

Memorandum

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Subject: Landscape Plan Review for Neighboring Tree Impacts,
Ascension Heights Subdivision, San Mateo

Date: October 26, 2018

Introduction

Arborwell was asked to review the *Ascension Heights Landscape Plan* dated September 18, 2018. Specifically, this review is to provide direction for the protection of three (3) *Hesperocyparis macrocarpa* (Monterey Cypress) growing along the rear property line at the project contiguous with 1538 Parrott Drive in unincorporated County of San Mateo, and to prepare a *Tree Protection Plan* to mitigate any potential impacts to the subject trees. An arborist report was prepared by Donald Cox, dated January 28, 2015 regarding the subject trees. We were asked to assess the impacts of proposed planting to tree adjacent to Lot 1, and the proposed subdivision infrastructure contained in the civil plans on the neighbor's trees on neighboring lots as well as for other trees to be preserved located on the property.

Plan Review

The plan shows the Cypress trees are growing along the west-side of the northern property line on the 1538 Parrott Drive property. The trees are located behind Lot 6, with the dripline of the eastern-most tree partially extending behind Lot 7. Lots 6 and 7 steeply slope down towards the subject trees. The eastern-most tree is growing approximately 3-4 feet from the property line and the other two are growing on the property line. The plan shows the limit of work set back 30-feet from the property line, and a tree protection fence at 10-feet from the property line. This 10-foot tree protection zone (TPZ) is planned for mulch only with no planting of any vegetation. Outside of the 10-foot TPZ and up to the structural setback, mulch is proposed along with native ground vegetation.

The back of Lots 1, 2, and 3 have trees growing on the project-side of the property line. The plan shows a tree protection fence approximately 15-feet from the property line. It also shows numerous planting just outside of the tree's protection zone.

Cox Report Review

The Cox Report recommends an overly large 50-foot radius TPZ extending south from the trunks. Other recommendations from the report are standard best practices.

On-Site Review

I visited the Ascension Heights Subdivision property on September 28, 2018 to visually assess the subject trees. The existing fence was approximately 20-feet from the trunks of the trees. At no time did I enter the 1538 Parrott Drive property. Because I was not able to physically measure the trees, I approximated the diameters of the subject trees in feet.

The two western-most trees were approximately 4-feet in diameter at 4.5 feet above grade, which is considered the standard height (DSH) of trunk diameter measurement. The eastern-most tree was 6-feet DSH. The canopy of the trees was approximately 40- to 50-feet.

The subject trees were multi-stemmed with very large scaffolding limbs. The branches were overarching on the Ascension Heights property. The trees did not appear to be well-maintained, indicative of extensive deadwood throughout their crowns. The subject trees had piles of yard debris and a deck structure within their dripline. The eastern-most tree showed evidence of a massive branch failure that has left the tree unbalanced towards the Ascension Heights property. The two western-most trees appeared to be structurally sound; however, Cypress at this stage of maturity are predisposed to large branch failure as well as crown failure.

Discussion

The subject trees' roots are not likely found in abundance on the uphill slope due to the trees being located in a basin where water would naturally accumulate. The landscape plan details for a 10-foot TPZ. An acceptable TPZ for these trees is a minimum of 25% of the total canopy area. 25% is the maximum allowable root loss a tree can sustain without compromising its long-term health and stability. Because the radius of the canopies is approximately 40- to 50-feet, 50% of the total area would yield a radius of 28- to 35-feet, which would be 25% on the project-side of the root area. These numbers are conservative as only one side of the tree has the potential to be affected by construction activities which would be, arguably, 25% of the total area. However, a TPZ less than the above distances may have the potential for the critical root structure to be compromised and would result in a loss of stability. This area of TPZ is for construction only.

I do not think the Cox Report's recommendation of a 50-foot TPZ radius is reasonable given that there are not likely uphill roots and that the 50-foot radius would unnecessarily diminish the lot size of Lot 6. The 30-foot TPZ that we recommend accommodates both the needs of the project as well as the critical root area of the trees.

The 30-foot setback is also our recommended TPZ for trees along the perimeter of Lots 1, 2, & 3 for the construction-period only.

The existing fence along the north property line is not likely the “true” property line and, as such, is encroaching on the Ascension Heights property. I would recommend the “true” property line be physically staked out, and the 30-foot zone—the structural setback—to be considered the TPZ and install fencing at 30 feet from the surveyed property line.

