive service. Our team is empowered to address questions, resolve concerns promptly, and ensure every guest has a positive experience at Hart Park Pool.

Staffing & Professional Standards
Premier Aquatics will provide certified, well-trained staff for all programs and operating hours. All lifeguards will maintain current StarGuard Elite certifications and participate in regular in-service training. Program instructors will be trained in Premier's in-house curriculum to ensure consistency, safety, and quality across all offerings. In addition, all instructors will have a minimum CPR/AED and First Aid certification. Deck leads will be on deck during all programing hours to provide customer service and program support.

Partnership with the City of Orange
Premier Aquatics views this relationship as a true partnership with the City of Orange. We are committed to open communication, transparency, and collaboration with City staff.

Regular check-ins, reporting, and proactive problem-solving will ensure alignment with City goals and a successful operating season.

Firm Experience
Premier Aquatics has extensive experience operating municipal aquatic facilities similar in scope to Hart Park Pool. Representative clients include:

City of Laguna Niguel: October 2023- Current.
Jonathon Harmon, jharmon@cityoflagunanigule.org
949-425-5108

Provide lifeguard coverage for facility and aquatic programing.

Liberty Military Housing: 2020- Current.
Amanda Begin, ABegin@livelmh.com
760-400-8193
Provide seasonal staffing to 26 facilities to the Marine Corp housing in Yuma Arizona, Camp Pendleton, Twentynine Palms, Coleville, and Miramar. Employ two full-time employees and roughly 140 employees. (roughly 40,000 hours)

Howard Johnson Hotel: 2023- Current.
Matt Stanley, matt.stanley@nothwesthotel.org
714-618-6020
Provide year-round service to one pool and one water park. Three full-time and 40 part-time staff. (Roughly 16,000 hours)

**In all, Premier Aquatics provides staffing and services to over 40 contracts which accounts for over 100 total pools. Pools range from small commercial HOA pools, to larger water parks, lazy rivers, and city competition pools. We have never failed to fulfill a contract and have never lost a contract to a service complaint. **

2024 Total Staffing Hours
Salary Hours- 16,632
Hourly Staffing- 173,931
Overtime Hours- 1,835
Total hours- 193,333

Conclusion
Premier Aquatics brings a proven track record, deep operational expertise, and a commitment to safety, customer service, and program excellence. We are well-positioned to successfully operate Hart Park Pool and to serve as a trusted partner to the City of Orange.

Memo

To: Potential Bidder

From: Leslie Hardy, Community and Library Services Director

Date: November 20, 2025

Subject: **Protection of Historic Structures**

The City of Orange wants you to be aware of its historic District, primarily in Old Towne that includes many structures and contributing elements. Hart Park and Plaza Park, which are in this District, contain historically significant structures and elements that must be protected.

As a valued partner using the facilities, or a contractor for the City of Orange responsible for the maintenance or improvements of these historically significant park sites, it is incumbent upon your members or employees to protect the structures and elements from being damaged as a result of their activities.

Plaza Park is particularly historic, having originally been constructed in the late 1800s during the City's infancy. The Plaza fountain, in its current state, was built in the 1930s and is a cherished and significant attraction for residents, businesses, and visitors alike. The Hart Park pool building and band shell are historic structures on the National Registry as contributing significantly to Old Towne Orange Historic District. In fact, all of the north section of Hart Park, including the creek bottom/parking lot and walls are a contributor to the District.

As stewards of our historical resources, please pay special attention to how you conduct your activities or work while in these parks. It is up to you to help preserve these important City treasures, so they are here for generations to come. It is important to understand that your role as a permitted user or City of Orange contractor requires you to use good judgment while conducting your activities or executing your duties and responsibilities and not put the historic structures or elements at risk of damage. They cannot be replaced and damage to them requires repairs, altering their original construction. Negligence on the part of any permitted user or contract employee causing damage to these historic structures or elements will not be tolerated and may result in revocation of permits or the contract employee being disqualified to perform work in City parks and may also result in the termination of your contract with the City of Orange.

Thank you for being good stewards of our precious historical resources.

I acknowledge that I have read, understand and will comply with the above guidelines (return one signed copy to the City).

Daniel Berezansky
Print Name & Title

Premier Aquatic Services LLC
Company Name

Signature

12/17/25
Date

PROPOSER'S ACKNOWLEDGEMENT OF COMPLIANCE

WITH INSURANCE REQUIREMENTS FOR

AGREEMENT FOR PROFESSIONAL SERVICES

Proposer agrees, acknowledges, understands and is fully aware of the insurance requirements as specified in Section 18, Insurance (Requirements) of the attached sample Agreement for Professional Services and hereby accepts all conditions and requirements as contained therein.

Proposer: Daniel Bertolucci

Name (Please Print or Type)

By: CEO

Proposer's Signature & Title

Date: 12/17/25

PROPOSER'S ACKNOWLEDGEMENT OF COMPLIANCE

WITH PROVISIONS FOR

AGREEMENT FOR PROFESSIONAL SERVICES

Proposer agrees, acknowledges, understands and is fully aware of the sample contract form as specified in Appendix A, attached sample Agreement for Professional Services. Proposer acknowledges conditions and requirements as contained therein. Contractor/Proposer must note any exceptions to the City's standard form professional services agreement as a part of their proposal submission for consideration by the City as part of the proposal, and warrants that the City may utilize proposed exceptions as a grounds for rejection of a proposal.

Proposer: Daniel Bernsley

Name (Please Print or Type)

By: CEO

Proposer's Signature & Title

Date: 12/17/25

****CONTRACTOR MUST ATTACH PROPOSED EXCEPTIONS TO THE CITY'S STANDARD/SAMPLE PROFESSIONAL AGREEMENT FORM – IF ANY- TO PROPOSAL FOR CONSIDERATION(AFTER THIS PAGE)****

Noncollusion Affidavit

(Title 23 United States Code Section 112 and
Public Contract Code Section 7106)

To the CITY OF ORANGE – DEPARTMENT OF PUBLIC WORKS

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Noncollusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Noncollusion Affidavit.
Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution

DEBARMENT AND SUSPENSION CERTIFICATION TITLE 2, CODE OF FEDERAL REGULATIONS, PARTS 180 & 1200

The Proposer, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal. Exceptions will not necessarily result in denial of award but will be considered in determining proposer responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action. Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

Daniel Berzansky

Print or Type Name of Proposer

CFO

Signature of Proposer

12/17/25

Date

This executed form must be submitted with proposal.

CERTIFICATION OF PROPOSAL

TO THE CITY OF ORANGE

The undersigned hereby submits its proposal and agrees to be bound by the terms and conditions of this Request for Proposal (RFP). By signing the Certification of Proposal and submitting a proposal to the City in response to this Request for Proposals, the Proposer hereby represents and certifies that:

A) No elected or appointed official, officer, or employee of the City has been or shall be compensated, directly or indirectly, in connection with this proposal or for any work connected with this proposal; should any agreement be approved in connection with this Request for Proposals ("Agreement") no elected or appointed official, officer, or employee of the City, during the term of his/her service with the City, shall have any direct or indirect financial interest in the Agreement, or obtain any present anticipated, or future financial interest or other material benefit arising therefrom;

B) No elected or appointed official, officer, or employee of the City shall have any financial interest, direct or indirect, in the Agreement nor shall any such official, officer, or employee participate in any decision relating to the Agreement which effects his/her personal financial interest or the financial interest of any corporation, partnership, or association in which they are, directly or indirectly, interested in violation of state law;

C) The Proposer and its principals do not have now, nor shall it acquire any financial or business interest that would conflict with the performance of services under the Agreement;

D) Proposer shall represent and certify that it does not and will not discriminate against any employee or applicant for employment because of race, religion, gender, color, national origin, sexual orientation, ancestry, material status, physical condition, pregnancy or pregnancy related conditions, political affiliation or opinion, age or medical condition;

E) By submitting the response to this request, Proposer agrees, if selected, to furnish services to the City in accordance with this RFP;

F) Proposer has carefully reviewed its proposal and understands and agrees that the City is not responsible for any errors or omissions on the part of the Proposer and that the Proposer is responsible for them;

G) It is understood and agreed that the City reserves the right to accept or reject any or all proposals and to waive any informality or irregularity in any proposal received by the Cit

H) The proposal response includes all of the commentary, figures and data required e Request for Proposal, dated 12/17/25. The proposal shall be valid for 180 days from the due date of this RFP.

Name of Proposing Firm (Contractor Entity Name): Premier Aquatic Services LLC

By: _____

(Authorized Signature)

Type Name (of Authorized Signer): Daniel Berzansky **Date:** 12/17/25

***Contractor's offered fees/costs shall be in effect, except in the case of a conflict with Exhibit B of the Agreement, in which case Exhibit B shall supersede/govern.

COST PROPOSAL – MANAGEMENT FEE MODEL

City of Orange – Hart Park Pool Operations
RFP No. 25-26.10

This Cost Proposal is submitted using a Management Fee model. Under this approach, Premier Aquatic Service LLC (PAS) will receive a fixed annual management fee, and PAS will be responsible for covering all staffing, programming, training, and administrative costs necessary to operate the Hart Park Pool and associated aquatic programs. All services will comply with the CMAHC guidelines.

This structure provides the City of Orange with cost certainty, budget predictability, and reduced operational risk, while allowing PAS to manage staffing efficiencies and program execution internally.

CP-1: Staffing Cost Proposal (Included in Management Fee)
All staffing costs required to operate Hart Park Pool during the May 2026 through April 2027 operating season are included within the proposed annual management fee. Staffing covered under this fee includes, but is not limited to:

- Lifeguards
- Head Lifeguards / Deck Supervisors
- Swim Instructors
- Program Supervisors
- Front Desk / Customer Service Staff

PAS assumes full responsibility for wages, payroll taxes, workers' compensation, training, and staffing-related expenses. No additional staffing costs will be billed to the City outside of the agreed-upon management fee. For any additional staffing services requested by the city, outside of the agreed upon scheduled listed in this proposal, Premier will bill at an hourly rate of $35.00/hour.

****CP-1 Total Staffing Cost to the City: $0 (Included in Management Fee)****

CP-2: Operating and Administrative Costs (Included in Management Fee)
Operating and administrative costs required to support safe and effective aquatic operations are included within the proposed annual management fee, with the exception of capital items to be left at the facility. These costs include, but are not limited to:

- Staff training and certifications (StarGuard Elite, CPR/AED, in-service training)
- Uniforms, rescue equipment, and program supplies
- Background checks and compliance requirements

- Scheduling, payroll, human resources, and administrative support

PAS will be responsible for managing these costs internally to ensure program quality, safety compliance, and customer service excellence.
****CP-2 Total Operating Cost to the City: $0 (Included in Management Fee)****

CP-3: Total Annual Cost Summary
The table below summarizes the total annual cost to the City of Orange under the Management Fee model proposed by Premier Aquatic Service LLC.

CP-1 Staffing Costs	$0 (Included in Management Fee)
CP-2 Operating & Administrative Costs	$0 (Included in Management Fee)
Annual Management Fee	$186,000.00
Pool Maintenance	$30,000.00
Total Annual Cost to the City (CP-3)	$216,000.00

**Regarding Appendix C in the RFP as it relates to pool service, we agree to all required service and service intervals and intend on increasing year round service to twice weekly, however all chemical costs associated with operating the pool will be billed back to the city using a look back period of one month. Details regarding pool maintenance will be found in Appendix A.

Revenue Share
Premier Aquatics is proposing a revenue share program with three different triggers which are listed below. See table below for an outline of revenue triggers.

Program Revenue Share	
Revenue	**Revenue Share**
$ 125,000.00	15.0%
$ 150,000.00	
$ 175,000.00	
$ 200,000.00	
$ 225,000.00	20%
$ 250,000.00	
$ 275,000.00	
$ 301,000.00+	22.5%

Management Fee Scope and Assumptions

The proposed annual management fee of $186,000 includes full responsibility for operating Hart Park Pool and delivering aquatic programming in accordance with the City's RFP requirements. PAS assumes the financial risk associated with staffing levels, wage fluctuations, and program execution.

This proposal is based on a year round operations from May through April and assumes the City will continue to provide utilities, chemicals, and after hours cleaning.

Certification and Signature

I certify under penalty of perjury that the information contained in this Cost Proposal is true and correct and that I am authorized to bind the firm contractually.
Premier Aquatic Service LLC

Authorized Signer: Dan Berzansky
Title: Owner
Signature: _____
Date: 12/17/25

Appendix A

Program Descriptions

Perpetual Group Swim Lessons
Fees: $15 per lesson billed monthly based on how many times the class meets in a month
Frequency: 1 x per week, participants can choose multiple days
Participants: 3 students in Level 1, 4 students in Level 2- 6

Premier Aquatic Service's Perpetual Group Swim Lessons are designed to build water safety, confidence, and foundational swim skills in a supportive group environment. Swimmers are placed into progressive levels and advance as skills are mastered, allowing for continuous development throughout the season.

This program focuses on water safety, breath control, floating, and stroke development including freestyle and backstroke, with introduction to additional strokes as swimmers progress. Small group sizes allow instructors to provide individual feedback while maintaining a positive, social learning environment.

Perpetual Private Swim Lessons
Fees: $28 per lesson billed monthly based on how many times the class meets in a month
Frequency: 1 x per week, participants can choose multiple days
Participants: 1 student

Perpetual Private Swim Lessons provide one-on-one instruction tailored to each swimmer's individual needs, learning style, and goals. These lessons allow instructors to focus on specific skills and accelerate progress at a pace comfortable for the swimmer.

Private lessons are ideal for swimmers who benefit from personalized instruction, have specific goals, or require additional support to build confidence and proficiency in the water.

Fast Track Group Swim Lessons
Fees: $1110 per session
Frequency: Class meets Monday – Thursday for 2 weeks (8 Lessons)
Participants: 3 students in Level 1, 4 students in Level 2- 6

Fast Track Group Swim Lessons are accelerated programs conducted over a concentrated two-week period. Classes meet multiple times per week with the same instructor and schedule, providing consistency and rapid skill development.

This format is ideal for swimmers looking to make quick progress, prepare for summer swim activities, or reinforce skills in a short timeframe.

Parent & Me Swim Lessons
Fees: $15 per lesson billed monthly based on how many times the class meets in a month
Frequency: 1 x per week, participants can choose multiple days
Participants: 8 students/parents

Parent & Me Swim Lessons introduce infants and toddlers to the water in a safe, positive, and playful environment alongside a parent or guardian. The program emphasizes water comfort, trust, and early water safety through songs, games, and guided activities.

These lessons help children develop early familiarity with the water while teaching parents techniques to support their child's comfort and safety.

Water Aerobics
Fees: $5 drop in fee
Frequency: Class meets 2- 3 days a week
Participants: 20 students

Water Aerobics is a low-impact aquatic fitness program designed to improve cardiovascular endurance, strength, flexibility, and overall wellness. Classes are instructor-led and suitable for all fitness levels.

Participants benefit from the resistance and buoyancy of the water, which reduces joint impact while providing an effective full-body workout.

Swim Team
Fees: $150 per month
Frequency: 4 practices a week, Monday- Thursday
Participants: group size varies

The Swim Team program offers structured training for swimmers ready to participate in a competitive or advanced swim environment. Practices focus on stroke technique, endurance, starts, turns, and overall swim conditioning.

In addition to physical training, the program emphasizes teamwork, discipline, and sportsmanship, creating a positive and motivating team culture.

Program Discounts
Perpetual style lessons allow for unlimited make-ups in the same style of lesson. Make-ups expire after 90 days.

Perpetual style lessons allow for a 10% sibling discount.

Appendix B

Page left blank Intentionally. Pool Pros detailed proposal attached on next page.

CITY OF ORANGE - HART POOL SERVICE AND MAINTENANCE

Commercial Service Quote

Prepared for

City of Orange
300 East Chapman Avenue
Orange, California 92866

The Pool Pros
6 Journey
Aliso Viejo, CA 92656

Alex Campos
alexc@thepoolprosusa.com

Dear :

QUOTE SUMMARY

On behalf of the entire **Pool Pros** team, I would like to submit the following proposal for your consideration. The following proposal includes all necessary weekly, monthly, quarterly, and annual service expectations. We understand the importance of well-maintained facilities and look forward to the opportunity to service your residents and to ensure that the pools at City of Orange are maintained to the highest possible standards.

