



12/13/2023

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Re: Tree Protection for Proposed Landscape Redesign at 240 S Whisman Road

Dear Scott,

At your request, I have visited the property referenced above to evaluate the trees present with respect to the proposed construction project. The report below contains my analysis.

Summary

There are four trees on this property, and none overhanging the property from adjacent properties. One heritage tree is recommended for removal irrespective of project features, as it is in poor condition.

All other trees are in good condition and should be retained and protected as detailed in the Recommendations, below. With proper protection, all are expected to survive and thrive during and after construction.

Assignment

I have been asked to write a report detailing impacts to trees from construction of the proposed landscape redesign at this property.

City Regulations

In Mountain View, trees are protected based on species and diameter as shown in the following text, reproduced from the City of Mountain View website:

What is a Heritage Tree?

Any tree that has a trunk with a circumference of forty-eight inches (48") or more measured at fifty-four inches (54") above natural grade;

A multi-branched tree that has major branches below fifty-four inches (54") above the natural grade with a circumference of forty-eight inches (48") measured just below the first major trunk fork; AND

Any Oak, Redwood or Cedar tree that has a trunk circumference of twelve inches (12") or more when measured at fifty-four inches (54") above natural grade.

The City of Mountain View has no publicly available documents guiding tree reporting for construction projects of which of which I am aware. I have therefore followed industry standards for establishing tree protection zones and prescribing protective measures.

Limitations to Analysis

All observations were made from ground level with basic tools. Trunk diameters were measured with a diameter measuring tape.

No other tools were used. No root collar excavations or aerial inspections were performed. No project features had been staked at the time of my site visit.

Purpose of Report

This report is intended to inform tree management decisions for this project, and to provide recommendations to maximize the likelihood of survival for the trees which may reasonably be retained.

Observations

Trees

Three heritage street trees are present on the property: two olives (*Olea europaea*) and one Monterey pine (*Pinus radiata*) (**Image 1**) One other heritage tree is present while the other fell during a storm and subsequently removed, both purple leaf plums (*Prunus cerasifera*) (**Image 2**). No trees overhang the property from adjacent properties.

The olives and pine are mature and in good overall condition. Both olives' structure is somewhat poor, with multiple leaders. The pine exhibited no red turpentine beetle (*Dendroctonus valens*) damage.

Both purple-leaf plums appear overmature, with thin canopies for the species. Many sprouts are present on the scaffold limbs of plum #4. The lower trunk of plum #5 was heavily damaged with delaminating bark, which has since fallen over in storm and been removed.

Project Features

All buildings are to remain as-is. New monument signage is proposed in approximately the same location as the existing monument signage.

Proposed hardscape is limited to areas already containing existing hardscape. All existing landscaped areas are proposed to be updated with new plants. All proposed plant species will be low water use.

No new drainage, grading, or fencing features are shown on the plans provided to me. Proposed irrigation will be installed below-grade.

Tree Conflicts

Irrigation and shrub installation are proposed within all TPZs. No hardscape changes, grading, or major excavation are proposed within TPZs.

Methods

I visited the site twice, on 4/23/2020 and 5/4/2020. All observations and photographs in this report were taken at those site visits.

In order to remain in compliance with the regional Shelter-in-Place order, I did not enter the property on 4/23. As the property is located less than a mile from my home, I walked there. All observations were made from the public sidewalk. Only the sides of the trees visible from the street were observed. Trunk diameters were estimated visually. I returned to the site once Shelter-In-Place was revised to allow landscape activities on 5/4, at which time I took measurements and closer observations.

All trees meeting the definition of Heritage Tree were inventoried, as well as other noteworthy trees. Vitality ratings are based on tree appearance and experiential knowledge of each species. Tree location data was processed in GIS software to create the maps included in this report.

This report is based on the updated Landscape Drawings sheets L10.01, L10.02, L10.03, & L10.05 dated 12/15/2023.

Discussion

Tree Protection Zone (TPZ)

Tree roots grow where conditions are favorable, and their spatial arrangement is therefore unpredictable. Favorable conditions vary among species, but generally include the presence of moisture, and soft soil texture with low compaction.

Contrary to popular belief, roots of all tree species grow primarily in the top two feet of soil, with a small number of roots sometimes occurring at greater depths. Some species have taproots

when young, but these almost universally disappear with age. At maturity, a tree's root system may extend out from the trunk farther than the tree is tall.

The optimal size of the area around a tree which should be protected from disturbance depends on the tree's size, species, and vitality, as shown in the following table (adapted from *Trees & Construction*, Matheny and Clark, 1998):

Species tolerance	Tree vitality	Distance from trunk (feet per inch trunk diameter)
Good	High	0.5
	Moderate	0.75
	Low	1
Moderate	High	0.75
	Moderate	1
	Low	1.25
Poor	High	1
	Moderate	1.25
	Low	1.5

It is important to note that some roots will almost certainly be present outside the TPZ; however, root loss outside the TPZ is unlikely to cause tree decline.

Excavation in TPZs

The potential for root damage is high when excavating inside TPZs. Heavy machinery should be avoided because it pulls on roots, damaging them far past the edge of excavation. Hand tools are preferable, but may still pull on or shatter roots.