No planting should be installed within the area beneath the driplines of the trees for Lots 1, 2, 3 6 & 7 as the plantings will introduce unneeded competition. However, the screen trees are acceptable. Planting of native ground vegetation may be placed anywhere outside of the dripline of any tree designated to be preserved, whether on or off the property, and within this 30-foot structural setback/tree protection zone.

Tree Protection Plan

This document does not replace any existing Tree Protection Plan, but rather, is a specific mitigation to potential disturbances to the subject trees. All work is to be performed by a qualified tree worker approved by the Project Arborist.

Tree Protection Zone

Fencing for the TPZ for the subject trees are to be set at the 30-foot structural setback and encompass the driplines of the trees at the very minimum.

Fencing is to be mounted on two inch diameter galvanized iron posts, driven into the ground to a depth of at least two (2) feet at no more than ten (10) foot spacing. A closeable 36-inch entry section for servicing the TPZ shall be provided. The fencing is to be wrapped with brightly colored orange fencing, which will provide a visual reminder to workers that the trees are protected.

Final Improvements: If the fencing must be relocated for final improvements, the posts may be supported by appropriate stanchions as directed by the Project Arborist (PA). This area should be considered a modified TPZ. Any activity within a modified TPZ must involve the PA’s prior approval.

Duration of Tree Protection Fencing

Tree fencing shall be erected prior to demolition, grading or construction and remain in place until final inspection. Tree Protection Fencing shall be field verified by the PA before any work can begin, including grubbing, demolition, and grading. TPZ cannot be moved without the prior approval of the PA. TPZs are to remain throughout the entirety of the project.

“Warning” Signage

A warning sign a minimum of 8.5x11-inches shall be prominently displayed on each fence. The sign shall clearly state:

Warning:

Tree Protection Zone

This fencing shall not be removed without prior approval of the Project Arborist.
(List Contact Arborist's Firm, Name, and Phone Number)

Once installed, each tree will then be protected for the duration of the project. All work that occurs in the dripline falls under the category of the TPZ. This means that work that is performed within this zone will require direct involvement of the PA. Improvements or activities such as paving, utility, and irrigation trenching and other ancillary activities shall occur outside the TPZ, unless authorized by the PA. Unless otherwise specified, the protective fencing shall serve as the TPZ boundaries. At no time shall TPZ be encroached without the directive of the PA.

Activities prohibited within the TPZ include:

- Storage or parking vehicles, building materials, refuse, excavated spoils or dumping of poisonous materials on or around trees and roots. Poisonous materials include, but are not limited to, paint, petroleum products, concrete or stucco mix, dirty water or any other material which may be deleterious to tree health.
- The use of tree trunks as a winch support, anchorage, as a temporary power pole, sign posts or other similar function.
- Cutting of tree roots by utility trenching, foundation digging, placement of curbs and trenches and other miscellaneous excavation without prior approval of the PA.
- Soil disturbance or grade/drainage changes
- Materials must not be stored, stockpiled, dumped, or buried inside the dripline of trees.
- Excavated soil must not be piled or dumped, even temporarily, inside the TPZ of protected trees.

Activities required within the TPZ include:

- **Mulching:** During construction, wood chips shall be spread within the TPZ to a six (6) inch depth, leaving the trunk clear of mulch to help inadvertent compaction and moisture loss from occurring. The mulch may be removed if improvements or other landscaping is required. Mulching may be applied at a depth of three (3) inches prior to construction under trees where there is no landscaping or paving (landscaping shall not be installed underneath the subject tree).

- Irrigation, aeration, or other beneficial practices that have been specifically approved for use within the TPZ.

Irrigation Program

Deep-root irrigate during the project.

1. Irrigation is to begin immediately and up to when construction is complete.
2. An application of growth regulator (paclobutryzol) prior to construction activities will aid in the development of fine-root growth and will help counter the effects of any root damage. This should be applied immediately for all trees that are to be protected in place. This is to be performed by a certified tree care specialist.
3. In addition, all trees are to have roots inoculated with endo/ectomycorrhizal fungal inoculum.
4. Irrigate a minimum of ten (10) gallons for each inch of trunk diameter once every month. A soaker hose or a drip line is preferred for this purpose.
5. Any new irrigation for existing trees must not be designed to strike the trunks of trees, because of potential high risk of disease infection. Bubbler irrigation is preferred.
6. If any irrigation lines, drain lines, sewer lines, or any other underground features inside the existing dripline of protected trees that are to be abandoned, they should be cut off approximately at soil grade and left in the ground.
7. Where necessary, irrigation should be installed using at least two bubblers.
8. The foliage of tree shall be kept dust-free with monthly washings, or more frequent as determined by the SPA.