What Makes Us Different

At The Pool Pros, we understand the importance of maintaining a clean, safe, and inviting aquatic space for your residents and guests. Our goal is to provide top-tier service with professionalism, reliability, and transparency.

Simply put, our commitment to you is fourfold.

C- Chemistry- We will maintain proper chemistry which will extend the life of your facility and equipment.

C- Cleanliness- We will maintain a clean and orderly pool and pump room.

C- Care- We will work to service and maintain your equipment as to avoid unnecessary repairs and replacement costs.

C- Communication- You will always know what is happening with your facility, be it regarding standard service, or the need for repairs. Communication is key.

Getting Started

Within one month of the start of service, The Pool Pros will provide the client with a comprehensive equipment audit to assist in capital planning and potential repair/replacement budgets. This audit should be used to prepare stakeholders for any impending needs for major and minor service. This service will also include a calibration of any existing or new chemical controller systems, to ensure pool chemistry is kept at a proper level.

Chemical Controllers

The Pool Pros requires properly functioning Chemical Controllers to ensure that pool chemistry is continuously operating at acceptable levels. For contracts not currently utilizing controllers, Pool Pros will recommend a number of options but will require that clients install one of the approved systems to begin service. Pool Pros will calibrate and maintain client controllers as part of regular service. Please note that daily records of pool chemistry is required in the State of California. The proper controllers satisfy that requirement.

Please also keep in mind that utilizing chemical controllers is guaranteed to extend the life of your equipment, your plaster, and your aquatics facility.

Scope of Services

The below outlines the general duties The Pool Pros will be responsible for the community pool(s).

Routine Maintenance:

1. Chemical testing and balancing for all bodies of water to Health department Standards.
2. Health Department-compliant record-keeping for water chemistry and maintenance.
3. Cleaning and skimming pool surfaces to remove debris.
4. Vacuuming pool floors and brushing walls to prevent algae.
5. Maintaining and cleaning pump room equipment and chemical storage areas.
6. Backwashing filters as needed for optimal filtration.
7. Coordinating chemical deliveries and maintaining an organized inventory.
8. Monitoring water levels and temperatures (80-83°F).
9. Inspecting and reporting any vandalism or facility damage immediately.

Reporting and Communication:

1. Detailed service logs delivered each service visit, including water chemistry data and performed tasks.
2. Immediate communication of any urgent issues or recommended repairs.

Additional Services:

1. Chlorine and Acid- Billed monthly for the preceding month.
2. Repairs and emergency response billed separately at $250/hour. Weekend calls will be billed at $350 per hour.

3. Fecal Contamination Event- Billed based on gallonage.
4. Equipment replacement and chemical costs (beyond standard chlorine and aci billed with prior written approval.
5. On-site training available for property management staff to enhance collaboration and understanding of facility needs.

Preventative Maintenance

Preventative maintenance is the key to a fully functioning aquatic facility. Please refer to the chart below for a full breakdown of the "Pool Pros Preventative Maintenance Commitment", and what to expect from an annual service and fee perspective.

Below is a comprehensive plan that the Pool Pros will follow to properly maintain for your bodies of water, complete with estimated hour and potential costs associated with each maintenance item.

General Preventative Maintenence Schedule and Associated Service Time Service Fees		
	Commercial	**Cost**
On Start Up		
Configure and Calibrate Automation System	10 Hours	**Included**
Weekly/Per Visit		
Inspect pumps. No unusual noises, baskets and impeller are free of any debris.	15 Min	Included
Inspect pool equipmentfor leaks - pipes, valves and fittings.	15 Min	Included
Inspect pool lighting fixtues - lights are securely fastened and functioning.	15 Min	Included
Inspect electrical panel - ensuring all circuit breakers are working correctly.	15 Min	Included
Inspect pool automation - pool equipment set to correct run times.	15 Min	Included
Backwash pool filtration system.	30 Min	Included
Clean skimmer and pump baskets	15 Min	Included
Monthly		
Check stability of handrails and condition of handrail covers.		Included
Inspect o ring seals on pump lids, check valves, valve actuators etc.		Included
Check facility gates to ensure self closing		Included
Quarterly		
Chemical feeders - replace tubing.	1 Hour	Included
Chemical feeders - inspect gears.	30 Min	Included
Bi-Annual		
Inspect and clean filter cartidges, o ring seals, drain plugs, tank lube.	2 Hours	Included
Inspect sand filter, Heaters, Pumps, Plumbing, Electrical, and Safety Compliance Checklist.	1-6 Hours*	Included
Annual		
Heater inspection / service	1 Hour	Included
Replace automation battery backup		Included
Inspect bonding to pool equipment - ensuring all electrial components are grounded.	15 Min	Included
Sand filter and Heater break downTBD by manufacture. DE Fillters are included.		*Per heater/Filter

Service Schedule

Off-Season ~~(May 1 – April 30)~~ **(September 1 - April 30)**
On-Season (May 1 – August 31)

What our clients are saying about us



"Since Pool Pros took over our four pools in 2023, it is the first time in nearly a decade that we feel we don't have to worry about our facilities. We know what they are doing, when they are doing it, and if repairs are needed, the speed at which they get them done is impressive. The communication they provide before and after is exceptional. We are so glad we found Pool Pros.".

JENNIFER ROBBINS

Liberty Military Housing

SERVICE QUOTE

Issued
December 18, 2025
Expires
February 1, 2026

Prepared for

Below is a detailed breakdown of your service quote. Please note that all pricing is subject to change based market fluctuations on chemicals and potential minimum wage increases. Please don't hesitate to reach out if you have any questions.

Products & Services	Billing Frequency	Quantity	Unit price	Price
2 Day Offseason 3 Day On-Season Maintenance	Monthly	1	$2,150.00 / month	$2,150.00 / month

Products & Services	Billing Frequency	Quantity	Unit price	Price
Service September through April- 2 Days per week, May through August- 3 Days Per week for the Maintenance of the pools.				
Annual Preventative Maintenance Program Equipment Program (filters, controllers, heaters, and Stenner chemical feed lines; includes inspections, cleaning, calibration, and minor adjustments; excludes major repairs and replacement parts)	Monthly	1	$350.00 / month	$350.00 / month
Monthly subtotal				$2,500.00

TERMS AND CONDITIONS

1. **Approval Process:** All non-routine repairs or additional expenses will require written approval from property management. Urgent repairs under $500 may proceed with verbal approval followed by written confirmation.
2. **Termination Clause:** Either party may terminate this agreement with a 30-day written notice. Outstanding invoices and approved work in progress must be settled before termination.
3. **Reporting Standards:** Service logs and reports will be shared electronically, ensuring transparency and accountability.
4. **Liability:** The Pool Pros is not responsible for equipment failures resulting from deferred maintenance or client decisions to postpone recommended repairs.

5. **Performance Standards:** The Pool Pros will maintain water chemistry within recommended guidelines, ensure all tasks are completed as scheduled, and respond promptly to client inquiries or emergencies.
6. **Compliance:** All work will comply with local health department codes and regulations to ensure safety and operational excellence.

PROPOSAL ACCEPTANCE

By agreeing to these terms, you can confirm your readiness to begin professional pool maintenance services with The Pool Pros effective immediately. Your account will be charged starting by the end of the week, with recurring monthly billing cycles thereafter. In addition, you acknowledge that pricing is subject to annual increases.

Print

EXHIBIT "B"
FEE SCHEDULE & AGREEMENT COST TABLE

Annual Fees (Totals) to Contractor 'Table 1'

		Initial Term	*Optional First Extension*	*Optional Second Extension*	*Optional Third Extension*
	Service Description	**Year 1 (Annual Fee)**	**Year 2 (Annual Fee)**	**Year 3 (Annual Fee)**	**Year 4 (Annual Fee)**
1	Pool Chemicals*	$ 11,424.00	$ 11,995.20	$ 12,594.96	$ 13,224.71
2	Pool Maintenance Service**	$ 30,000.00	$ 31,200.00	$ 32,448.00	$ 33,745.92
3	Management Fee**	$ 186,000.00	$ 193,440.00	$ 201,177.60	$ 209,224.70
4	Agreement Subtotal (Scope)	**$ 227,424.00**	**$ 236,635.20**	**$ 246,220.56**	**$ 256,195.33**
5	Contingency***	$ 22,742.40	$ 23,663.52	$ 24,622.06	$ 25,619.53
6	**Not-to-Exceed Annual Amount**	**$ 250,166.40**	**$ 260,298.72**	**$ 270,842.62**	**$ 281,814.86**

* Not-to-Exceed Cost: Contractor will provide Pool Chemicals (A) and (B) below, at the rates listed below on an as needed basis up to the applicable not-to-exceed annual fee. Contractor shall notify the City at least 30-days in advance of any projected need for additional chemical purchases that will exceed the annual available remaining fee.

**Fixed Fee: Contractor's negotiated total cost for service. In no event will contractor invoice above the line item maximum for this service type. Contractor will invoice the City (monthly) for fixed fee services at 1/12 the annual amount.

*** City Contingency : This line item is fixed per year in accordance with the Agreement, and expenditures within this itemization may only be approved by the City in advance, in writing.

Chemical Fee Table (Unit Rates) to Contractor 'Table 2'

	Chemical Type	**UOM**	**Fee/Rate (max)**	**Annual Not-to-Exceed**
(A)	Bulk Chlorine	Gallon	**$2.68 ******	See line #1 by Year
(B)	Bulk Muriatic Acid	Gallon	**$2.84 ******	See line #1 by Year

**** Contractor may, in conjunction with an approved annual amendment, request in writing an increase to the maximum unit "Fee/Rate" provided that the increase does not exceed a maximum annual pecentage of 4.0%. Contractor shall provide necessary back-up/sub-contract substantiation for requested chemical rate cost increases.

Revenue Fees (to City) 'Table 3'

Gross Revenue Amount	**City's Revenue Share Percentage**
$0.00 to $124,999.99	0.00%
$125,000.00 to $224,999.99	15.00%
$225,000.00 to $300,999.99	20.00%
$301,000.00+	22.50%

Revenue: Contractor shall pay City for revenue share (portions of gross revenue) based upon specific revenue targets listed above. Revenue tracking resets annually in conjunction with potential annual amendments. Contractor shall provide revenue tracking reports not less frequently than quarterly. Revenue share payments shall be made to the City within 30-days after the end of an applicable quarter. The City may elect to recieve potential revneue as a credit to be deducted from a regular invoice to the City for Service.

General Fee Notes

1 In the event of a descrepancy between Exhibit A / Contractor's Proposal, and this Exhibit B, the information in Exhibit B shall govern.

2 Contractor shall itemize all monthly invoices/fees to the City in accordance with Table 1 of this Exhibit.

///

Agenda Item

Orange City Council

Item #: 10.3. 3/10/2026 **File #:** 26-0095

TO: **Honorable Mayor and Members of the City Council**

THRU: **Jarad Hildenbrand, City Manager**

FROM: **Christopher Cash, Public Works Director**

1. SUBJECT

Establishment of Permit Parking Area “AF” to be comprised of both sides of Fairmont Way from La Veta Avenue to Delia Lane

2. SUMMARY

Staff received a request for permit parking on Fairmont Way. The request was processed in accordance with the City’s Neighborhood Permit Parking Program, adequately supported by the affected property owners, and approved by the City Traffic Commission. If approved, Fairmont Way will establish Permit Parking Area “AF.”

3. RECOMMENDED ACTION

Adopt Resolution 11658. A Resolution of the City Council of the City of Orange adopting a revised master resolution of designated permit parking areas and established permit parking opportunity areas within the City of Orange.

4. FISCAL IMPACT

None. Implementation involves minimal staff time and minimal expenditures that have already been approved in the City’s operating budget.

5. STRATEGIC PLAN GOALS

Goal 5: Improve Infrastructure, Mobility, and Technology

6. DISCUSSION AND BACKGROUND

The City’s Neighborhood Permit Parking Program (NPPP) provides a mechanism for protecting residential streets from external parking overflow when certain criteria are satisfied. To initiate the NPPP process, a property owner on an affected and eligible street must submit a written request identifying the streets and boundaries for permit parking as well as days and times where demand for on-street parking is the highest. City staff will review the proposed streets for eligibility for incorporation into the permit parking program. Once reviewed, staff will conduct a parking occupancy study on eligible streets. A street must have a minimum 75% parking occupancy and 75% property owner support via a petition process. If these criteria are met, staff will present the proposed permit parking boundaries to City Traffic Commission (CTC) for initial review and City Council for final approval.

Permit Parking on Fairmont Way

Staff received a written request to implement permit parking on Fairmont Way. After reviewing the street and neighborhood, staff confirmed that Fairmont Way met the objectives and criteria of the City's NPPP for permit parking consideration. Staff mapped the number of legal parking spaces for the street and conducted parking occupancy studies during hours of highest demand identified by the proponent. Fairmont Way met the 75% minimum level of parking occupancy, with an average parking occupancy of 75%. Subsequently, staff mailed petitions to affected property owners. The results of the petition process for Fairmont Way indicate that 79% of property owners are in favor of permit parking, 0% are opposed, and 21% did not respond. Because the property owner support on the street met the 75% stipulated in the NPPP, staff supports, and the CTC recommends implementation of permit parking. If approved, Fairmont Way, from La Veta Avenue to Delia Lane, would establish Permit Parking Area "AF."

7. ATTACHMENTS

- Attachment 1 Resolution No. 11658
- Attachment 2 Proposed Permit Parking Area
- Attachment 3 City Traffic Commission Staff Report February 11, 2026
- Attachment 4 Draft City Traffic Commission Minutes February 11, 2026
- Attachment 5 Notification Letter Fairmont Way

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RESOLUTION NO. 11658

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ORANGE ADOPTING A REVISED MASTER RESOLUTION OF DESIGNATED PERMIT PARKING AREAS AND ESTABLISHED PERMIT PARKING OPPORTUNITY AREAS WITHIN THE CITY OF ORANGE

WHEREAS, pursuant to California Vehicle Code Section 22507, local authorities may generally prohibit or restrict the stopping, parking, or standing of vehicles on certain streets or highways, or portions thereof, during all or certain hours of the day; and

WHEREAS, local authorities may also include a designation of certain streets upon which preferential parking privileges are established with a permit or permits that exempt them from the prohibition or restriction of the ordinance or resolution; and

WHEREAS, pursuant to the authority provided by the California Vehicle Code, the City Council of the City of Orange codified Chapter 10.30 of the Orange Municipal Code generally establishing parking requirements for the City of Orange; and

WHEREAS, Sections 10.30.010 and 10.30.020 specifically establishes the Neighborhood Parking Permit Program designating portions of certain public streets for permit-parking and explicitly authorizes the City Council of the City of Orange to add, remove or modify designated areas within the Neighborhood Parking Permit Program by resolution; and

WHEREAS, the creation of a "Master Resolution" containing all the permit parking areas in a single document eliminates the need to potentially revise multiple resolutions when an area is added, deleted, or modified within the Neighborhood Parking Permit Program; and

WHEREAS, the City Council of the City of Orange most recently adopted said Master Resolution on March 10, 2026 (Resolution No. 11636), containing a list of all permit parking areas within the City; and

WHEREAS, staff now recommends adding additional streets in the Neighborhood Permit Parking Program; and

WHEREAS, accordingly, the City Council desires to rescind Resolution No. 11636 and replace it with a revised Resolution;

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Orange does resolve as follows:

SECTION I:

That Resolution No. 11636, adopted October 14, 2025, is hereby rescinded, effective immediately upon the date of the adoption of Resolution No. 11658.

SECTION II:

The following streets be added to the Neighborhood Permit Parking Program as Area "AF":

Both sides of Fairmont Way from La Veta Avenue to Delia Lane.

SECTION III:

That the Master Resolution of Permit Parking Area for the Neighborhood Permit Parking Program attached hereto as Exhibits "A", Exhibit "B", Exhibit "C", Exhibit "D", Exhibit "E", Exhibit "F", Exhibit "G", Exhibit "H" and Exhibit "I" are hereby adopted.

ADOPTED this ____ day of _____, 2026

_____
Daniel R. Slater, Mayor, City of Orange

ATTEST:

_____
Pamela Coleman, City Clerk, City of Orange

APPROVED AS TO FORM:

_____
Natalie Adourian, City Attorney

I, PAMELA COLEMAN, City Clerk of the City of Orange, California, do hereby certify that the foregoing Resolution was duly and regularly adopted by the City Council of the City of Orange at a regular meeting thereof held on the _____ day of _____, 2026 by the following vote:

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:

_____
Pamela Coleman, City Clerk, City of Orange

EXHIBIT A

The following areas are all areas that have been designated by the City Council for inclusion in the Neighborhood Permit Parking Program and are subject to Chapter 10.30 of the Orange Municipal Code. Any additions or deletions to the Neighborhood Permit Parking Program shall be made by amending this Master Resolution.