Air excavation is the least invasive method for removing soil around tree roots. Specialized tools such as an AirSpade use highly pressurized air to blow soil away while leaving roots intact.

If roots must be severed, damage can be minimized by making smooth cuts with sharp tools at the edge of the excavation nearest the tree. Roots should never be crushed or broken off. Minimizing the surface area of wounds in this manner speeds wound closure and discourages infection.

Traffic in TPZs

Driving or heavy foot traffic on bare soil around trees destroys roots, both by crushing them directly and by compacting the soil. Compaction removes pore spaces which allow oxygen to reach the roots. Without oxygen, the roots cannot transpire (break down stored food for the tree to use). This results in slowing or cessation of the tree's life processes, which can lead to localized dieback or whole-tree death.

The presence of existing pavement within a tree's root zone effectively mitigates the effects of traffic. In the absence of existing pavement, temporary anti-compaction materials such as wood chips topped with plywood can effectively prevent impacts.

Selected Species-Specific Issues

Monterey pine – this species is highly susceptible to damage from red turpentine beetles (*Dendroctonus valens*). Beetles generally colonize trees in the spring, and a heavily colonized tree may die completely by the summer of the same year. For this reason, mature Monterey pines are generally not considered long-term trees even if apparently healthy. However, Monterey pines typically have few other problems and are may be safely retained until death.

Purple-leaf plums – like most ornamental fruit trees, purple-leaf plums are short-lived, with a documented lifespan of less than 50 years.¹ In my experience, this species' lifespan ranges from about 20-40 years under usual landscape conditions. Sprouting from scaffold branches indicates stress in this and many other species, and often occurs near the end of a tree's lifespan.

Despite purple-leaf plums' small stature, limb failures from poor structure are common, though this may result more from improper pruning than inherent weakness of the species.

Conclusions

Pine #1 and olives #2 and 3 are in reasonably good condition. Plums #4 and 5 are in poor condition, particularly plum #5, which has since fallen and been removed. Minor impacts to all trees are expected from proposed irrigation and shrub installation.

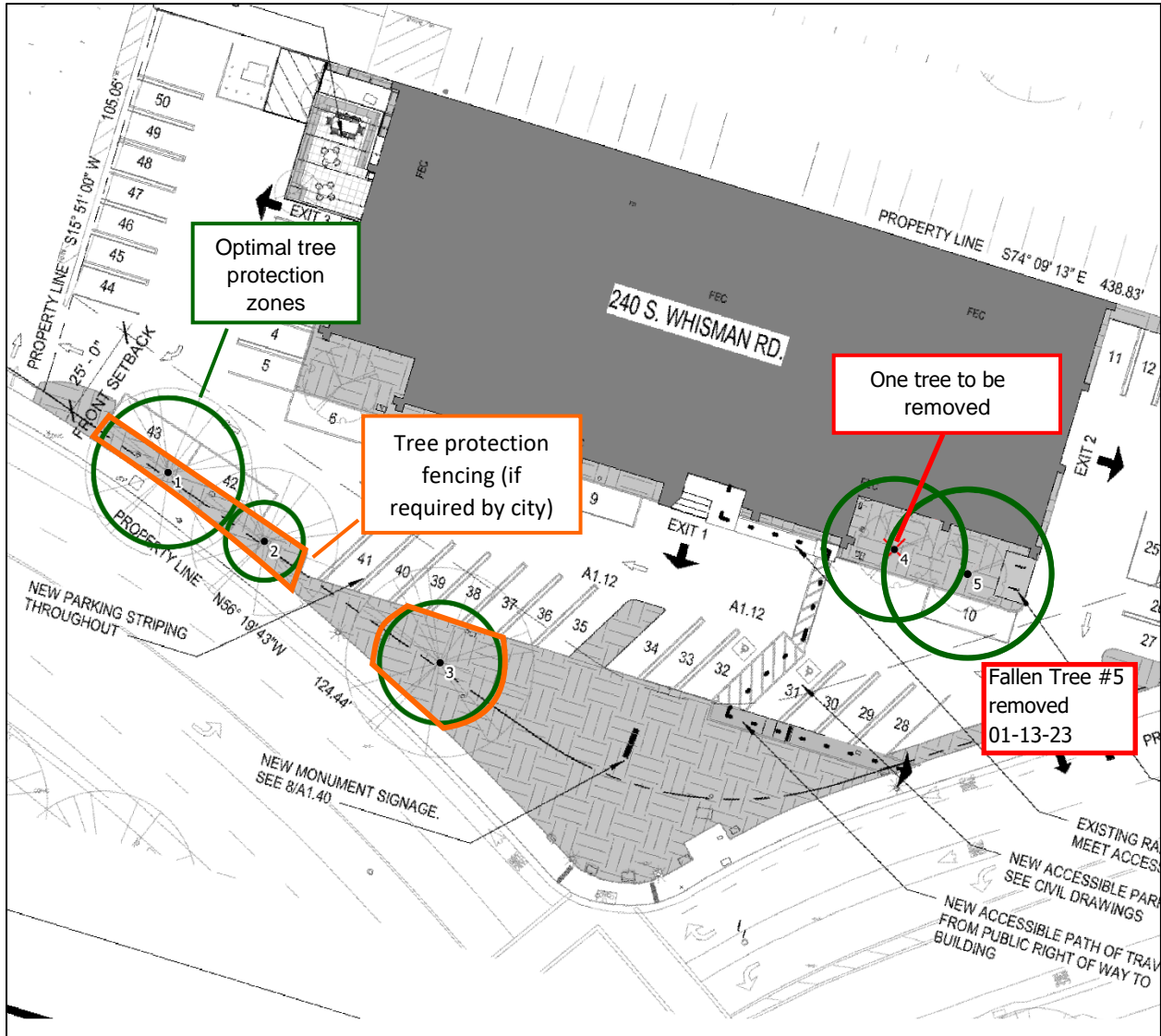
Some materials storage may occur within TPZs if they are left unfenced, but will likely be limited to potted plants, top dressings, and irrigation equipment. None would likely cause substantial impacts.

