

Memo

Date: December 3, 2025

To: Larry Tay, City of Orange

From: Matt Benjamin, Delia Votsch, Fehr & Peers

Subject: Traffic Modifications and Safety Enhancements to the Orange Plaza

Fehr & Peers has been retained by the City of Orange to review potential traffic modifications and safety enhancements to the Orange Plaza that would reduce vehicle incursions into Plaza Park. City staff have previously reviewed potential enhancements and prepared a report on 9/23/25 summarizing their considerations and recommendations. We have prepared comments on the 9/23/25 staff report and discussion of additional enhancements that could be considered on Chapman Avenue to reduce vehicle speeding and incursions into Plaza Park.

Our recommendations are based on our evaluation of the existing roadways, primarily focused on treatments that could reduce speeds and direct vehicular traffic to navigate the circle appropriately.

Comments on 9/23/25 Staff Report

Raised Median Island (Splitter Islands)

We agree with the City's recommendation that splitter islands provide opportunities for landscaping while "providing shelter for pedestrians, encouraging slower speeds, channelizing traffic into the circular roadway, separating in and outbound traffic". This would be the most effective solution to reduce the speed of traffic entering the circular roadway, providing a significant safety benefit. Properly channelizing and deflecting motorists to the right as they enter the circular roadway may obviate the need for additional crash rated bollards on the portions of Plaza Park exposed to entry points. The raised splitter islands could be implemented in advance or in conjunction with the supplemental bollards discussed below. Raised median islands should include some additional considerations prior to final design including a review of drainage conditions and a consultation with emergency services. The design process and emergency vehicle turning analysis may reveal opportunities to install crash rated bollards on some parts of the splitter islands.

While splitter islands can be installed with less expensive "quick-build" materials, this design would provide a visual cue, but no physical deflection of vehicles entering the circular roadway. Another consideration is that quick-build materials such as plastic bollards are damaged quickly and result in an aesthetic quality likely to be found unacceptable to the community and the Old Town Preservation Association. Another quick build-strategy could include a combination of painted splitter islands and concrete planters, but sight distance, maintenance, and potentially less effective channelization are among the drawbacks as compared with raised concrete splitter islands.

Recommendation: Implement

Supplemental Bollards

Crash-rated bollards are an effective treatment to protect people and public amenities within the Plaza Square central island. Fehr & Peers agrees with the City staff recommendation to install additional bollards extending beyond the sidewalk access points to the fountain. This will prevent intrusion and damage to landscaped areas where people could be also present.

Recommendation: Implement

Boulders

We agree with the City's discussion, boulders may have aesthetic value or provide other benefits to a landscaped area but are not designed or engineered to provide traffic safety benefits. In addition to the notes the City made, boulders could also take valuable space in the public right-of-way that could be allocated to pedestrians, bikes, or other users of Plaza Square without providing a safety benefit.

Recommendation: Not recommended unless boulders can be acquired with proven crash ratings and a strong community preference emerges for boulders over bollards.

Rumble Strips

Rumble strips are typically used in rural highway environments where motorists may be lulled into inattentiveness. Longitudinal rumble strips (parallel to direction of travel) help prevent drifting off the highway. Transverse rumble strips (installed in a series across the travel lane) alert motorists to upcoming stop or yield conditions that may appear suddenly at highway speeds. In the Orange Plaza rotary, longitudinal rumble strips would have to be crossed frequently to access parking. Transverse rumble strips on approaches to the Orange Plaza rotary may produce an undesirable level of noise as noted by City staff and could negatively impact bicyclists.

Recommendation: Not recommended unless all near-term and other recommended options prove infeasible or inadequate.

Plaza Closure

Temporary (Overnight Only)

We agree with the City's comments that an overnight closure would require planning to accommodate a diversion in both vehicle capacity and parking supply. However, temporary closures, whether overnight daily or only for special events (as noted in the staff report) would remove traffic from entering Plaza Square and therefore reduce the likelihood of traffic collisions in Plaza Square and incursions in Plaza Park. As the staff report notes, set-up and tear-down of a barrier system need to be considered, both in capital and maintenance costs but also labor costs.

Recommendation: Not recommended at this time unless all near-term and other recommended options prove infeasible or inadequate. Then evaluate if the recurring overnight closure would be financially feasible and would adequately serve overnight operational and access needs.