CHAPMAN UNIVERSITY NEIGHBORHOOD PERMIT PARKING AREA "A"

1. Both sides of Center St. from Walnut Ave. to the southern terminus of Center St. adjacent to residential land uses.
2. Both sides of Cleveland St. from Palm Ave. to Sycamore Ave.
3. East side of Cypress St. from Maple Ave. to the southern property line of 171 North Cypress St.
4. Both sides of Cypress St. from Walnut Ave. to Sycamore Ave.
5. Both sides of Everett Pl. from Shaffer St. to Glassell St.
6. Both sides of Glassell St. from Walnut Ave. to Rose Ave.
7. East side of Grand St. from the southern property line of 127 N Grand Street to the northern property line of 147 North Grand St.
8. Both sides of Grand St. from Palm Ave. to the southern property line of 183 N Grand St. adjacent to residential land uses.
9. Both sides of Grand St. from Mayfair Ave. to Walnut Ave. adjacent to residential land uses.
10. Both sides of Harwood St. from Palm Ave. to the northern terminus of Harwood St.
11. Both sides of Jefferson Ave. from Harwood St. to Shaffer St.
12. East side of Lemon St. from Maple Ave. to the southern property line of 149 North Lemon St.
13. Both sides of Lemon St. from Palm Ave. to Walnut Ave. adjacent to residential land uses.
14. Both sides of Maple Ave. from Cleveland St. to Orange St. adjacent to residential land uses.
15. North side of Maple Ave. from Olive St. to the eastern property line of 115 East Maple Ave.
16. Both sides of Mayfair Ave. from Shaffer St. to Glassell St.
17. Both sides of Olive St. from Maple Ave. to the northern terminus of Olive St. adjacent to residential land uses.
18. Both sides of Olive St. from Sycamore Ave. to Walnut Ave.
19. Both sides of Orange St. from Maple Ave. to Palm Ave. adjacent to residential land uses.
20. Both sides of Orange St. from Walnut Ave. to the northern terminus of Orange St.
21. Both sides of Palm Ave. from Harwood St. to Glassell St. adjacent to residential land uses.
22. North side of Palm Ave. from Pine St. to Harwood St.
23. Both sides of Rose Ave. from Glassell St. to Grand St.
24. Both sides of Shaffer St. from Chapman Ave. to Walnut Ave. adjacent to residential land uses.
25. West side of Shaffer St. from Walnut Ave. to the northern property line of 516 North Shaffer St.
26. Both sides of Sycamore Ave. from Cambridge St. to Center St.
27. North side of Sycamore Ave. from Glassell St. to the western property line of 317 West Sycamore Ave. adjacent to residential land uses.
28. South side of Sycamore Ave. from the western property line of 314 West Sycamore Ave. to Lemon St.
29. Both sides of Walnut Ave. from Cambridge St. to Center St. adjacent to residential land uses.

AREA "B"

1. Both sides of Adams Ave. from Glassell St. to Grand St.
2. Both sides of Hoover Ave. from Glassell St. to Grand St.
3. Both sides of Quincy Ave. from Glassell St. to Grand St.
4. Both sides of Wilson Ave. from Glassell St. to Grand St.

AREA "C"

1. Both sides of Compton Ave. from Manchester Ave. to Lewis St.
2. East side of Lewis St. from the northerly property line at 4035 Compton Ave. to the southern property line of 119 N. Lewis St.
3. West side of Manchester Ave. from Sheringham Ave. to Compton Ave.
4. North side of Sheringham Ave. from Manchester Ave. to Windgap Dr.
5. South sides of Sheringham Ave. from Woodridge Cr. to Windgap Dr.
6. Both sides of Sunningdale Cr. from Compton Ave. south to include the cul-de-sac.
7. Both sides of Windgap Dr. from Compton Ave. south to include the cul-de-sac.
8. West side of Woodridge Cr. from Sheringham Ave. south to include the cul-de-sac.
9. East side of Woodridge Cr. from the northerly property line of 119 N. Woodridge Cr. south to include the cul-de-sac.

AREA "D"

1. Both sides of Dunas St. from Maple Ave. north to include the cul-de-sac.
2. Both sides of Maple Ave. from Prospect St. to Olympia Way.
3. Both sides of Olympia Way from Maple Ave. to Spring St.
4. Both sides of Shasta St. from Maple Ave. north to include the cul-de-sac.
5. Both sides of Vine Ave. from Olympia Way to its western terminus.
6. Both sides of First St. from Chapman Ave. north to include the cul-de-sac.
7. Both sides of Pearl Ave. from First St. to McPherson Rd.
8. East side of McPherson Rd. from 131 to 133 N. McPherson Rd.

AREA "E"

1. West side of Elm St. south of Sycamore Ave. to include the cul-de-sac.

AREA "F"

Permit Parking between the hours of 10:00 p.m. and 6:00 a.m.

1. Both sides of Almond Ave. from Prospect St. to Violet Ln.
2. Both sides of Kathleen St. from Chapman Ave. to Palmyra Ave.
3. Both sides of Palmyra Ave. from Craig Dr. to Prospect St.
4. East side of Prospect St. from Almond Ave. to Palmyra Ave.
5. Both sides of Violet Ln. from Almond Ave. to Palmyra Ave.

AREA "G"

Permit Parking between the hours of 10:00 p.m. and 6:00 a.m.

1. Both sides of Euclid Ave. from James St. to Seranado St.
2. Both sides of James St. from Sycamore Ave. to Euclid Ave.
3. Both sides of Palm Ave. from Swidler St. to Seranado St.
4. Both sides of Sycamore Ave. from Swidler St. to Seranado St.
5. Both sides of Seranado St. from Spring St. to Walnut Ave.
6. Both sides of Silverleaf Ave. from Thomas St. to Seranado St.
7. Both sides of Spring St. from Swidler St. to Seranado St.
8. Both sides of Swidler St. from Spring St. to Walnut Ave.
9. Both sides of Thomas St. from Sycamore Ave. to Silverleaf Ave.
10. Both sides of Walnut Ave. from Swidler St. to Seranado St.

AREA "H"

1. Both sides of Shaffer St. beginning 390 feet north of Katella Ave. and ending at Trenton Ave. (R-1 zoned single-family residences only.)

AREA "I"

1. Both sides of Almond Ave. from Prospect St. to Dunas St.
2. Both sides of Century Ave. from James St. to Thomas St.
3. Both sides of Craig Dr. 100 feet south of Roberta Dr. to Prospect St.
4. Both sides of Dunas St. from Palmyra Ave. to Almond Ave.
5. Both sides of James St. from Century Dr. to La Veta Ave.
6. North side of La Veta Ave. from Prospect St. to Dunas St.
7. Both sides of Merelet Ln. from Craig Dr. to include the cul-de-sac.
8. Both sides of Olympia Way from Palmyra Ave. to Almond Ave.
9. North side of Palmyra Ave. from Prospect St. to Thomas St.
10. Both sides of Ruth Pl. easterly of James St.
11. Both sides of Ruth Pl. from Prospect St. to Olympia Way.
12. Both sides of Shasta St. from Palmyra Ave. to Almond Ave.
13. Both sides of Thomas St. from Century Dr. to Palmyra Ave.

AREA "J"

1. Both sides of Binnacle Ave. from Jetty Dr. to its easterly terminus.
2. North side of Chapman Ave. from Jetty Dr. to 4537 W. Chapman Ave.
3. North side of Chapman Ave. frontage road from Jetty Dr. to cul-de-sac.
4. Both sides of Grant Pl. from Chapman Ave. northerly to include the cul-de-sac.
5. Both sides of Jetty Dr. from Chapman Ave. to Sirius Ave.
6. West side of Lewis St. from Sirius Ave. to Simmons Ave.
7. South side of Simmons Ave. from Lewis St. to Spinnaker St.
8. Both sides of Sirius Ave. from Lewis St. to Jetty Dr.
9. Both sides of Spinnaker St. from Binnacle Ave. to Simmons Ave.

10. Both sides of Stay Court easterly of Jetty Dr.
11. Both sides of Tiller Ave. from Lewis St. to Spinnaker St.

AREA "K"

1. Both sides of the 2700 block of E. Bennett Ave.
2. Both sides of the 2700 block of E. Killingsworth Ave.
3. Both sides of the 100-200 blocks of N. Malena Dr.
4. Both sides of the 2700 block of E. Sherman Ave.
5. Both sides of the 100-200 blocks of N. Wheeler St.

AREA "L"

1. Both sides of Jacaranda Ave. from Morgan St. to Mallard St.
2. Both sides of Juniper Ave. from Morgan St. to Mallard St.
3. Both sides of Mallard St. from Collins Ave. northerly to 985 N. Mallard St.
4. Both sides of Morgan St. from Collins Ave. northerly to 986 N. Morgan St.

AREA "M"

1. Both sides of Citrus St. from Almond Ave. to the southerly commercial property lines south of Chapman Ave.

AREA "N"

1. West side of Bedford Rd. from La Veta Ave. to Bronson Ave.

AREA "O"

1. North side of Spring St. from Hewes St. to Earlham St.

AREA "P"

1. Both sides of the 1000 block of Gardner Dr.
2. Both sides of the 1000 block of Greengrove St.
3. Both sides of Monroe Ave. from California St. to Lincoln St.
4. Both sides of Quincy Ave. from California St. to Lincoln St.
5. Both sides of Lincoln St. between Adams Ave. and Wilson Ave. including the cul-de-sac.
6. West side of Lincoln St. from 990 N. Lincoln St. to Adams Ave.
7. East side of Lincoln St. from 1073 N. Lincoln St. to Adams Ave.
8. Both sides of Adams Ave. between Lincoln St. and California St.

AREA "Q"

1. Both sides of the 8500 block of Biscayne Way.
2. Both sides of the 8500 block of Deershire Ct.
3. Both sides of the 200 block of Fairfield Ln.
4. Both sides of the 200 block of Firenza Way.
5. Both sides of the 8500 block of Heatherview Ln.

AREA "R"

1. Both sides of San Luis Dr. from 7821 (north side) to Santa Cruz Ave., and from 7816 (south side) to the beginning of 8132.
2. 8102 and 8110 Santa Cruz Ave. (south side).
3. Both sides of Santa Maria St. between San Luis Dr. and Santa Cruz Ave.

AREA "S"

1. Both sides of Poplar St. between Maple Ave. and the cul-de-sac.
2. North side of Maple Ave. between Stevens St. and 1949 W. Maple Ave.
3. South side of Maple Ave. from Stevens St. to 2010 W. Maple Ave.
4. Both sides of Eckhoff St. between 130-283 N. Eckhoff St.

AREA "T"

1. Both sides of Cully Dr. from the westerly property lines of 861 and 864 W. Cully Dr. to the cul-de-sac.
2. Four spaces on the east side of Eckhoff St. from the southerly limit to W. Arbor Way (approximately 110 feet).
3. Five spaces on the east side of Eckhoff St. from 45 feet north of W. Arbor Way end of curb return to Maple Ave. (approximately 140 feet. It allows one parking space to remain in the permit parking program just north of the driveway at 2037 W. Arbor Way for visibility).
4. Three spaces on the east side of Eckhoff St. north of Willow Ave. to the northerly limit (approximately 70 feet).
5. Two spaces on the east side of Eckhoff St. from the existing red curb north of Maple Ave. to the driveway south of 206 N. Eckhoff St.

AREA "U"

1. Both sides of Waverly St. from the northerly property lines of 133 and 138 S. Waverly St. to Almond Ave.

AREA "V"

1. The south side of E. Rose Ave. from 1932/1934 to N. Highland St.
2. Both sides of N. Highland St. from E. Rose Ave. to E. Barkley Ave.
3. Both sides of E. Mayfair Ave. from 1740 E. Mayfair Ave. to N. Highland St.
4. The south side of E. Lomita Ave. from 1734/1736 to N. Highland St.
5. The north side of E. Lomita Ave. from 1901 to N. Highland St.
6. Both sides of E. Barkley Ave. from the cul-de-sac to N. Highland St.
7. Both sides of the cul-de-sacs of N. Victoria Dr., N. Russell Dr., and N. Shirley Dr., north of E. Mayfair Ave.

AREA "W"

1. Both sides of Madison Ave. from Wayfield St. to the cul-de-sac.
2. Both sides of Orange Grove Ave. from Wayfield St. to the westerly property lines of 1743/1744
3. E. Orange Grove Ave.
4. East side Wayfield St. between Orange Grove Ave. and the southerly property lines of 550/555 Wayfield St.
5. West side of Wayfield St. between Orange Grove Ave. and Madison Ave.

AREA "X"

1. South side of Collins Ave. from Hart St. to 2842 E. Collins Ave.

AREA "Y"

1. Both sides N. Citrus St. from Walnut Ave. to W. Sycamore Ave.

AREA "Z"

1. Both sides of Sycamore Ave. from Rancho Santiago Blvd. to Richard St.
2. Both sides Rancho Santiago Blvd. from the south city limits to Silverleaf Ave.
3. Both sides of Silverleaf Ave. from Rancho Santiago Blvd. to Richard St.
4. Both sides of Christine St. from Silverleaf Ave. to Sycamore Ave.
5. Both sides of Richard St. from Silverleaf Ave. to Sycamore Ave.

AREA "AA"

1. Both sides of Ryals Ln. from the West City limit to Bob White Way.
2. East side of Bob White Way between Ryals and Partridge Ln.
3. Both sides of the 200 Block of Renee St.
4. Both sides of Avenida Palmar, from west City limits to N. Thora St.
5. Both sides of Sandpiper Circle.

AREA "AB"

1. Both sides of Mallard Street, from 985 N. Mallard St. to Jackson Ave.

AREA "AC"

1. Both sides of Via Lardo Avenue from Hewes Street to easterly terminus.

AREA "AD"

1. East side of Swidler Place from Chapman Avenue to Almond Avenue.
2. Both sides of Almond Avenue from Swidler Place to Olympia Way.

AREA "AE"

1. The east side of Parker Street from the southerly property line of 125 N. Parker Street to Maple Avenue.
2. The west side of Paker Street from the southerly property line of 122 N. Parker Street to Maple Avenue.
3. The west side of Pixley Street from the southerly property line of 128 N. Pixley Street to Maple Avenue.

AREA "AF"

1. Both sides of Fairmont Way from La Veta Avenue to Delia Lane.

OPPORTUNITY AREA "1"

1. Both sides of Lilac Ln. from Culver Ave. to Orchard Ave.
2. Both sides of Plum Ln. from Culver Ave. to Orchard Ave.
3. Both sides of Orchard Ave. from Flower St. to the easterly terminus of the street.
4. Both sides of Bedford Rd. between Culver Ave. and La Veta Ave.
5. Both sides of Devon Rd. between Palmyra Ave. and Culver Ave. (permit parking between the hours 4:00p.m. and 9:00a.m.)
6. Both sides of Crest Rd. between Palmyra Ave. and Culver Ave.

Opportunity Area "2"

1. Both sides of Fairway Dr. from Cambridge St. to Tustin St.
2. Both sides of Young Cir. south of Fairway Dr.
3. Both sides of Greenview Dr. south of Fairway Dr.

OPPORTUNITY AREA "3"

1. Wayfield St. between Palm Ave. and Walnut Ave.
2. Palm Ave. between Park Ln. and Wayfield St.
3. Park Ln. between Dana Pl. and Palm Ave.
4. Wayfield Cr. south of Palm Ave.
5. Both sides of Mount Vernon Ave. between Wayfield St. and Le May Ct.
6. Both sides of Park Ln. between Mount Vernon Ave. and Sycamore Ave.
7. Both sides of Martha Ave. east of Park Ln.
8. Both sides of Sycamore Ave. between Wayfield St. and Highland St.
9. Both sides of Highland St. between Sycamore Ave. and south terminus.
10. Both sides of Wayfield St. from Chapman Ave. north to include the cul-de-sac.

OPPORTUNITY AREA "4"

1. Both sides of Trenton Ave. from the westerly property lines of 331 E. Trenton Ave. and 1482 N. Grant St. to Shaffer St.

