

March 25, 2025

Suitability of Adopting and Retaining 61 Canary Island Pine Trees along Serrano Blvd, and 22 Canary Island Pine Trees along Cannon St.

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Background:

In August 2023, I provided a summary report of conditions regarding the suitability of adopting trees within the Right of Way adjacent to Mabury Ranch HOA. The report primarily served as a broad overview to establish estimated initial and future maintenance costs. Future liability concerns due to observable conditions was a determining factor in anticipated costs.

A thorough inspection of conditions was performed in March, 2025. This document serves to provide additional information on the 61 Canary Island Pine trees along Serrano Blvd, the 22 Canary Island Pines on Cannon St, and my recommendation to remove the 61 trees on Serrano Ave, if adopted as City responsibility. This document is not intended to provide every observation or potential factor of concern, relating to current conditions, defects, and likely future liability of these trees.

Method:

To determine the likelihood of future liability issues, and compatibility as City trees: trees were assessed for species characteristics, immediate hazard, tree structural integrity defects, site conditions, and observed current infrastructure damage.

Tree Species Characteristics:

Canary Island Pine is the largest pine species native to the Old World, with recorded height and width of 196' tall and 105" DBH.

Mature trees are commonly 80-120' tall, with trunk widths 35-50" DBH. Canopy widths are commonly 20-35'.

Specimens in the native range are reported to live over 800 years. In California, anticipated longevity is 100-200 years.

On a Low / Moderate / High scale for root damage potential, Canary Island Pine is rated as Moderate. Canary Island Pine has a generally deep root system. Preventing root related infrastructure damage relies upon correct site suitability and placement.

Planting Site Conditions:

- On Serrano Ave:

52 trees are located within 11 planters, behind the sidewalk and abutting the private HOA wall. Planters are 4' wide, with some minor variance in width. Trees within planters are spaced an average of 17' apart, with some outliers. Trees in planters were measured to be between 7" and 29" to the wall, and from 9" to 28" to the sidewalk.

9 trees are located east of the planters, with distances of up to 7'-9' to HOA wall, and 26" to 68" to sidewalk.

- On Cannon St:

22 trees are located behind the sidewalk, adjacent to an open trail. Trees are generally spaced between 17' to 20' apart. Trees measured between 7' to 8' to HOA wall, and 30" to 45" to sidewalk (with 1 exception).

Competition with Private Trees:

Many trees were observed to be in current conflict with private property tree canopies, and other trees are anticipated to have future conflicts with private trees, as the trees mature.

- On Serrano Ave:

22 trees were observed to have canopies within 10' of private trees. 11 trees were observed to be in contact with private trees. 23 tree trunks were observed to have less than 30' proximity to private tree trunks.

- On Cannon St:

8 trees were observed to have canopies within 10' of private trees. 4 trees were observed to be in contact with private trees. 11 tree trunks were observed to have less than 30' proximity to private tree trunks.

Tree Conditions:

- On Serrano Ave:

Current tree size is generally small for the species, with DBH measurements between 5" and 20". The majority of trees are approximately 8"-12" DBH. The 61 trees have the capacity to grow far larger than their current size. Defects in the main stem or branch structure were observed in many (15) trees. Of 15 trees with observed structural defects, 5 constituted severe defects that currently warrant tree removal.

Of the 9 trees to the east and outside of the 4' planters:

3 trees are still staked, and staked improperly with a splint, which weakens trunk development.

2 additional trees were observed with poor structure.

4 trees have observable adjacent infrastructure damage.

1 tree trunk measured 9' to light pole.

3 trees have insufficient distance to 1 or more adjacent Crape Myrtle trees.

- On Cannon St:

DBH measurements range from 10"-27". The majority of trees are approximately 17"-20". The 22 trees are anticipated to grow larger than their current size. 5 trees were improperly pruned to remove the majority of branches on the East facing side. 1 tree was impacted by an embedded 3" metal pole. No other substantial defects were observed.

Current Infrastructure Damage:

- On Serrano Ave:

41/61 tree locations observed to have current adjacent infrastructure damage. 27 locations observed to have damage to public infrastructure. 28 locations observed to have damage to adjacent private wall.

- On Cannon St:

13/22 tree locations observed to have current adjacent infrastructure damage. 8 locations observed to have damage to public infrastructure. 7 locations observed to have damage to adjacent private wall.

Potential for Future Damage and Liability:

Proper planning for tree planting is essential to have healthy, long lived trees that provide many benefits, while limiting liability over the lifetime of trees.

When determining suitable tree placement for a site, an important factor is the space available for canopy, trunk, and root growth. Considering soil volume is a necessary component of site suitability. Trees require adequate oxygen-rich soil space for their roots, to anchor and provide the tree water and nutrients. When trees are surrounded by hardscape, their available root space is greatly diminished and made more inhospitable due to soil compaction, and other factors. When trees are placed close together, this also reduces soil volume available per tree, and the trees compete for this space. These conditions can create adverse effects, such as: stunted growth, poor health, poor anchorage, abnormal or raised root crown (mounding of the soil around trees), susceptibility to spread of pests and disease, increased likelihood of root conflicts with infrastructure, and increased likelihood of tree failure.