Permanent

Additionally, a permanent closure of Plaza Square would have many of the tradeoffs and considerations that staff report for the overnight closure. Parking supply would need to be accounted for, including pick-up/drop-off space associated with food deliveries and taxi/TNC use by patrons and visitors. Traffic diversion could also have potential implications on nearby streets, with north/south traffic on Glassell most likely shifting to Orange Street and Olive Street. East/west traffic on Chapman Avenue poses a more complex challenge, as nearby parallel streets such as Almond Ave or Maple Ave do not have the capacity or designation to support as much traffic as Chapman Ave does. Additional study would be required to understand and plan for the parking and traffic diversions, however a full closure of Plaza Square would provide reductions in vehicular collisions and potential incursions into Plaza Park.

Recommendation: Not recommended at this time unless all near-term and other recommended options prove infeasible or inadequate. Long-term implementation could be considered only after substantial study to evaluate safety, traffic operations, urban design, effects on the City's paid parking program, historic preservation, and community preferences with a particular focus on whether operational and access needs could be adequately maintained.

Other Enhancements

In addition to the enhancements discussed in the staff report, we recommend that the City consider these additional enhancements around Plaza Square.

Raised Crosswalks

Raised crosswalks provide traffic calming and safety benefits by increasing the visibility of pedestrians and slowing vehicle traffic. Raised crosswalks could be effective for the pedestrian crossings on Plaza Square. Raised crosswalks at the entry and exit points to the rotary could be a more appropriate alternative to transverse rumble strips (discussed above) and could be designed and installed in conjunction with raised splitter islands. Raised crosswalks could also be considered on Chapman Avenue from Lemon Street to Grand Avenue to provide traffic calming benefits as vehicles approach Plaza Square.

Raising the crosswalks that traverse the circular roadway to Plaza Park could have an adverse effect on traffic operations and may not be desirable. Additional considerations with raised crosswalks that should be considered prior to final design would be a review of drainage conditions and consultation with emergency services.

Recommendation: Consider near-term implementation of raised crosswalks on approaches to the circular roadway in conjunction with the design of raised splitter islands.

Continuous Barrier

A continuous barrier installed along the curb of Plaza Park would provide additional protection from vehicle incursion into the park, but may not be as effective or as durable as bollards. A barrier could slow oncoming traffic, but would not be installed where pedestrians access Plaza Park at the marked crosswalks, where bollards have already been installed. Furthermore, the continuous barrier may have aesthetic drawbacks or limit how the park is utilized during special events, with limited

additional benefit from the existing posts and chain that are currently installed around the perimeter of Plaza Park.

Recommendation: Consider as part of a larger study to evaluate, safety, traffic operations, urban design, historic preservation, and community preferences.

Reflective Paint

The city could consider enhancing the visibility of the existing curb and posts around Plaza Park by installing reflective paint on one or both of these surfaces. The benefits of this enhancement would provide enhanced visibility to alert drivers to the presence of the circle, especially at night, which would discourage vehicle incursions into Plaza Park. This would be a low cost and low complexity enhancement to reinforce and compliment the enhancements the City has already completed.

Recommendation: Consider for near-term implementation.

Summary

| Treatment | Cost | Complexity | Recommendation |
|-------------------------|----------|------------|--|
| Raised Splitter Islands | Moderate | Low | Near-term priority |
| Supplemental Bollards | Moderate | Low | Near-term priority |
| Boulders | Low | Low | Not recommended |
| Rumble Strips | Low | Low | Not recommended |
| Overnight Plaza Closure | Moderate | High | Not recommended, consider a comprehensive study if other measures are inadequate |
| Permanent Plaza Closure | High | High | Not recommended, consider a comprehensive study if other measures are inadequate |
| Raised Crosswalks | High | Moderate | Consider near-term implementation with design of splitter islands. |
| Continuous Barrier | Low | Low | Potentially consider as part of long-term study |
| Reflective Paint | Low | Low | Consider near-term implementation |

Note: Low costs would be approximately \$300,000 or less, Moderate costs would range between approximately \$300,000 to \$600,000, and High costs would range from \$600,000 or greater. These cost estimates are preliminary and would be subject to change based on detailed engineering design considerations.