2. Both sides of Trenton Ave., from Shaffer St to Cleveland St.
3. Both sides of Grant St. from Trenton Ave. to the cul-de sac.

OPPORTUNITY AREA "5"

1. Both sides of Greengrove St. from Meats Ave. to the southern terminus.
2. Both sides of Del Mar Ave. from Cambridge St. to Greengrove St.
3. South side of Meats Ave., from Cambridge St. to Greengrove St.

EXHIBIT B

The following are descriptions of preemptively established permit parking opportunity areas approved by the City Council and are subject to Chapter 10.30 of the Orange Municipal Code. Any additions or deletions to the Neighborhood Permit Parking Program shall be made by amending this Master Resolution.

CHAPMAN UNIVERSITY NEIGHBORHOOD PERMIT PARKING OPPORTUNITY AREA "A"

Generally bounded by Lomita Avenue to the north, Cypress Street to the west, Chapman Avenue to the south, and Cambridge Street to the east, as shown in Exhibit C.

OPPORTUNITY AREA "1"

To the north, Opportunity Area "1" is comprised of the area bounded by Sycamore Avenue. To the west, Opportunity Area "1" is comprised of the area bounded by, but does not include, the 57 Freeway. To the south, Opportunity Area "1" is comprised of the area bounded by, but does not include, the 22 Freeway from the 57 Freeway to Bedford Road, and La Veta Avenue from Bedford Road to Main Street. To the east, Opportunity Area "1" is comprised of the area bounded by, and inclusive of, the east side of Bedford Road from the 22 Freeway to La Veta Avenue; and bounded by, but does not include, Main Street from La Veta Avenue to Sycamore Avenue.

OPPORTUNITY AREA "2"

To the north, Opportunity Area "2" is comprised of the area bounded by, but does not include, the Santiago Creek Bike Trail. To the west, Opportunity Area "2" is comprised of the area bounded by, but does not include, Cambridge Street. To the south, Opportunity Area "2" is comprised of the area bounded by, but does not include, the 22 Freeway. To the east, Opportunity Area "2" is comprised of the area bounded by, but does not include, Tustin Street.

OPPORTUNITY AREA "3"

To the north, Opportunity Area "3" is comprised of the area bounded by, but does not include, the Walnut Avenue. To the west, Opportunity Area "3" is comprised of the area bounded by, and inclusive of, Wayfield Street from Walnut Avenue to Palm Avenue and Wayfield Street from Chapman Avenue to the northern terminus of Wayfield Street. To the south, Opportunity Area "2" is comprised of the area bounded by, but does not include, Chapman Avenue. To the east, Opportunity Area "2" is comprised of the area bounded by, but does not include, the 55 Freeway and Le May Court.

OPPORTUNITY AREA "4"

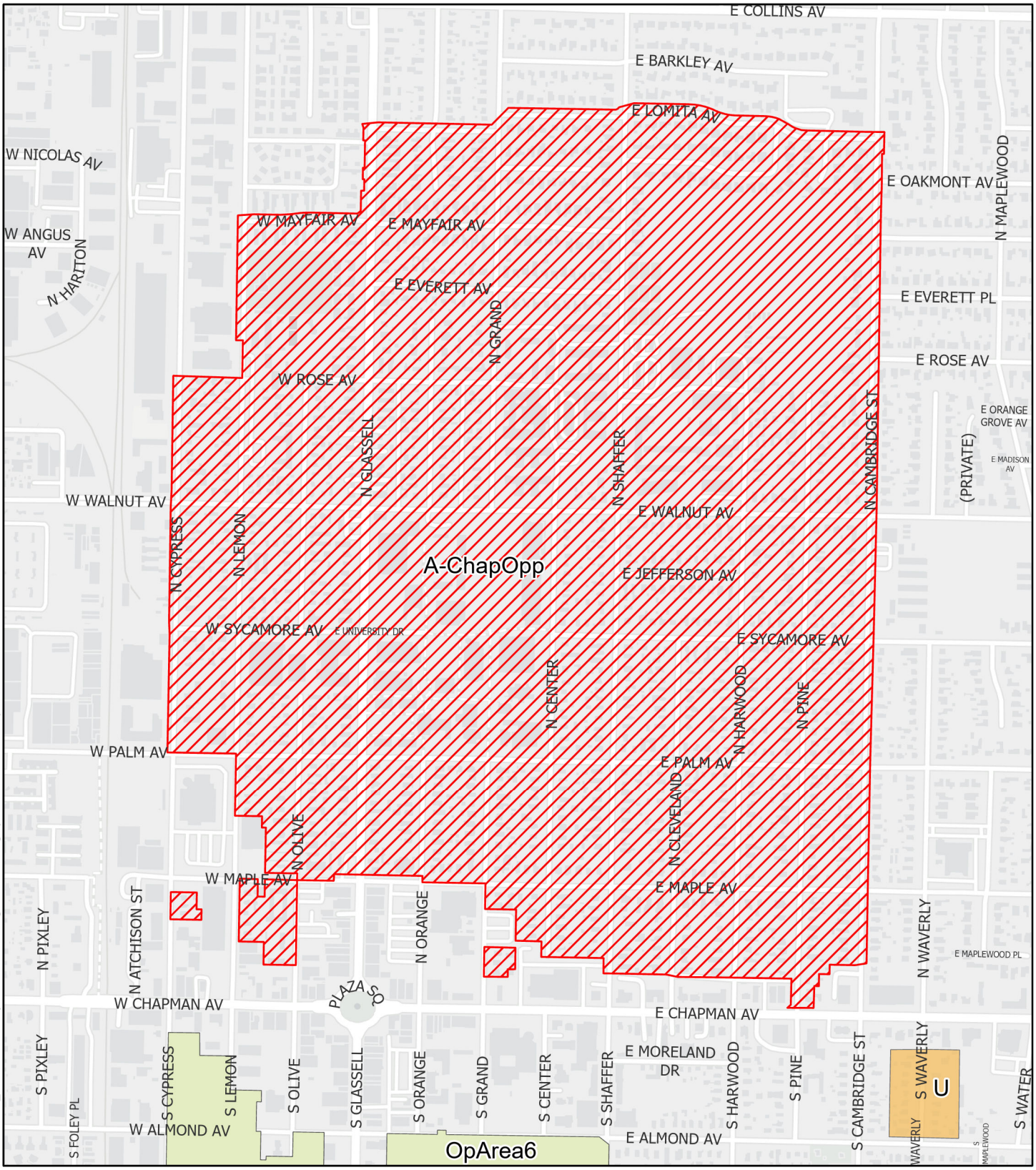
To the north, Opportunity Area "4" is comprised of the area bounded by, and inclusive of, Trenton Avenue. To the west, Opportunity Area "4" is comprised of the area bounded by the western property line of 331 East Trenton Avenue. To the south, Opportunity Area "4" is comprised of the area bounded by the prolongation of the southern property line of 1411 North Shaffer Street and 1412 North Shaffer Street. To the east, Opportunity Area "4" is comprised of the area bounded by, but does not include, Cambridge Street.

OPPORTUNITY AREA "5"

To the north, Opportunity Area "5" is comprised of the area bounded by, and inclusive of, the south side of Meats Avenue. To the west, Opportunity Area "5" is comprised of the area bounded by, but does not include, Cambridge Street. To the south, Opportunity Area "5" is comprised of the area bounded by, and inclusive of, Del Mar Avenue and the southern terminus of Greengrove Street. To the east, Opportunity Area "5" is comprised of the area bounded by, and inclusive of, Greengrove Street.

OPPORTUNITY AREA "6"

Opportunity Area "6" is generally bounded by Almond Avenue to the north, Cypress Street to the west, Palmyra Avenue to the south, and Shaffer Street to the east, as shown in Exhibit I.



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Exhibit C

City of Orange
Geographic Information System

Legend

- Area A Chapman University Neighborhood Permit Parking
- NPPP Opportunity Area 6
- Area U

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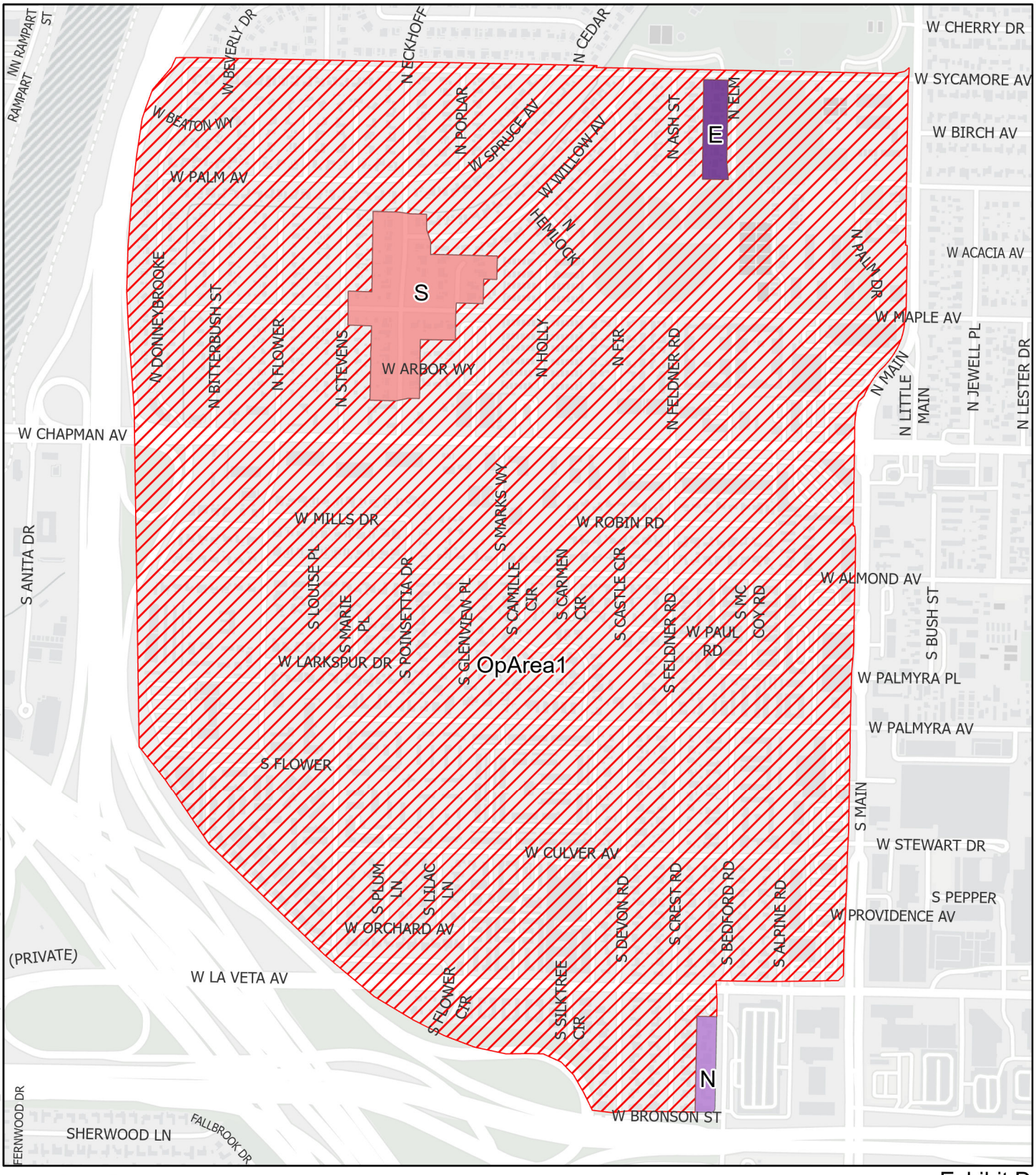
2/27/2025

Source: City of Orange (2025)

CITY OF ORANGE

Area "A" Chapman Neighborhood Area

2561



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Exhibit D

City of Orange
Geographic Information System

Legend

- NPPP Opportunity Area 1
- Area E
- Area N
- Area S

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2/27/2025

Source: City of Orange (2025)

CITY OF ORANGE

Opportunity Area 1

2562



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City of Orange
Geographic Information System

Legend

NPPP Opportunity Area 2

Exhibit E

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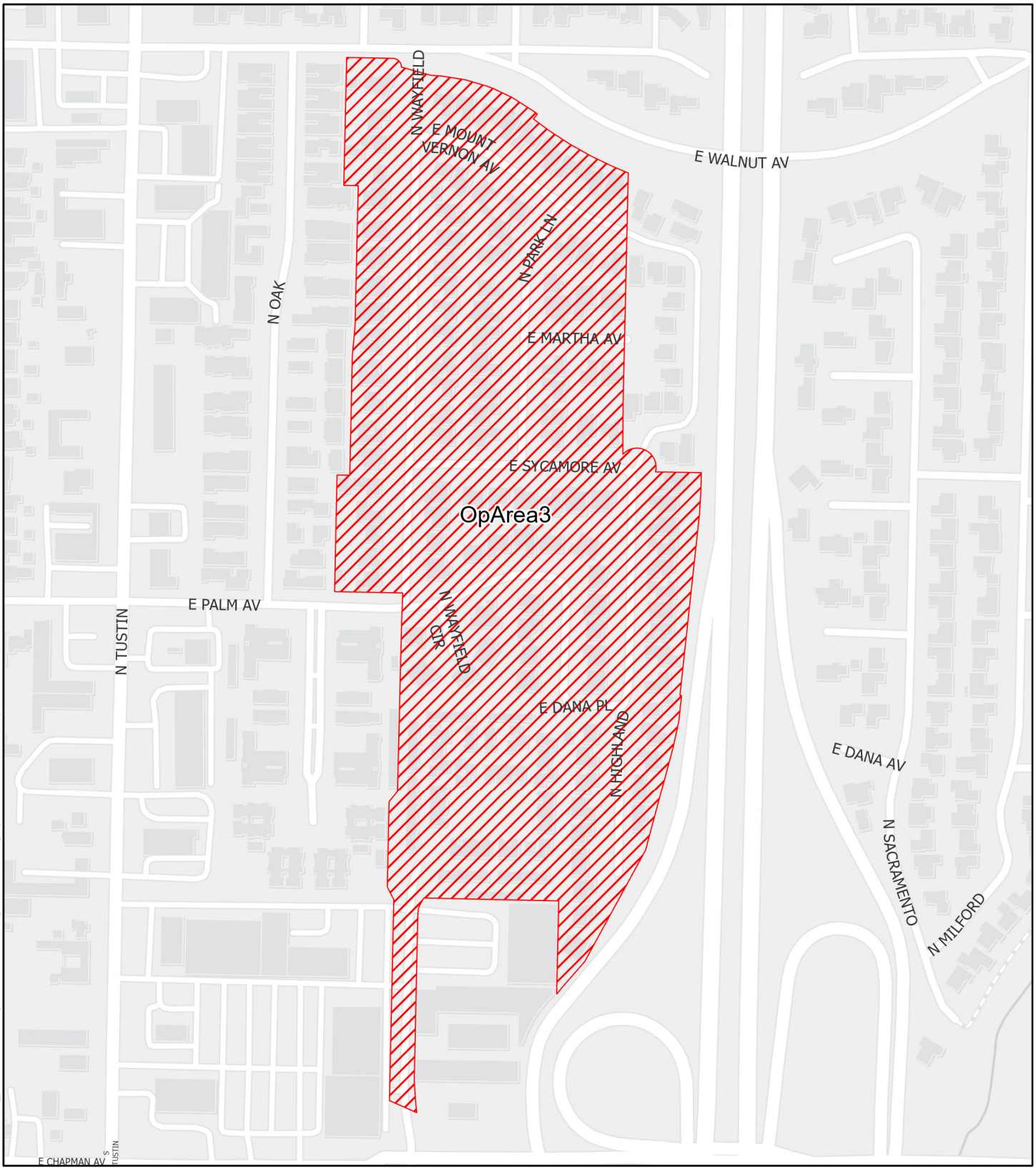
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Source: City of Orange (2025)