Generally, a "good" soil volume for a large tree is 1000 cu. ft. For reference, the County of San Diego requires 600 cu. ft. for small trees, 1000 cu. ft. for medium size trees, and 1500 cu. ft. for large trees (County of San Diego BMP Design Manual, Section K, pg 32). The City of Orange Master Street Tree Plan (1999) establishes 8' x 8' as a minimum planting area for the species. If the root zone is limited to an 8' x 8' square, the soil volume is estimated as 192 cu. ft.

- On Serrano Ave:

52 trees within the 4' planters do not meet the minimum requirement of an 8' x 8' square, and also do not have adequate soil volume. Trees within the 4' planter are very likely to cause both public and private infrastructure damage. It is very likely that the future replacement of surrounding infrastructure would require the removal of trees.

- On Cannon St:

22 trees have comparatively far more soil volume, and root space. Trees are located further from the private wall, as well as sidewalk. Trees are inadequately spaced, and in too close proximity to private trees. Due to the current proximity of the private wall and sidewalk, there is opportunity to follow the City standard operating procedure for root mitigations. There is potential for selective root removal to allow for retention of trees, at the time of potential future sidewalk replacement.

Conclusion:

The Canary Island Pine trees of concern are generally not observed to be diseased, though there are a range of minor to major defects on some trees. Many trees have adjacent infrastructure damage present. Many trees have canopy conflicts with private trees.

- On Serrano Ave:

The mature size of the species is highly non-compatible with the proximity to the HOA wall, as well as the undersized planter where they reside. The current size of the pines is considered small / immature for the species, and it is anticipated that they would grow much larger. A mature Canary Island Pine

has the potential trunk size over 4' in diameter, as wide as the entire planter. As trees mature, their trunk flare and root crown (the widening at the base of the tree, where the trunk connects to the roots) often become more pronounced, which has a very high likelihood of damage to adjacent infrastructure when planted in inadequate space.

Due to the inadequate space, the likelihood of any root mitigations performed being successful without undermining the stability of the trees is unlikely. When making determinations to the suitability of selective root removal for root mitigations, proximity of cuts to the trunk is a major consideration. It would be very likely that sidewalk replacement would result in observations of root caused damage, and required root mitigations would result in the removal of trees.

It is very likely that 52 trees planted within the 4' planter will present with future liability issues. The likelihood of future issues greatly exceeds the potential liability of typical new City tree locations, due to the combination of small planter size, proximity to private infrastructure, and species.

The 9 trees not located in 4' planters are assessed to have comparatively lower likelihood of damage related to soil volume, and distance to the private wall. The 9 trees were observed to have defects, substantially inadequate spacing, and current adjacent infrastructure damage.

61/61 Canary Island Pine Trees located on Serrano Ave are recommended for removal, if adopted as City responsibility.

- On Cannon St:

There is a comparatively far greater space between infrastructure and trees, on Cannon St. Due to more available space, there is potential to follow normal root assessment and mitigation procedures during infrastructure repair.

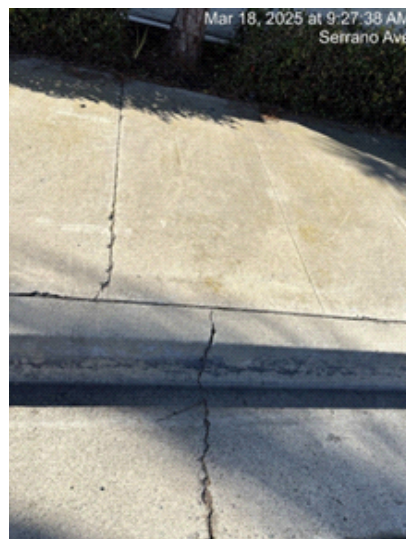
22/22 Canary Island Pine Trees located on Cannon St are recommended for retention, if adopted as City responsibility.

Examples of Current Infrastructure Damage



28 tree locations on Serrano Ave observed to have current damage to adjacent private wall.

Examples of Current Infrastructure Damage

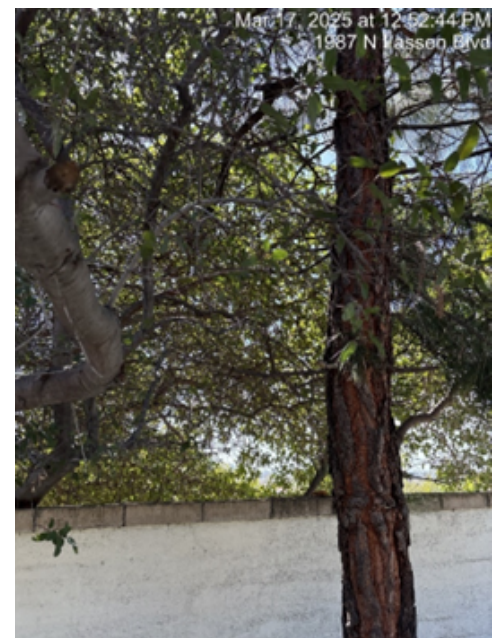


Examples of Current Infrastructure Damage



27 tree locations on Serrano Ave observed to have current damage to adjacent public infrastructure.