Damage to Trees - Reporting

Any damage or injury to the subject trees shall be reported within six (6) hours to the PA and job superintendent so that mitigation can take place. All mechanical or chemical injury to branches, trunk or to roots over two (2) inches in diameter shall be reported. In the event of injury, the following mitigation and damage control measures shall apply and implemented by a Certified Arborist:

- a. Root injury: If trenches are cut and tree roots two (2) inches or larger are encountered they must be cleanly cut. The end of the root shall be covered with either a plastic bag and secured with tape or rubber band. All exposed root areas within the TPZ shall be backfilled or covered within one (1) hour. Exposed roots may be kept from

drying out by temporarily covering the roots and draping layered burlap or carpeting over the upper three (3) feet of trench walls. The materials must be kept wet until backfilled to reduce evaporation from the trench walls. All the above activities shall be performed by a Certified Arborist.

- b. Bark or trunk wounding: Current bark tracing and treatment methods shall be performed by a Certified Arborist within two (2) days.
- c. Scaffold branch or leaf canopy injury: A Certified Arborist will remove broken or torn branches back to an appropriate branch capable of resuming terminal growth within five (5) days. If leaves are heat scorched from equipment exhaust pipes, consult the PA within six (6) hours.

A. Trenching, Excavation and Equipment Use

Excavation or boring activity within the TPZ is restricted to the following activities, conditions and requirements if approved by the PA:

1. Notification. Contractor shall notify the SPA a minimum of twenty-four (24) hours in advance of the activity in the TPZ.
2. Root Severance. Roots that are encountered shall be cut to sound wood and repaired. No roots of two (20-inch diameter and larger shall be cut without the prior approval of the SPA. Approval is based on the distance of the root from the tree trunk and whether or not there are sufficient roots in the area to compensate for their removal.
3. Excavation. Any approved excavation, demolition or extraction of material shall be performed with equipment sitting outside the TPZ. Methods permitted are by hand digging, hydraulic or pneumatic air excavation technology. Avoid excavation within the TPZ during hot, dry weather.
 - a. If excavation or trenching for drainage, utilities, irrigation lines, etc., it is the duty of the contractor to tunnel under any roots two (2) inches in diameter and greater.
 - b. Prior to excavation for foundation/footings/walls, grading or trenching within the TPZ, roots shall first be severed cleanly one (1) foot outside the TPZ and to the depth of the future excavation. The trench must then be hand dug and roots pruned with a saw or other approved root pruning equipment by the SPA.
4. Heavy Equipment. Use of backhoes, steel tread tractors or any heavy vehicles within the TPZ is prohibited

B. Root Severance

Cutting and removal of roots smaller than two (2) inches in diameter shall be done by chain saw or hand saw to provide a flat and smooth cut and cause the least damage possible to the root and tree's health. Cutting roots by means of tractor-type equipment or other than chain saws and hand saws is prohibited.

Proper pruning technique shall encourage callusing of the roots. Root cutting and removal shall not exceed thirty-five (35) percent of total root surface.

If any roots over two (2) inches in diameter are severed during any excavation, the following procedure shall be followed:

1. The roots shall be shaded by immediately covering the entire trench with plywood, or by covering the sides of the trench with burlap sheeting that is kept moist by watering twice per day.
2. When ready to backfill, each root shall be severed cleanly with a handsaw. Where practical, they should be cut back to a side root. Immediately, a plastic bag shall be placed over the fresh cut, and secured with a rubber band or electrical tape. Shading should immediately be placed until backfilling occurs.
3. Plastic bags shall be removed prior to backfilling.
4. Backfill shall be clean, native material free of debris, gravel or wood chips.

If roots three (3) inches in diameter, or larger, are encountered during excavation, Contractor shall contact the SPA immediately and request a field inspection, and obtain instruction as to how the roots should be treated. No roots three (3) inches in diameter, or larger, shall be cut and removed without prior approval from the SPA. Excavation will be performed with an airspade when greater than 4" of soil is required to be removed from a dripline. Roots will be pruned per recommendations by the SPA.

Conclusion

It is the nature of trees exposed to construction that some do not survive, and mortality cannot be predicted. In the event that due care is exercised, all of the trees designated for preservation on the project are expected to remain healthy and alive.