CITY OF ORANGE

Opportunity Area 2



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Exhibit F

City of Orange
Geographic Information System

Legend

NPPP Opportunity Area 3

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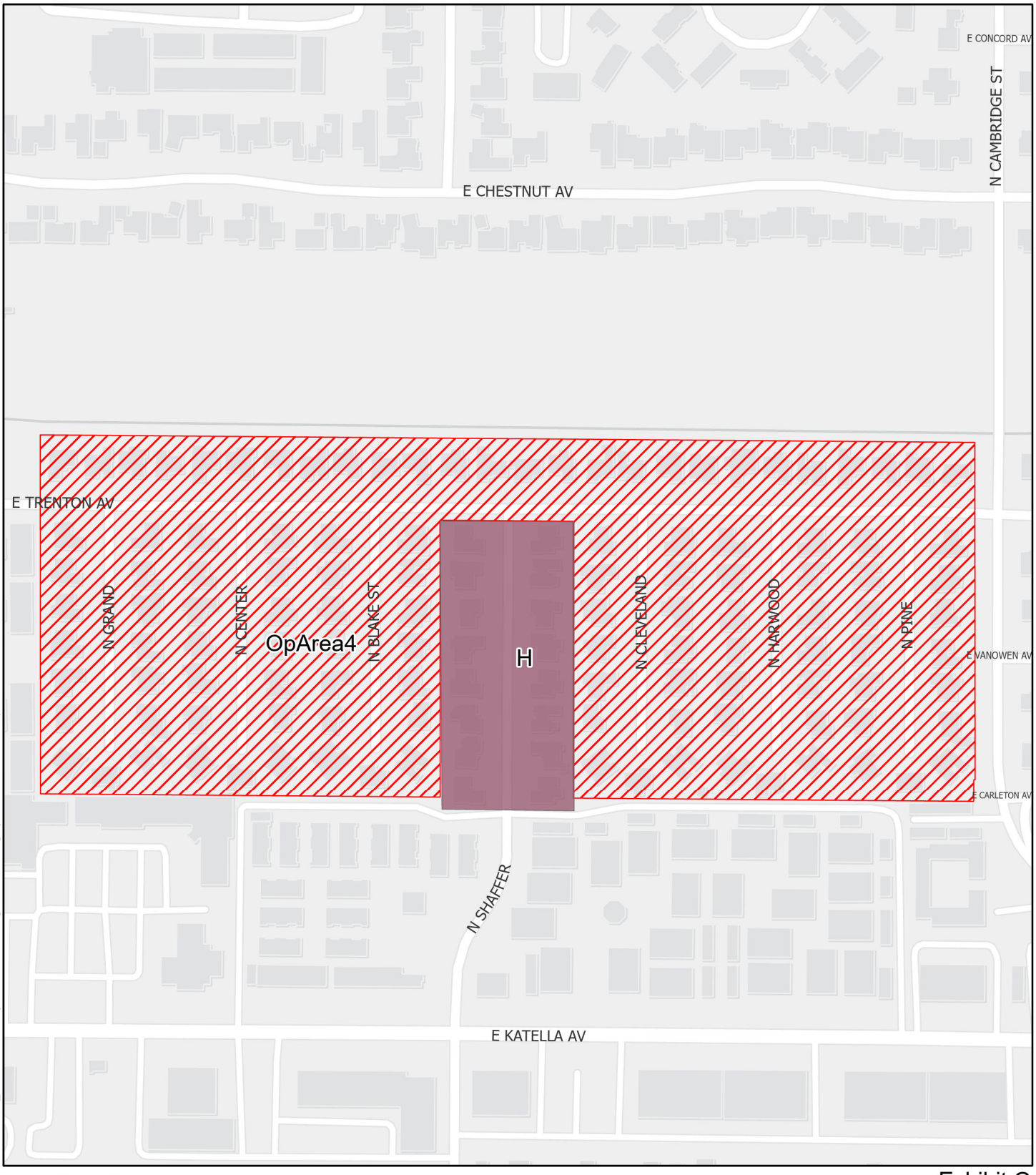
2/27/2025

Source: City of Orange (2025)

CITY OF ORANGE

Opportunity Area 3

2564



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Exhibit G

City of Orange
Geographic Information System

Legend

- NPPP Opportunity Area 4
- Area H

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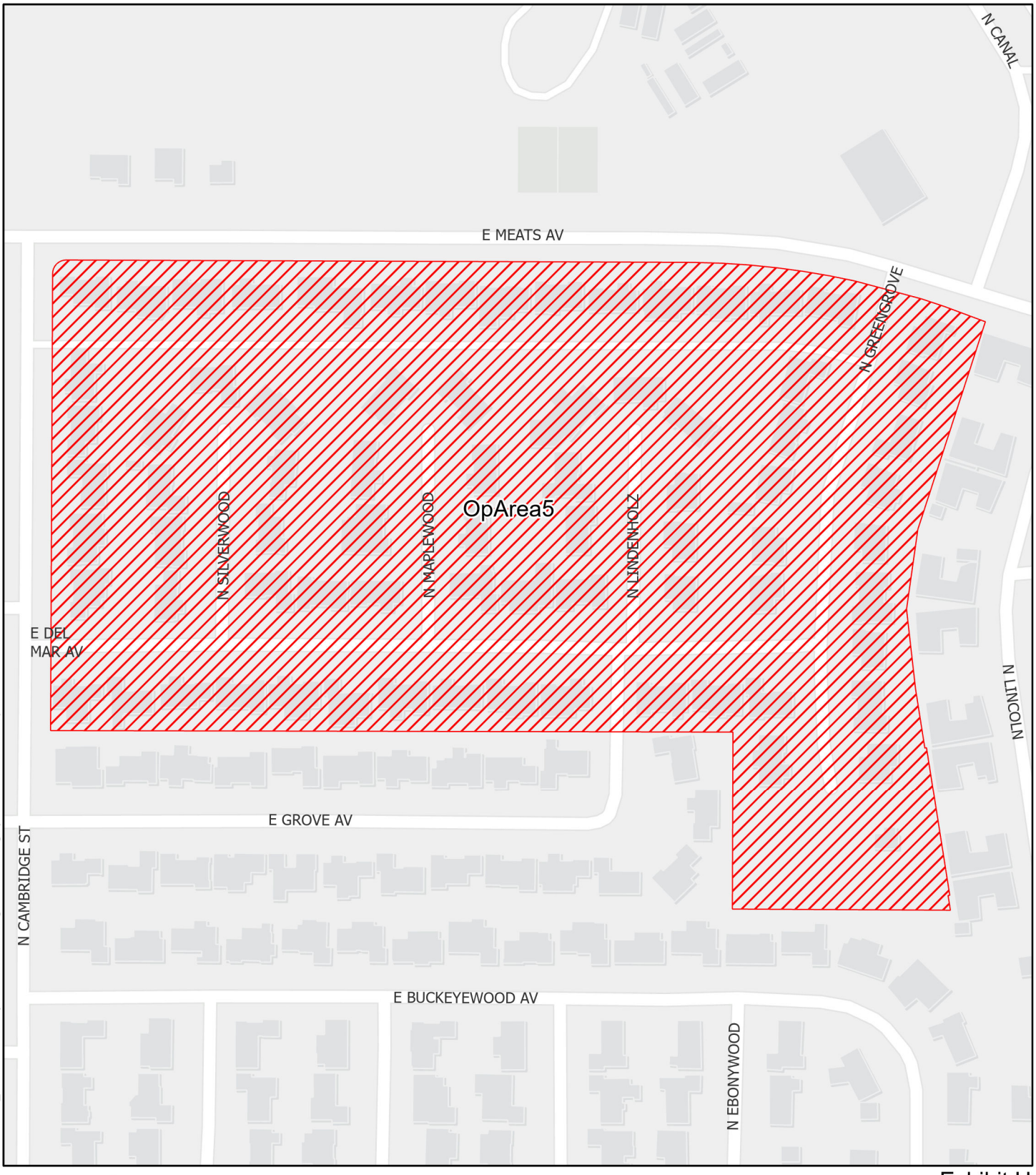
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Source: City of Orange (2025)

CITY OF ORANGE

Opportunity Area 4



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City of Orange
Geographic Information System

Legend

NPPP Opportunity Area 5

Exhibit H

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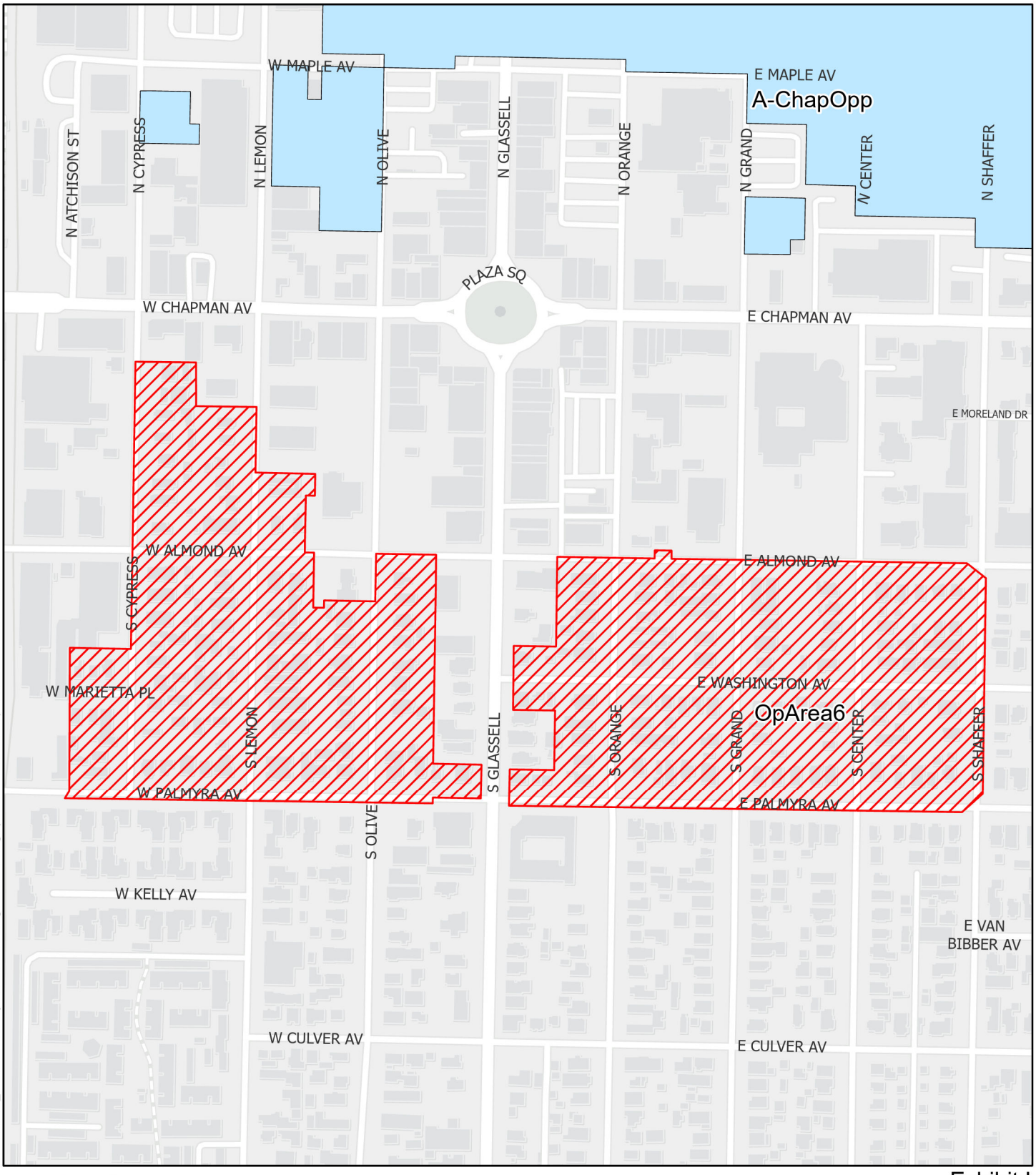
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Source: City of Orange (2025)

CITY OF ORANGE

Opportunity Area 5



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Exhibit I

City of Orange
Geographic Information System

Legend

- Area A Chapman University Neighborhood Permit Parking
- NPPP Opportunity Area 6

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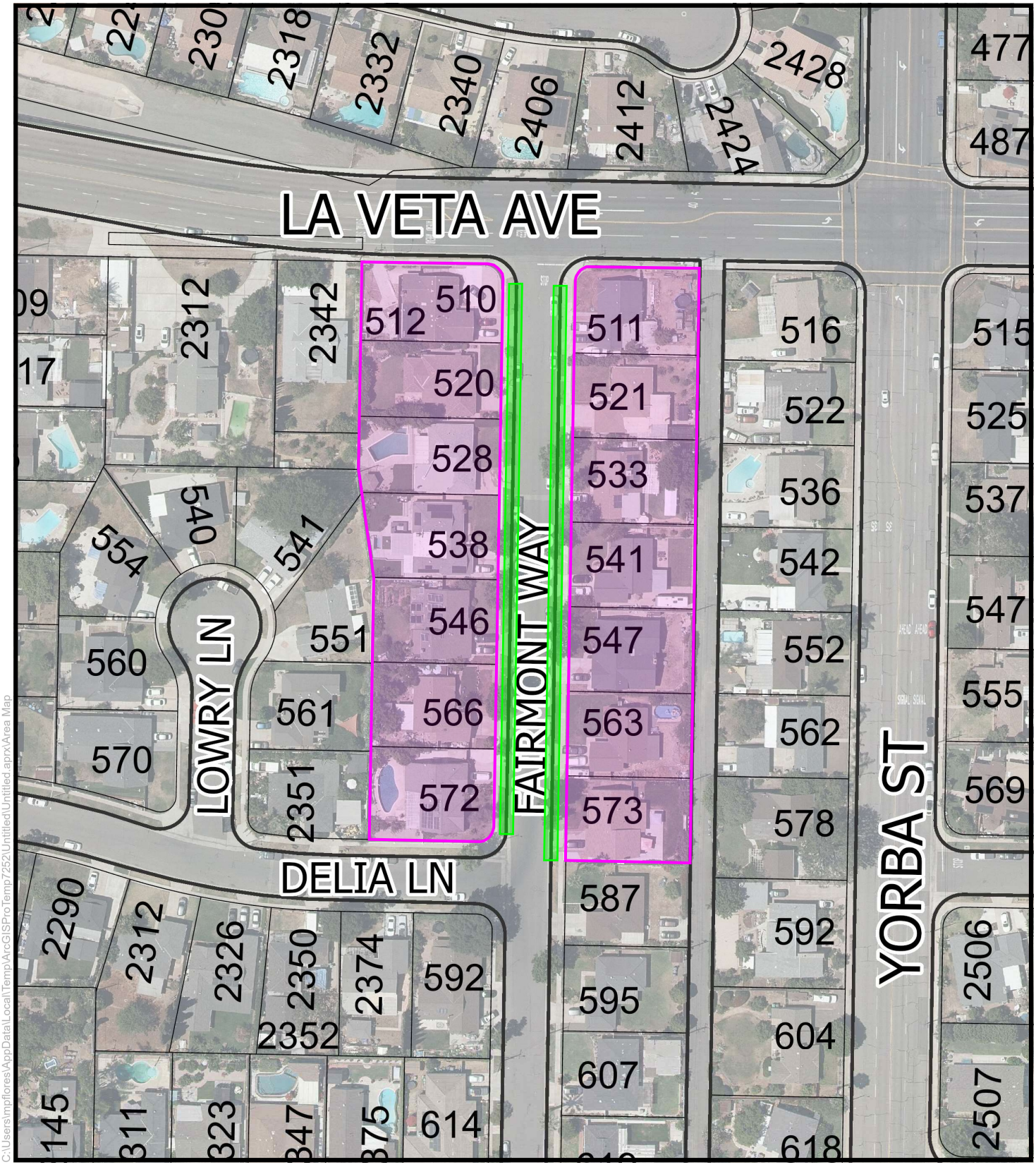
2/27/2025

Source: City of Orange (2025)

CITY OF ORANGE

Opportunity Area 6

2567



City of Orange
Geographic Information System

PERMIT PARKING FAIRMONT WAY

LEGEND:

PETITION AREA

PROPOSED PERMIT PARKING AREA AF

CITY OF ORANGE

ATTACHMENT 2 - ACTIVATION MAP

1/29/2026

Source: City of Orange (2024)

Agenda Item

City Traffic Commission

Item #: 4.3. 2/11/2026 **File #:** 26-0066

TO: **Chair and Members of the City Traffic Commission**

THRU: **Larry Tay, Deputy Public Works Director/Traffic Engineer**

FROM: **Maria Flores, Assistant Engineer**

1. SUBJECT

Request for permit parking on both sides of Fairmont Way from La Veta Avenue to Delia Lane

2. SUMMARY

A request for permit parking on Fairmont Way was made and evaluated in accordance with the City's Neighborhood Permit Parking Program. The request meets the intent and minimum requirements of the permit parking program and has received the necessary support from affected property owners.