Recommendations

1. Retain trees #1-3 during and after construction.
2. Remove tree #4, while tree #5 has since fallen and been removed.
3. Install tree protection fencing for trees #1-3 if deemed necessary by the City of Mountain View.
 - a. Place tree protection fencing at or beyond the edge of each tree's TPZ, approximately as shown in the Tree Map, below.
 - b. If tree protection is required, all fencing must be installed prior to any equipment coming onsite, and must remain in place through the duration of construction.
4. If live roots over two inches in diameter are encountered during excavation in any location:
 - a. Use careful hand or pneumatic excavation to minimize root damage.
 - b. If feasible, relocate the excavation to avoid the root.
 - i. In the case of trenching for pipe installation, route the pipe around the root if feasible.
 - ii. In the case of shrub installation, plant the shrub away from the root.
 - c. Notify the project arborist if excavation cannot be relocated and root must be severed.
 - d. Sever the root with a sharp saw or bypass pruners.

¹ SelecTree. "*Prunus cerasifera* Tree Record." 1995-2020. Apr 29, 2020.
< <https://selectree.calpoly.edu/tree-detail/prunus-cerasifera> >

Tree Map²



² Tree locations approximate. Tree protection zones to scale. Tree protection features not to scale.

Tree Table

Tree #	Common Name	Species	DBH (inches, estimated visually 05/02/2020)	DBH (as measured by City Arborist 12/14/22)	Vitality (0 = dead, 3 = healthy)	Species Construction Tolerance (1 = poor, 3 = good)	TPZ radius (ideal; feet)	Project Impacts	Disposition	Notes
1	Monterey pine	<i>Pinus radiata</i>	26.2		3	2	19.7	Minor from irrigation and shrub installation. Other impacts are unlikely.	Retain. Install tree protection fencing if required by the city.	No red turpentine beetle damage observed.
2	Olive	<i>Olea europaea</i>	20.6		3	3	10.3	Minor from irrigation and shrub installation. Other impacts are unlikely.	Retain. Install tree protection fencing if required by the city.	Structure is somewhat poor, with many leaders. Two leaders are pressing against one another.
3	Olive	<i>Olea europaea</i>	32		3	3	16.0	Minor from irrigation and shrub installation. Other impacts are unlikely.	Retain. Install tree protection fencing if required by the city.	Structure is somewhat poor, with many leaders.
4	Purple-leaf plum	<i>Prunus cerasifera</i>	14.9	16.5"	2	1	Heritage per City Measurements	Minor from irrigation and shrub installation	Remove due to poor structure and short remaining lifespan	Poor structure. Many sprouts in canopy indicate stress. Thin canopy. Species is short lived, and this specimen appears to be nearing the end of its lifespan.
5	Purple-leaf plum	<i>Prunus cerasifera</i>	14.8	17.6"	0	0	Heritage per City Measurements	Not applicable	Not applicable	Tree fell over during a storm in January 2023. The tree was removed on January 13, 2023 by Frank + Grossman Landscape Contractors

Supporting Photographs

Image 1: Monterey pine #1 and olives #2 and 3 (left to right, trunk details in order below)

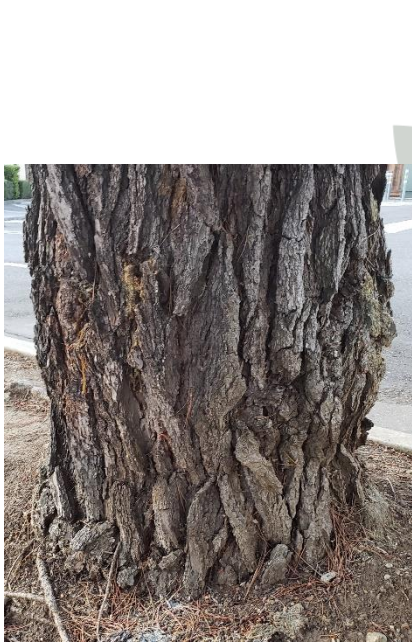


Image 2: purple-leaf plums #4 (left) and 5 (trunk details in order below)



Respectfully submitted,



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