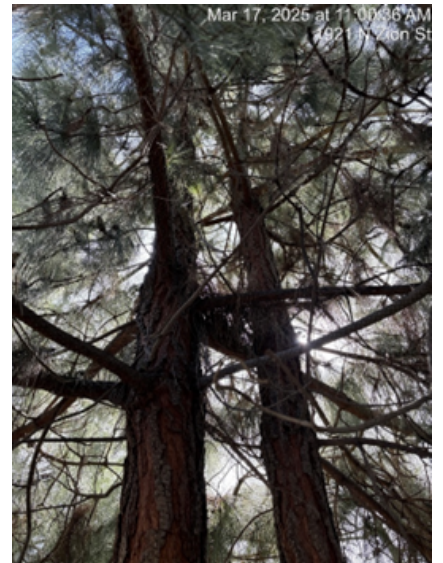
Examples of Current Conflicts with Private Tree Canopies



Competition and close proximity of trees may result in modified growth habit, such as leaning. Inadequate space between trees also increases the likelihood of branch failure, as trees make contact during inclement weather.

22 trees on Serrano Ave were observed to have canopies within 10' of private trees. 11 trees were observed to currently be in contact with private tree canopies.

Examples of Observed Defects



Defects in main stem and branch structure were observed in 15 trees on Serrano Ave. 5 trees were observed with severe defects, such as very poor and non-correctable branch structure, previous topping, and multi-trunk.

Examples of Potential Utility Conflicts



5 trees on Serrano Ave observed to be planted too close to street light poles, and do not meet the minimum required distance established by the Master Street Tree Plan (1999).

Man-hole covers and Utility vaults were observed in close proximity to some trees. Potential future conflict could involve requirement to repair Utility Infrastructure. Presence of underground installations reduce available soil volume and root space.

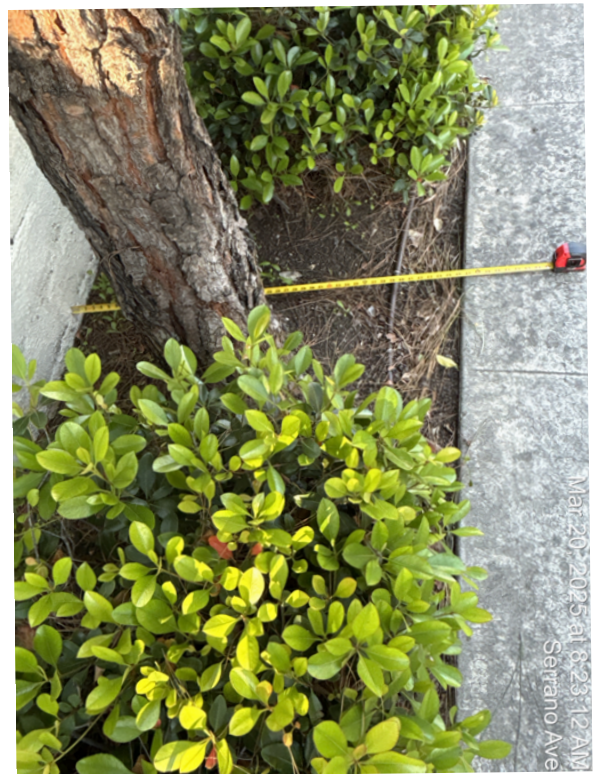
Examples of Surface Roots and Improper Root Barrier Installation



10 locations on Serrano Ave were observed with root barrier. All root barrier appeared improperly installed, with proximity as close as 4" to trunks. Root barrier installed at such close proximity to a trunk undermines the development of the root crown, the natural development of roots, and negatively effects tree health and anchorage.

Exposed surface roots were observed at 5 locations.

Planter Size



ABOVE: 52 trees observed to be in 4' wide planters.

BELOW: Example of mature Canary Island Pine at 300 E Chapman Ave parking lot. Tree measured to be 36" DBH, and approximately 40" at base. Note that the trunk flare and root crown extend further on the far side.



Planter Size, Comparison of Serrano Ave to Cannon St



ABOVE: 52 trees observed to be in 4' wide planters, with trunk proximity to wall from 7" to 26", and proximity to sidewalk from 9" to 28".

LEFT: 22 Canary Island Pine Trees along Cannon, with approximately 7-8' proximity to wall, and approximately 3' proximity to sidewalk.