3. RECOMMENDED ACTION

1. Approve the implementation of permit parking on Fairmont Way from La Veta Avenue to Delia Lane.
2. Forward recommendation to City Council for final action.

4. FISCAL IMPACT

None. Implementation involves minimal staff time and minimal expenditures that have already been approved in the City's operating budget.

5. STRATEGIC PLAN GOALS

Goal 5: Improve Infrastructure, Mobility, and Technology

6. DISCUSSION AND BACKGROUND

Background:

A property owner on Fairmont Way submitted a request to initiate the process of permit parking on Fairmont Way. The subject street is outlined and shown on the attached Area Map. In accordance with the City's Neighborhood Permit Parking Program (NPPP), staff preformed an initial screening of the study area to determine the following:

1. Whether the street is eligible for permit parking; and
2. If so, does said street lie within a City-defined permit parking opportunity area with a streamlined implementation procedure.

Since Fairmont Way qualifies for permit parking but isn't in a designated permit parking opportunity area, it must meet both the minimum parking occupancy level and receive sufficient support from

property owners before a permit parking recommendation can be made. The details of the request are outlined below.

Parking Occupancy Study:

Staff mapped and counted the number of legal parking spaces for each of the streets in the study area. The proponent provided staff with the days and times when parking demand in the neighborhood was believed to be at its highest. Staff then conducted the parking observations during those reported hours. Based upon the City's NPPP, a street parking occupancy rate of 75% is required to qualify for permit parking. Fairmont Way met the requirement with a 75% parking occupancy.

Petition Result:

Because the parking occupancy met the minimum required threshold on Fairmont Way, petitions were circulated for the residents on the street. The petition letter and a list of permit parking advantages and disadvantages were provided by the Traffic Division to each resident property owner on the street. The table below shows the results of the neighborhood polling.

Affected Street	Household In Favor		Household Opposed		Unreturned	
Fairmont Way	11	79%	0	0%	3	21%

The results of the petition process indicated that Fairmont Way meets the required minimum 75% of property owners in favor of the permit parking program.

Findings:

Since the level of parking demand and stakeholder support meets the minimum requirements under the City's NPPP, permit parking is recommended.

The following should be kept in mind:

1. Under the NPPP, property owners on any adjacent street experiencing spillover may request to initiate permit parking within a year without having to pay the application fee. Parking occupancy, petition thresholds, and other requirements in effect at the time will still apply.
2. Any vehicle parking in a designed parking-by-permit area without a permit is subject to citation. Parking permits do not supersede the street sweeping restrictions in the neighborhood.

7. ATTACHMENTS

- Letter of Request
- Area Map
- Site Sketch & Petition Area Map
- Notification Letter

Dear City of Orange,

My name is Brock Fedden and I am the homeowner of [redacted] My neighbors and I have noticed a huge influx of cars parking on our street from the apartments over the hill located on La Veta Ave named Arroyo Casa Apartments. We expect the parking problem to increase with the two new apartment complexes that are currently being built. The cars start arriving around 5:00 pm and some will leave the next day around 3:00 pm. Although there have been many times when the cars will stay on our street for 2+ days. They block our mailboxes, leave piles of trash out of their vehicles on the curb before they pull away, we have even had the car owners get violent with neighbors when asked if they lived on the street.

The neighbors from [redacted] were given a notice by me and have all agreed that parking by permit is the way to go.

The neighbors across the street from [redacted] were also given the same notice and have agreed with the parking by permit.

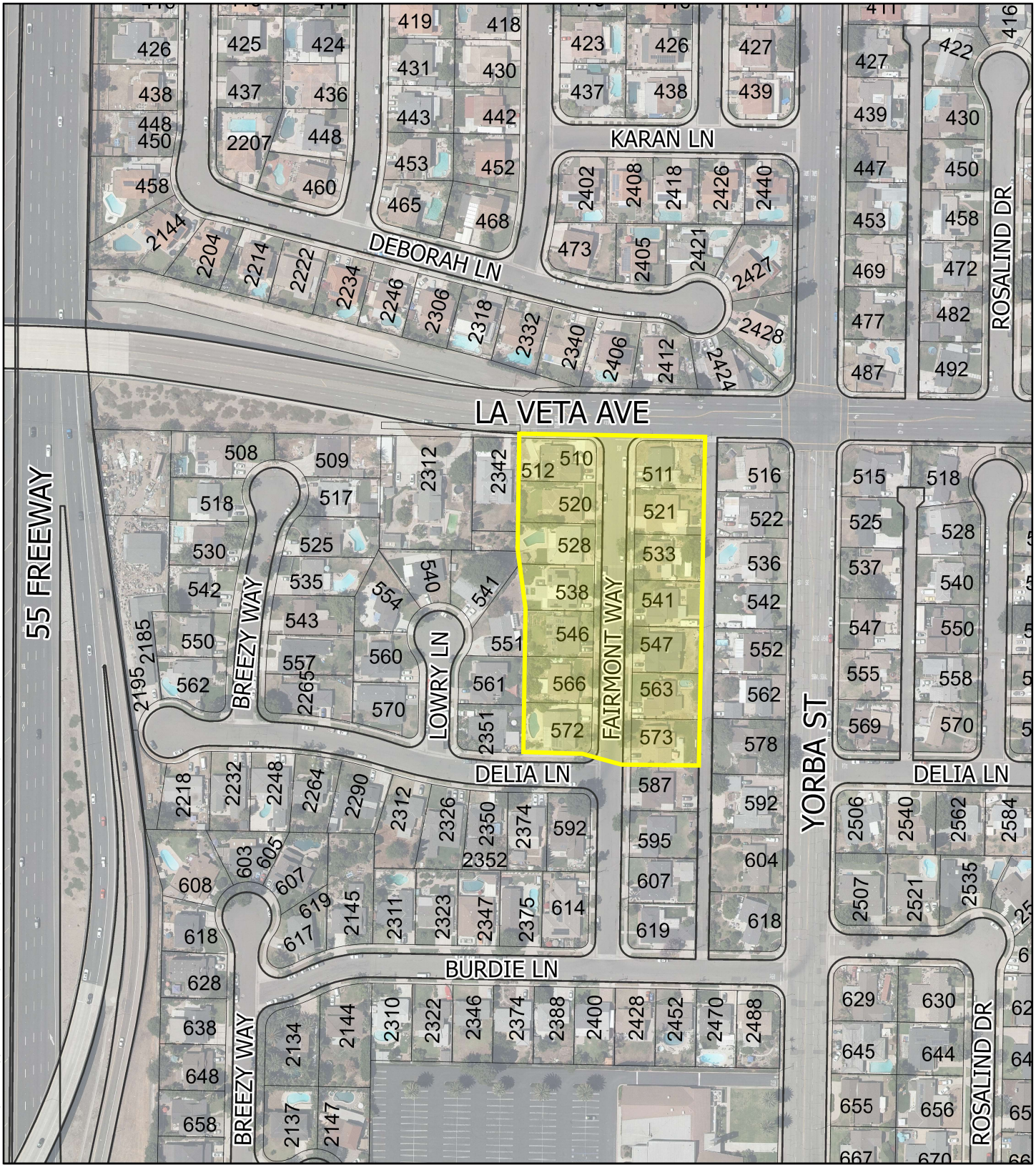
I know that we have to provide a $500 petition fee. I have included a check. If you need to get ahold of me please email [redacted] also CC [redacted] or call [redacted]

[redacted]

Fairmont way → La veta Ave to Delia Ln

after 8-9pm
saturday & surday

Thursday night
Friday night



City of Orange
Geographic Information System

LEGEND:

AREA MAP

ITEM 4.3 PERMIT PARKING FAIRMONT WAY

CITY OF ORANGE

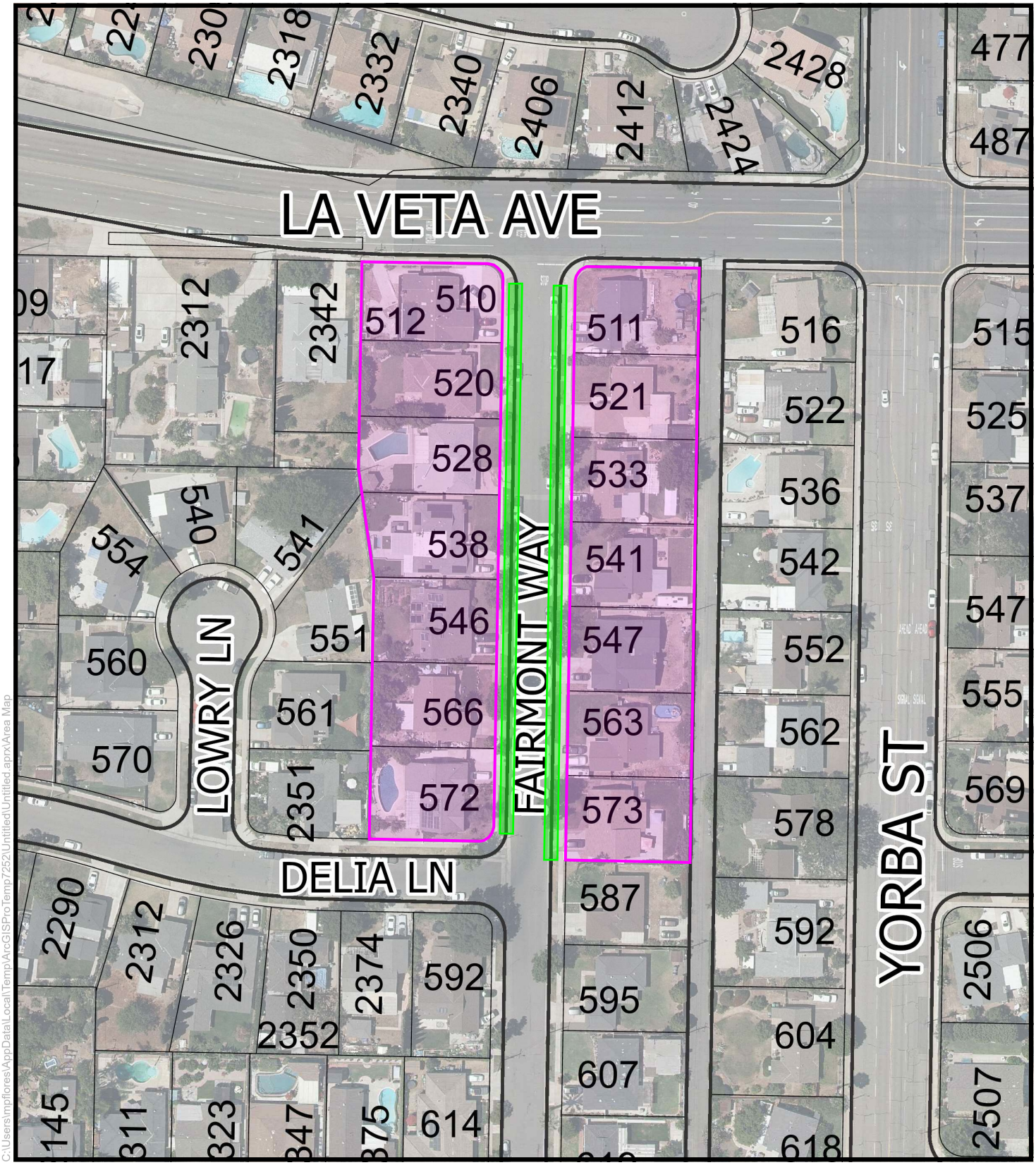
AREA MAP

1/29/2026

Source: City of Orange (2024)

2572

C:\Users\mpflores\AppData\Local\Temp\ArcGISProTemp7252\Untitled\Untitled.aprx\Area Map



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City of Orange
Geographic Information System

ITEM 4.3 PERMIT PARKING FAIRMONT WAY

LEGEND:

PETITION AREA

PROPOSED PERMIT PARKING AREA AF

CITY OF ORANGE

SITE SKETCH & PETITION AREA

1/29/2026

Source: City of Orange (2024)

City of Orange
Public Works Department
300 E. Chapman Ave.
Orange, CA 92866

January 29, 2026

Dear Resident/Property Owner:

This letter is to inform you that an item will be presented to the City Traffic Commission regarding:

- **A request to add a Neighborhood Permit Parking Program on Fairmont Way from La Veta to Delia Lane.**

The matter will be considered at the **February 11, 2026,** meeting of the City Traffic Commission. The meeting is scheduled at **5:30 p.m.**, in the **City Council Chamber**, located at 300 East Chapman Avenue.

You and any other interested party are encouraged to attend this meeting and express your opinions and/or concerns regarding this issue. Please feel free to contact Maria Flores at (714) 744-5525 or mpflores@cityoforange.org if you have any questions.

Sincerely,

Larry Tay, P.E., PTOE
Deputy Public Works Director/
City Traffic Engineer

MINUTES - DRAFT

City of Orange

City Traffic Commission

February 11, 2026

The Traffic Commission of the City of Orange, California convened on Wednesday, February 11, 2026, at 5:30 p.m. for a Regular Meeting in the Council Chamber, 300 E. Chapman Avenue, California.

1. OPENING/CALL TO ORDER

Chair Feliz called the meeting to order at 5:30 p.m.

1.1 PLEDGE OF ALLEGIANCE

Commissioner Sean Chavarria led the flag salute.

The meeting was paused at 5:31 p.m. due to technical issues and resumed at 5:51 p.m.

1.2 ROLL CALL

Present: Ricci, Barbeito, Hamilton, Chavarria, Redding, and Feliz
Absent: None

2. PUBLIC COMMENTS

None.

3. APPROVAL OF MINUTES

3.1. Approval of minutes of the City of Orange Traffic Commission Regular Meeting held on December 10, 2025

A motion was made by Vice Chair Ricci, seconded by Commissioner Chavarria, to approve minutes as presented. The motion carried by the following vote:

Ayes: Ricci, Barbeito, Hamilton, Chavarria, Redding, and Feliz
Noes: None
Absent: None

4. NEW BUSINESS

4.1. Proposed installation of rectangular rapid flashing beacons on White Oak Ridge approximately 260 feet east of Deep Spring Road

Transportation Analyst Jose A La Torre provided a brief staff report utilizing a PowerPoint Presentation.

A motion was made by Vice Chair Ricci, seconded by Commissioner Chavarria, to approve rectangular rapid flashing beacons on White Oak Ridge approximately 260 feet east of Deep Spring Road. The motion carried by the following vote:

Draft

Ayes: Ricci, Barbeito, Hamilton, Chavarria, Redding, and Feliz
Noes: None
Absent: None

4.2. 3-hour time-limited parking on the north side Katella Avenue, adjacent to the commercial frontage of 1249 E. Katella Avenue (APN: 375-461-48)

Transportation Analyst Jose A La Torre provided a brief staff report utilizing a PowerPoint Presentation.

The Commission considered the request for time-limited parking and discussed related concerns in the area. Staff provided clarification on the various types of time-limited parking that have been implemented historically based on land use needs.

A motion was made by Chair Feliz, seconded by Commissioner Hamilton, to: 1. Approve installation of 3-hour parking on the north side of Katella Avenue, adjacent to the commercial frontage of 1249 E. Katella Avenue. 2. Adopt Resolution TC 01-2026. A Resolution of the Traffic Commission of the City of Orange for the Establishment of 3-Hour Time-Limited Parking on the North Side of Katella Avenue, Adjacent to the Commercial Frontage of 1249 E. Katella Avenue (Assessor Parcel Number 375-461-48). The motion carried by the following vote:

Ayes: Ricci, Barbeito, Hamilton, Chavarria, Redding, and Feliz
Noes: None
Absent: None

4.3. Request for permit parking on both sides of Fairmont Way from La Veta Avenue to Delia Lane

Assistant Engineer Maria Prado provided a brief staff report utilizing a PowerPoint Presentation.

The Commission inquired about available mechanisms to address concerns about potential spillover of permit parking into adjacent streets. Staff clarified that a program is available allowing residents impacted by spillover to apply for permit parking without paying the application fee.

Public Speakers
Garrett Terlaak and Rachael Fedden spoke in favor.
Mark Rosales spoke in favor but expressed concerns regarding potential spillover of vehicles onto Delia Lane.
Anna Illif spoke in opposition, citing concerns about spillover of vehicles into the surrounding neighborhoods if the request is approved.

A motion was made by Commissioner Hamilton, seconded by Commissioner Chavarria to: 1. Approve the implementation of permit parking on Fairmont Way from La Veta Avenue to Delia Lane. 2. Forward recommendation to City Council for final action. The motion carried by the following vote:

Ayes: Ricci, Barbeito, Hamilton, Chavarria, Redding, and Feliz
Noes: None
Absent: None

Draft

4.4. Discussion of potential operational changes to the signalized intersection of Tustin Street and Briardale-Taft Avenue

Senior Civil Engineer Martin Varona provided a brief staff report utilizing a PowerPoint Presentation. Staff recommended modifying the traffic signal to serve east and westbound traffic separately rather than together.

Public Speakers

Mike Brydges supported the proposal with the suggestion that eastbound through traffic be permitted and requested speed humps and no through traffic on Briardale Avenue.

Nora Wolkoff spoke in favor of the proposed changes.

Vera Mater spoke in favor of the proposed changes.

Bill Chavez, Ryan Helms, and Cindy Ellington, spoke in favor of the proposed changes and also supports implementing permit parking on Briardale Avenue.

The Commission inquired about the potential tradeoff's of adding an additional phase to the signal. Staff clarified that the proposed change is expected to have a minimal impact on overall traffic flow.

A motion was made by Vice Chair Ricci, seconded by Commissioner Chavarria to approve the implementation of a signal sequencing strategy that involves serving east and westbound traffic from Briardale Avenue in series, rather than in parallel. The motion carried by the following vote:

Ayes: Ricci, Barbeito, Hamilton, Chavarria, Redding, and Feliz
Noes: None
Absent: None

5. ADJOURNMENT

There being no further business, the meeting was adjourned at 6:40 p.m.

The next Regular City Traffic Commission Meeting will be held on Wednesday, April 8, 2026, at 5:30 p.m., in the Council Chamber.

_____
LARRY TAY
DEPUTY PUBLIC WORKS DIRECTOR/
CITY TRAFFIC ENGINEER

Draft

City of Orange
Public Works Department
300 E. Chapman Ave.
Orange, CA 92866

February 25, 2026

Dear Resident/ Property Owner:

This is to inform you that the City Council will be hearing a request **to add a Neighborhood Parking Permit Program** on the following street(s):

- **Both sides of Fairmont Way from La Veta Avenue to Delia Lane.**

The matter will be considered at the **March 10, 2026,** meeting of the City Council. The meeting is scheduled at **6:00 p.m**., in the **City Council Chamber**, located at 300 East Chapman Avenue.

You and any other interested party are encouraged to attend this meeting and express your opinions and/or concerns regarding this issue. Please feel free to contact Maria Flores at (714) 744-5525 or mpflores@cityoforange.org if you have any questions.

Sincerely,

Larry Tay, P.E., PTOE
Deputy Public Works Director/
City Traffic Engineer

LT/fv

Agenda Item

Orange City Council

Item #: 10.4. 3/10/2026 **File #:** 26-0092

TO: **Honorable Mayor and Members of the City Council**

FROM: **Jarad Hildenbrand, City Manager**

1. SUBJECT
City Charter Discussion

2. SUMMARY
California Government Code Sections 34450-34462 set forth the procedures to adopt a city charter. There are two approaches. First, the City Council may place a question on a special or general election ballot asking voters to approve the creation of a charter commission. If approved, the charter commission would develop a draft charter that would later be placed on a subsequent ballot for voter consideration. Alternatively, the City Council may draft a charter and submit it directly to voters at a special or general election.

In recent years, several California cities have explored charter status to evaluate potential flexibility in areas such as public contracting, fiscal policy, and local governance. On January 13, 2026, the City Council directed staff to develop a draft City Charter. The draft City Charter is presented for City Council discussion, and staff seeks direction on how to proceed.

3. RECOMMENDED ACTION
Review and discuss the draft City Charter and provide direction to staff.

4. FISCAL IMPACT
None.

5. STRATEGIC PLAN GOALS
Adoption of a City Charter could support or affect multiple goals outlined in the Fiscal Years 2025-2030 Citywide Strategic Plan.

6. DISCUSSION AND BACKGROUND
The following provides an overview of the similarities and differences between general law and charter cities. Additionally, this analysis details the procedures to adopt a city charter.

General Law vs. Charter Cities

California law authorizes two legal structures for municipal organizations - general law or charter law. General law cities (i.e., the City of Orange) draw much of their authority from State of California (State) statutes. Charter cities derive *select* authority from a locally adopted charter as authorized in Article XI of the California Constitution. Cities often pursue charter status to gain greater local control over municipal affairs, particularly in areas such as public contracting, municipal finance, and local governance structures. Charter authority can allow a city to tailor policies to local priorities while remaining subject to state law on matters deemed to be of statewide concern.

It is also important to note that charter authority is not unlimited and has been narrowed over time by legislation and court decisions, particularly in areas such as labor standards and housing policy that are often deemed matters of statewide concern.

General Law Cities

Most cities in California are general law cities. Of the 482 cities in California, 121 have adopted local charters with 10 of those being from Orange County. As a general law city, Orange is bound to State law even if an issue is exclusively local. Under a general law structure, a city's police power comes entirely from the California constitution with all other municipal authority deriving from State statute.

Charter Cities

Alternatively, the California Constitution authorizes municipalities to function as a Charter City. Often referred to as "home rule," the logic underpinning the Charter City concept is that a city is best suited to manage local affairs with the State retaining authority over those matters deemed a Statewide concern. This means that a Charter City's local laws prevail over State laws when the issue at hand is determined to be a "municipal affair."

Municipal Affairs vs. Statewide Concerns

The distinction between municipal and statewide affairs is an important aspect to consider. If an increasing number of City functions are determined to be a matter of Statewide concern, then the benefits of becoming a Charter City are diminished. This points to the crux of the issue and begs the question, *"What is a municipal affair?"*

Generally, two sources have defined municipal affairs - the California Constitution and the courts. In beginning with the former, the term *municipal affair* is referenced in the California Constitution; however, it is not clearly defined. Article XI, section five, subsections (a-b), of the California Constitution discuss the general notion of self-governance while detailing four broad categories of municipal affairs. These four categories include:

1. City Police Force.
2. Subgovernment in all or part of a city.
3. Conduct of city elections; and
4. The manner in which municipal officers and employees are elected or appointed.

Aside from these general categories, the courts determine whether a matter is a municipal affair. When making this determination, the facts of the case are evaluated through a four-part test developed by the California Supreme Court. This has resulted in case law supporting a non-exhaustive and fluctuating list of what are deemed to be municipal affairs.

As an example, charter cities previously retained significant authority over land use matters or could exempt the city from prevailing wage requirements. Charter city authority over these matters has since been reduced through a combination of court actions and legislation that have deemed these matters a Statewide concern, thereby preempting what a city's charter may say on these issues.

For reference, provided below is a general overview of matters categorized as a Statewide concern vs. municipal affair*.

Municipal Affair	**Statewide Concern**

Police authority	Traffic control
Municipal elections	Tort claims against public agencies
Local fiscal matters	Prevailing wage law
Qualifications for local officials	Brown Act, California Public Records Act, Political Reform Act
Public contracting and contractual services	Numerous housing laws

*Attachment 2 details pros and cons of General Law and Charter Cities.

The Process to Adopt a City Charter

There are two pathways for the City to adopt a charter - a City Council-drafted charter process or a Charter Commission process. Each is briefly discussed below:

City Council-drafted charter

1. Initiate: City Council directs staff to prepare a draft charter.
2. Public Review: Publish draft; conduct community outreach and at least two public hearings.
3. Call Election: The City Council adopts a resolution submitting the proposed charter to Orange voters at a regular or special municipal election.
4. Voter Decision: Simple majority approval is required. If approved, the City will file the charter with the Secretary of State, at which point, it will become effective.

Charter Commission-drafted charter

1. Ballot Question: The City Council calls an election asking voters whether to form a charter commission (Commission) and simultaneously elects 15 commissioners.
2. Commission Work: If approved, the top 15 vote-getters serve on the Commission. The Commission would draft the charter, hold public hearings, and submit the proposed charter to the City Council.
3. Second Election: The City Council places the Commission's proposed charter on a subsequent ballot for voter approval.
4. Adoption: Simple majority approval is required. If approved, the City will file the charter with the Secretary of State, at which point, it will become effective.

Draft City Charter and Direction to Staff

On January 13, 2026, the City Council directed staff to develop a draft charter for City Council review and discussion. The draft City Charter (Attachment 1) is presented for discussion purposes only and is intended to begin a policy conversation regarding charter provisions. Staff seeks City Council direction on next steps and on several policy matters that could be addressed in a proposed charter, including which topics should be included, excluded, or deferred.

To become a charter city, the City must adopt a charter by a majority vote of its electorate. If the City Council's goal is to place a proposed charter before voters as soon as practicable, the earliest opportunity would be the November 2026 General Municipal Election. The most expeditious approach would be for the City Council to draft a proposed charter and submit it directly to voters.

Unlike other ballot measures, a proposed city charter requires additional procedural steps prior to placement on the ballot, including multiple public hearings and related noticing requirements.

If the City Council would like to proceed toward a November 2026 ballot, staff will need to begin the process immediately to meet required milestones over the next two months. Attachment 3 provides a draft timeline to support consideration of a November 2026 ballot measure. This timeline is preliminary and subject to change, including based on election deadlines issued by the Orange County Registrar of Voters.

7. ATTACHMENTS

- Attachment 1 - Draft City Charter for discussion and feedback
- Attachment 2 - General Law and Charter City Pros and Cons
- Attachment 3 - City Council Drafted Charter: Draft Ballot Measure Timeframe

Agenda Item

Orange City Council

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We, the people of the City of Orange, seeking to strengthen our ability to govern ourselves locally, do hereby adopt this Charter under the Constitution of the State of California.

Article I
Incorporation, Succession, and Powers

Section 100. Name and Boundaries

The City of Orange shall continue to be a municipal corporation under the same name and possessed of all the property and interests of which it was possessed at the time the Charter takes effect. The boundaries of the City shall be the boundaries as established at the time the Charter takes effect, or as may later be changed in the manner authorized by law.

Section 101. Powers

The City of Orange shall have all powers possible for a Charter City to have under the Constitution and laws of the State of California as fully and completely as though they were specifically enumerated in the Charter, subject only to the limitations contained in the Charter.

Section 102. Ordinances, Resolutions, and Other Regulations

All lawful ordinances, resolutions, rules, and regulations, and portions thereof, in force at the time this Charter takes effect, and not in conflict or inconsistent herewith, are hereby continued in force until the same shall have been duly repealed, amended, changed, or superseded by proper authority.

Section 103. Continuance of Contracts and Public Improvements

All contracts entered into by the City, or for its benefit, prior to the taking of effect of this Charter, shall continue in full force and effect. Public improvements for which proceedings have been instituted under laws existing at the time this Charter takes effect, in the discretion of the City Council, may be carried to completion as nearly as practicable in accordance with the provisions of such existing laws or may be continued or perfected under this Charter.

Article II
Expenditures of Taxpayer Money

Section 200. Balanced Budget

The City Council must adopt a balanced budget each fiscal year. The adopted budget shall not provide for projected expenditures in excess of projected revenues. After adoption of the budget, in the event that revised estimates of expected revenues or expenditures, or both, show that expenditures will exceed estimated revenues, expenditures should be reduced or revenues increased, or both, to ensure that actual expenditures do not exceed actual revenues for that fiscal year. Nothing in this Section shall be construed to prohibit the adoption of a multi-year budget, provided that it is a balanced budget.

Section 201. Taxpayer Money Prohibited in Candidate Campaigns

A City officer shall not expend, and a candidate shall not accept, any taxpayer dollars or public moneys for the purpose of seeking elective office.

Section 202. Public Safety Funding

The amount allocated in the City budget to the Fire Department, Police Department, and Code Enforcement Division shall total in aggregate at least two-thirds (2/3) of the General Fund.

Section 203. El Modena Library Branch

The amount allocated in the City budget to the Orange Public Library must ensure the maintenance of at least one branch library within the portions of the City of Orange known as El Modena.

Section 204. Waiving of Fees

To support economic development, by ordinance, the City Council may identify temporary periods throughout the fiscal year where select fees may be waived.

Article III
Elections

Section 300. General Municipal Elections

General municipal elections for the election of officers and for such other purposes as the City Council may prescribe shall be held in the City on the first Tuesday after the first Monday in November in each even-numbered year and shall be consolidated with the statewide general election in the manner provided in the California Elections Code. However, in the event the State Legislature hereafter prescribes a different day for the holding of the statewide general election, general municipal elections shall be held upon such day in each even-numbered year as prescribed for the statewide general election.

Section 301. Special Municipal Elections

All other municipal elections that may be held by authority of this Charter, or of any law, shall be known as special municipal elections.

Section 302. Initiative, Referendum, and Recall

The powers of the initiative and referendum and of the recall of elected municipal officers are hereby reserved to the electors of the City. Unless otherwise provided by ordinance, hereafter enacted, the provisions of the Elections Code of the State of California, as the same now exist or may hereafter be amended, governing the initiative, the referendum, and the recall of the municipal officers shall apply to use thereof in the City insofar as such provisions of the Elections Code are not in conflict with this Charter.

Section 303. Council Districts

(a) The City Council shall consist of six members and a separately elected Mayor. The Mayor will be directly elected by the voters of the City. The other six members of the City Council shall be elected by districts in six single-member districts, meaning one member of the City Council shall be elected from each district, by the voters of that district alone.
(b) After each federal decennial census, the City Council shall adopt boundaries for all of the council districts of the City, a process that shall be known as "redistricting."
(c) After completing a redistricting pursuant to subsection (b), the City Council shall not redistrict until after the next federal decennial census, unless a court orders the City Council to redistrict, the City Council is settling a legal claim that the council district boundaries are unconstitutional or illegal, the boundaries of the city have changed from the addition or subtraction of territory causing a City population change of ten percent or more, or the number of council members elected by districts is changed.

Section 304. Ballot Designations

(a) Notwithstanding the Elections Code, a candidate for City elected office who holds a position as a City Commissioner, County Commissioner, State Commissioner, or Federal Commissioner at the time of filing candidate nomination documents may elect to designate their commission position as their principal profession, occupation, or vocation for purposes of Government Code Section 13107(a)(3). Nothing in this section shall be construed to prevent a candidate from:
    1) using their commission position in conjunction with one or two other principal professions, occupations, or vocations for their ballot designation
    2) electing not to use their commission position as one of their principal professionals, occupations, or vocations for their ballot designation
(b) The City requests that the Secretary of State, County Registrar of Voters, and any judicial officer deem a City Commissioner to be a principal profession, occupation, or vocation for purposes of Government Code Section 13107(a)(3) when an Orange City Commissioner is a candidate for a non-City office. The City declares that service on an Orange City Commission entails significant involvement on the part of the commissioners.
(c) Nothing in this section shall be construed to authorize the use of the word "retired" in conjunction with a commissioner ballot designation.

Article IV
Elected Officers

Section 400. Elected Officers

The elected officers of the City shall consist of a Mayor, a City Treasurer, and six City Council members. Subject to the provisions of this Charter, the Mayor, City Treasurer, and City Council

members in office at the time this Charter takes effect shall continue in office until the expiration of their respective terms and until their successors are elected and qualified.

Section 401. Mayor's Powers and Duties

The Mayor shall be the Chair of the City Council and shall preside over its meetings. Otherwise, the Mayor shall have the same rights, privileges, powers and duties as are held by members of the City Council and shall be regarded as a member of the City Council for all purposes except to the extent expressly inconsistent with any other provision of this Charter or other applicable law. Except as specified in this article, Article V, and Section 303, all references in this Charter to the "City Council" or to "City Council members" shall be inclusive of the Mayor.

Section 402. Mayor's Term and Election

The Mayor shall serve a term of four years and shall be elected at each general municipal election.

Section 403. Vice Mayor

Each December after the election of the Mayor, the City Council shall designate one of its members as the Vice Mayor, who shall serve at the pleasure of the City Council. The Vice Mayor shall perform the duties of the Mayor during the Mayor's absence or disability or at the Mayor's request.

Section 404. City Treasurer's Term and Election

The City Treasurer shall serve a term of four years. The City Treasurer shall be elected in the general municipal election held in any year evenly divisible by four.

Section 405. City Council Terms and Election

The members of the City Council shall serve a term of four years. Three members of the City Council shall be elected in the general municipal election held in any year evenly divisible by four, and three members of the City Council shall be elected in the general municipal election held in any even-numbered year not evenly divisible by four.

Section 406. Election Consolidation

Pursuant to Section 300, the general municipal election shall be consolidated with the statewide general election. There shall be no primary elections for the elected officers of the City. Nothing in this section shall be construed to prevent the City Council from calling a special municipal election to be consolidated with a statewide primary election.

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Article V
Term Limits

Section 500. Mayor

No person shall hold the office of Mayor for more than two, four-year terms in a lifetime.

Section 501. City Council Member

No person shall hold the office of member of the City Council for more than three, four-year terms in a lifetime.

Section 502. Partial Terms

If a person shall hold an office for less than fifty percent of a term, then that term shall not be counted toward the limits in this article.

Section 503. Application

Pursuant to Government Code Section 36502(b), the limits in this article shall apply prospectively only

Article VI
Appointed Officers and Employees

Section 600. City Manager and City Attorney

The City Council shall appoint the City Manager and the City Attorney.

Section 601. Fire Chief, Police Chief, City Clerk, and Other Department Heads

The City Manager shall appoint the Fire Chief, the Chief of Police, City Clerk and the heads of other City departments

Section 602. Removal

The City Council may remove the City Manager and the City Attorney. The City Manager may remove the Chief of Police, Fire Chief, City Clerk, and heads of other City departments.

Section 603. Core Services Performed by City Employees

Firefighters, police officers, emergency medical services personnel, and librarians are deemed personnel performing core services of the City, which must be performed by City employees and may not be contracted out to other governments, private-sector companies, or nonprofit organizations. However, nothing in this section shall prevent the City from entering into mutual aid agreements, assistance agreements, and other specialized service agreements on an as-needed basis.

Section 604. Classification and Compensation Study

At least once every ten years, the City shall conduct a Classification and Compensation study to review significant changes in job duties, classification specifications, and compensation levels. The study shall also review changes in operations, organizational structure, reporting relationships, and staffing since the last such study.

Article VII
Vacancies in Office

Section 700. Permanent Vacancy

In the event of a vacancy in an elected office as defined under the California Government Code Section 1770, the City Council shall fill the vacancy by appointment within sixty days or call for a special election. The person appointed or elected to fill a vacancy shall serve the remainder of the unexpired term. Notwithstanding the Elections Code, a person appointed to fill a vacancy who seeks the same office in a general municipal election is not required to use the word "Appointed" in conjunction with the title of their City office in the ballot designation filed by that person in their nomination documents.

Section 701. Temporary Vacancy

Pending trial, the City Council may, by a three-fourths vote, suspend any elected or appointed officer, against whom prosecution has commenced in felony criminal proceedings. By a majority vote, the City Council may elect to end the suspension at any time, and the officer returned to office. However, the suspension must automatically end, and the officer returned to office, upon acquittal, dismissal of charges by the prosecutor, or dismissal of charges by the judge. By a three-fourths vote, the City Council may choose to extend the suspension in the case of a hung jury unless the prosecutor informs the City Attorney that charges will not be refiled against the officer.

Article VIII
Compensation of Elected Officers

Section 800. City Treasurer

The compensation of the City Treasurer shall be set by the City Council. The City Council shall vote upon any change to the City Treasurer's compensation no later than June 30 of the year in which the election for City Treasurer takes place, and any such change in compensation shall not take effect until the commencement of the City Treasurer's next term of office.

Section 801. City Council Member

Effective upon the operative date of this Charter, the compensation of City Council members is set at the full limit provided for in Government Code Section 36516(a)(2), as amended from time to time by the State Legislature. The compensation shall increase at an amount equal to inflation as specified in Government Code Section 36516(a)(4)(B), as amended from time to time by the

State Legislature, but not to exceed three percent (3%), or if necessitated by Government Code Section 36516(a)(3), as amended from time to time by the State Legislature.

Section 802. Benefits

The City shall the City Council members in the same health, dental, vision, and life insurance plans and same retirement plans, including, but not limited to, the California Public Employees Retirement System, that are made available and paid by the City for its employees. Nothing in this section shall prevent a City elected officer from deferring a portion of their own compensation into an alternative retirement plan.

Section 803. Exclusions

Any amounts paid by the City to reimburse a City elected officer for actual and necessary expenses incurred in the performance of official duties shall not be included for purposes of determining salary pursuant to this article. Any amounts paid by the City for a City elected officer's retirement, health and welfare, and federal social security benefits shall not be included for purposes of determining salary under this article, provided that the same benefits are available and paid by the City for its employees.

Section 804. Waiver of Compensation

A City elected officer may waive any or all compensation provided by this article.

Article IX
Appointive Boards, Commissions, and Committees

Section 900. Establishment

The City Council shall establish appointive boards, commissions, and committees by ordinance and shall specify in such ordinance the powers, duties, and membership of each, except as otherwise specified in this article.

Section 901. Planning Commission

The Planning Commission shall consist of seven members. Each member of the City Council shall appoint one Commissioner for a term concurrent with the City Council member's term of office. Any Commissioner may be removed by the City Council member who appointed that Commissioner or by a majority vote of the City Council.

Section 902. Public Library Board of Trustees

The Public Library Board of Trustees shall consist of seven members. Each member of the City Council shall appoint one Trustee for a term concurrent with the City Council member's term of office. Any Trustee may be removed by the City Council member who appointed that Trustee or by a majority vote of the City Council.

Section 903. Citizens Oversight Committee

(a) The Citizens Oversight Committee shall provide citizens' oversight in connection with expenditures of tax revenues generated by Article X.

(b) Any tax measure proposed to the voters shall include a Citizens Oversight Committee. The City Council shall elect as to whether the Committee specified by subsection (a) shall serve as the Citizens Oversight Committee for that tax measure. If the City Council elects to designate a separate committee for such measure, then such committee shall be structured as described in subsection (c).

(c) Any Citizens Oversight Committee shall consist of fourteen members:

1) Each member of the City Council shall appoint one member of the Committee for a term concurrent with the City Council member's term of office.
2) The Chief of Police shall appoint one member of the Committee for a four-year term.
3) The Fire Chief shall appoint one member of the Committee for a four-year term.
4) The largest association of businesses within the boundaries of the City shall appoint one member of the Committee for a four-year term.
5) Unless otherwise represented to avoid duplicate representation, the association representing the largest number of City employees shall appoint one member of the Committee for a four-year term.
6) Unless otherwise represented to avoid duplicate representation, the association representing the largest number of City management employees shall appoint one member of the Committee for a four-year term.
7) Unless otherwise represented to avoid duplicate representation, the association representing the largest number of City firefighters shall appoint one member of the Committee for a four-year term.
8) Unless otherwise represented to avoid duplicate representation, the association representing the largest number of City police officers shall appoint one member of the Committee for a four-year term.

Any member of the Committee may be removed by the person or entity who appointed that member or by a majority vote of the City Council.

Section 904. Continuation of Existing Boards, Commissions, and Committees

Subject to the provisions of this Charter, the ordinances regarding appointive boards, commissions, and committees in place at the time of the adoption of this Charter shall remain in effect and may be amended by the City Council in the standard manner that ordinances are amended, and their members shall continue in office until the expiration of their respective terms and until their successors are appointed and qualified.

Article X
Taxation

Section 1000. Transient Occupancy Tax

(a) The Uniform Transient Occupancy Tax Ordinance of the City in place at the time of the adoption of this Charter shall remain in effect and may be amended by the City Council in the standard manner that ordinances are amended, except as otherwise specified in this section.
(b) For the privilege of occupancy in any hotel with eleven or more rooms, each transient is subject to and shall pay a tax in the amount of fourteen percent of the rent charged by the operator.
(c) For the privilege of occupancy in any hotel with ten or fewer rooms, each transient is subject to and shall pay a tax in the amount of ten percent of the rent charged by the operator.

Section 1001. Large Parking Operator Tax

In any parking facility owned or operated by an entity that provides at least two hundred parking spaces within the boundaries of the City, each occupant is subject to and shall pay a tax in the amount of fourteen percent of the parking fee for the privilege of occupancy of the space.

Section 1002. Franchise Tax

A franchise tax of four percent of gross receipts shall be paid by any company granted a cable, fiber, telephone (including, but not limited to, cellular), Internet, trash disposal, or pipeline franchise in the City. A utility franchise tax of four percent of gross receipts shall be paid by any company serving as the City's gas, water, or electric utility.

Section 1003. Pursuant to Article XIII C, Section 3 of the State Constitution, the initiative power shall not be prohibited or otherwise limited in matters of reducing or repealing any tax specified in this article of this Charter. The power of initiative to affect local taxes shall be applicable to the taxes specified in this article of this Charter, and the signature requirement shall be the same as that applicable to statewide statutory initiatives.

Article XI
Political Reform

Section 1100. Electronic Filing

The City Council shall provide by ordinance for the electronic filing of campaign statements, reports, and other required documents. The City Council shall provide by ordinance for the electronic filing of statements of economic interests. Persons electronically filing documents shall not be required to submit paper copies of such documents, and wet signature requirements shall be waived for such electronically filed documents.

Section 1101. Campaign Contribution Limits

(a) No person shall make, and no City candidate or treasurer of a controlled committee of a City candidate shall solicit or accept any contribution aggregating more than $1,500.00 (one thousand, five hundred dollars) per election. In February of each odd-numbered year beginning in 2027, the City Council shall, by ordinance, adjust the contribution limit to reflect any cumulative increase or decrease in the Consumer Price Index for all consumers for the local metropolitan statistical area as announced by the United States government since the last adjustment. Such adjustments shall be rounded off to the nearest hundred dollars for the limitations on contributions.

(b) The contribution limitations of this Section shall not apply to a City candidate's contribution of his or her separate or community property funds to his or her own City Candidate Committee or campaign. Contributions by a spouse from separate property shall be subject to the limitations set forth in this Section. In February of each odd-numbered year beginning in 2027, the City Council shall, by ordinance, adjust the contribution limit to reflect any cumulative increase or decrease in the Consumer Price Index for all consumers for the local metropolitan statistical area as announced by the United States government since the last adjustment. Such adjustments shall be rounded off to the nearest hundred dollars for the limitations on contributions.

Section 1102. Gift Ban

For purposes of the Orange Gift Ban Ordinance, no item with a value of $25.00 or less shall be deemed a gift.

Article XII
Miscellaneous

Section 1200. Eminent Domain

The City may not exercise the power of eminent domain to acquire property from any private Owner thereof, without such Owner's consent, when the purpose of the acquisition is to convey the property so acquired to any private party. As used in this section, "Owner" means the owner of the fee title interest in the property to be acquired. Nothing contained in this section shall be deemed to prohibit acquisitions of property interests by eminent domain for the purpose of either:

(a) conveying such acquired interests to the owner of other property affected by a public acquisition of property in order to mitigate impacts of the acquisition or the project to be constructed on such other property; or

(b) the development of any facilities to be operated by the City or any facilities of which the City is or shall be an owner.

Section 1201. Sales of City Assets

Pursuant to Government Code Section 37350, the City may purchase, lease, receive, hold, and enjoy real and personal property, and control and dispose of it for the common benefit.

Section 1202. Public Utilities

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Pursuant to Public Utilities Code Sections 10051, 10061(a)-(b) and (d)(e), the City Council may sell and dispose of any public utility that the City owns. Public Utilities Code Sections 10052-10060 and Section 10061(c) shall not apply in the City of Orange.

Article XIII
Legal Provisions

Section 1300. Violations

A violation of this Charter or of any ordinance of the City shall constitute a misdemeanor and may be prosecuted in the name of the People of the State of California or may be redressed by civil action filed by the City. The maximum fine or penalty for any violation of a City ordinance shall be the same as established by the general laws for a misdemeanor.

Section 1301. Amendment

(a) Amendments to this Charter shall be proposed and submitted to the electors of the City in the manner provided by the Constitution of the State of California and Section 1104 of this Charter.
(b) Notwithstanding subsection (a), in the event that the Legislature renumbers a section of state law referenced in this Charter effective on or after January 1, 2026, the City Council may, upon advice of the City Attorney, amend this Charter to reflect that renumbering, but such amendment must be approved by a unanimous vote of all City Council members with no abstentions or absences.

Section 1302. Definitions

Unless the provisions or the context otherwise requires, as used in this Charter:

(a) Whenever the term “City” occurs in this Charter, it means the City of Orange, and whenever the term office, department, agency, board, commission, officer, or employee, as the case may be, is used, it means an office, department, agency, board, commission, officer, or employee of the City of Orange;
(b) “Shall” is mandatory, and “may” is permissive;
(c) “State” is the State of California;
(d) “Federal” is the United States of America.

Section 1303. Effect of Invalidity in Part

If any section, subsection, sentence, clause, or phrase of this Charter, or any amendment thereto, is for any reason held to be unconstitutional or otherwise invalid, that decision shall not affect the validity of the remaining portions of this Charter. The people of the City of Orange hereby declare that they would have ratified and adopted this Charter and each section, subsection, sentence, clause, and phrase thereof, and any amendment thereto, irrespective of the fact that any one or more other sections, subsections, sentences, clauses, phrases, or amendment be declared unconstitutional or otherwise invalid.

Section 1304. Effective Date

This Charter shall take effect on January 1, 2027.

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Attachment 2 – General Law City and Chart City Pros and Cons

Type	Pros	Cons
General Law City	**Clear statewide framework:** Operations are guided by the California Government Code, reducing ambiguity in interpretation and implementation. **Lower administrative complexity:** Fewer city-specific governance documents or procedures to maintain. **Lower legal exposure:** Following established state rules minimizes litigation risk around governance authority. **Cost-efficient:** No need to draft, adopt, or amend a city charter; avoids election costs. **Predictable processes for staff:** Standardized rules streamline training, onboarding, and compliance.	**Limited local autonomy:** Must adhere to state-mandated procedures even when they do not align well with local priorities or operational efficiency. **Less flexibility in procurement and contracting:** Required to follow Public Contract Code rules that may slow project delivery. **Governance rules are fixed:** Changes to council structure, election sequencing, or administrative organization are constrained by state law. **Innovation constraints:** Difficult to pilot or tailor policies because statewide uniformity often limits local customization.
Charter City	**Greater control over municipal affairs:** Ability to create local rules for elections, contracting, governance structure, public works delivery, and other local functions. **Local procurement flexibility:** Cities may adopt alternative bid thresholds, design-build processes, and other tools that can accelerate projects and reduce costs. **Governance customization:** Can adjust council size, district election structures, term limits, or the form of government through the charter.	**Higher legal risk:** Cities must continually assess whether a given issue is a “municipal affair” or a “matter of statewide concern,” which can lead to litigation if unclear. **Requires significant legal and administrative capacity:** Drafting, maintaining, and interpreting a charter will demand more time from the City Attorney’s Office. **Costly to adopt or amend:** Charter processes require voter approval, specialized drafting, and extensive community engagement.

Attachment 2 – General Law City and Chart City Pros and Cons

	Policy innovation: Ability to design tailored programs reflecting local needs rather than applying statewide norms. **Opportunity for cost savings:** More flexible public contracting rules can improve efficiency in capital projects. **Stronger local identity:** A charter can codify community values and governance priorities.	**Not exempt from matters of Statewide Concern:** Despite broader autonomy, state mandates still apply in areas such as housing (RHNA, SB 35), environmental laws, ethics, transparency, elections administration, and labor standards. **Ongoing maintenance:** Charters often need periodic updates as legal standards evolve, creating long-term administrative obligations.

Attachment 3 – City Council Drafted Charter: Draft Ballot Measure Timeline

City Council Drafted Charter: Draft Ballot Measure Timeline	
Step	**Deadline**
Draft Ballot Measure	March Through Early April
Notice First Public Hearing	April 9, 16, and 21, 2026
Conduct First Public Hearing	Tuesday, May 12, 2026
Notice Second Public Hearing	May 21, 28, 2026 **and** June 2, 2026
Conduct Second Public Hearing	Tuesday, June 23, 2026
Conduct Vote to Submit Charter Measure to Voters	Tuesday, July 14, 2026
Signed Resolutions Sent to the Orange County Registrar of Voters	Friday, July 17, 2026
Last Day to Submit Direct Arguments and Impartial Analysis	Friday, July 31, 2026
Election Day	Tuesday, November 3, 2026