Consulting Arborists

3109 Sacramento Street San Francisco, CA 94115

Member, American Society of Consulting Arborists Certified Arborists, Tree Risk Assessment Qualified

Cell 415.606.3610

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M-Design Architecture 4131 W. El Camino Real Suite 200 Palo Alto, CA 94306

RE: 634 Palomar Drive Redwood City, CA 94062

Date: 12/12/20

ARBORIST REPORT

Assignment

Arborist Report and Tree Protection Plan

- Review pre-existing relevant work product, as provided: site survey, schematic drawings, grading plans, landscape plans, utilities plans, etc.
- Visit the project site to evaluate trees and develop the scope for the report.
- Provide an evaluation of soil physical, chemical and drainage properties to typify the site at large. An existing Geotechnical report, site observations, testing and/or research of soil survey data may be utilized.
- Inspect adjacent properties for both overhanging tree canopies and sensitivity of adjacent tree root structure to construction impacts. Provide recommendations, as necessary.
- From a site plan (to be provided by others), label each tree to match the Arborist Report and Tree Protection Plan.
- Provide a tree survey of all regulated trees on and adjacent to the project site. Provide data interpretation criteria.
- Identify potential construction impacts to trees and provide recommendations for modifications and/or mitigation to lessen these impacts.
- Develop tree recommendations for site utilization planning for staging and equipment access.
- Develop tree maintenance recommendations.



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Background

The property at **634 Palomar Drive, Redwood City** currently has 12 trees on the property, and 7 trees near the driveway approach that crosses the neighbor's property, for a total of 19 trees affected. The new construction will impact various trees due to paving the driveway, the footprint for a new house, geotechnical stabilization of a relatively recent landslide and the installation of a septic system.

Lea & Braze Engineering has produced designs that show the landslide and septic system construction needs in detail, and the placement of the new home site and various retaining walls. Their utility plan sheet C-3.0 was used as the basis for the Site Plan with Additions that was created by us and is part of this report.

Tree Assessment

A total of 19 trees were found on this property and along the driveway approach. Tree numbers assigned to each tree below correspond to those used on the Site Plan with Additions. The data for tree identification, size and condition are listed below:

Tree No.	Genus species	Common Name	Diameter	Height	Spread	Condition
1	Quercus agrifolia	Coast live oak 5.5"		20'	10'	Fair
2	Quercus agrifolia	Coast live oak	13.0"	20'	30'	Good
3	Quercus agrifolia	Coast live oak	9.0"	20'	30'	Fair
4	Quercus agrifolia	Coast live oak	22.5"	30'	40'	Good
5	Quercus agrifolia	Coast live oak	16.0"	30'	40'	Good
6	Quercus agrifolia	Coast live oak	13.0"	20'	30'	Fair
7	Quercus agrifolia	Coast live oak	14.5",16.7",15.5"	25'	40'	Good
8	Aesculus californica	California buckeye	6.0"	12'	16'	Good
9	Quercus agrifolia	Coast live oak	11.5"	25'	25'	Good
10	Quercus agrifolia	Coast live oak	11.7"	30'	25'	Good
11	Quercus agrifolia	Coast live oak	7.3"	25'	15'	Good
12	Quercus agrifolia	Coast live oak	18.6"	30'	40'	Good
13	Umbellularia californica	California bay	4.8"	12'	12'	Good
14	Quercus agrifolia	Coast live oak	21.1",17.5"	40'	60'	Good
15	Aesculus californica	California buckeye	10.0",6.4"	20'	30'	Good
16	Aesculus californica	California buckeye	10" equivalent	12'	20'	Poor
17	Quercus agrifolia	Coast live oak	11.1",7.8"	12'	20'	Poor
18	Eucalyptus globulus	Tasmanian blue gum	25.7",17.0"	50'	50'	Fair
19	Eucalyptus globulus	Tasmanian blue gum	12.0",13.5",19.5", 14.0"	50'	50'	Fair

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Table 1.0 – All Trees

Project Arborists

The *Project Arborist* referred to in this report is identified here as a Consulting Arborist from Tree Management Experts, and will be either Roy Leggitt or Aaron Wang. Roy Leggitt has more than 30 years of experience after obtaining a BS in Plant Science – Ornamental Horticulture from CSU-Fresno, is a Certified Arborist and is Tree Risk Assessment Qualified (TRAQ). Aaron Wang has more than 8 years of experience after obtaining a BS in Forestry and Natural Resources from UC-Berkeley, is a Certified Arborist and is Tree Risk Assessment Qualified.

Trees to be Removed

A total of 8 trees must be removed due to poor health or structure, for purposes of construction, or both poor condition and construction. California bay carries sudden oak death, and this small tree should be removed to protect the health of the nearby coast live oaks. See page 10.

Tree No.	Genus species	Common Name	Diameter	Removal Reason
8	Aesculus californica	California buckeye	6.0"	Within landslide repair
13	Umbellularia californica	California bay	4.8"	Sudden oak death carrier
14	Quercus agrifolia	Coast live oak	21.1",17.5"	Within footprint of house
15	Aesculus californica	California buckeye	10.0",6.4"	Within leach field footprint
16	Aesculus californica	California buckeye	10" equivalent	Poor structure
17	Quercus agrifolia	Coast live oak	11.1",7.8"	Poor structure, decayed trunk
18	Eucalyptus globulus	Tasmanian blue gum	25.7",17.0"	Too close to leach field, poor structure
19	Eucalyptus globulus	Tasmanian blue gum	12.0",13.5",19.5", 14.0"	Too close to leach field, poor structure

Table 2.0 – Tree Removals

Tree Impacts and Recommendations

Tree Protection Zones

Trees 1, 2, 3, 4, 5, 6, 7, 9, 10, 11 and 12

A Tree Protection Zone (TPZ) has been established for each remaining tree. Because of the landslide repairs, potential for grading, building footprint, leach field and retaining walls, all trees will be affected by construction, both along the driveway and on this property. The TPZ areas are graphically illustrated on the Tree Protection Plan (page 11), and the measured radius distances are shown in Table 3.0 below. If there is any difference, the measured radius distances in Table 3.0 will take precedence. Whenever

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work is performed within the TPZ of a tree, the tree must have tree protection measures in place, per this Arborist Report. When any excavation, trenching, grading or vehicular access occurs within a TPZ, the Project Arborist must be on site.

Pre-construction Pruning

Trees 1, 2, 3, 4, 5, 6, 7 and 12

Table 3.0 also indicates pruning requirements for certain trees. Pruning as specified will remove branches proactively to prevent broken branches from trucks that would cause injury to the protected trees. The pruning must be completed before construction of any type begins since this is part of the tree protection.

In some cases, branches will be cut back part way, and in other cases lower branches will need to be removed entirely. The driveway will need truck access past trees 1, 2, 3, 4, 5 and 7. The area where the landslide occurred will need equipment access beneath tree 6. Clearances for construction of the house will need some pruning of tree 12. All pruning must be completed under the direction of the Project Arborist.

Tree No.	Genus species	Common Name	Diameter	Pre-construction Pruning Requirements	Tree Protection Zone Diameter
1	Quercus agrifolia	Coast live oak	5.5"	Driveway clearances	11'
2	Quercus agrifolia	Coast live oak	13.0"	Driveway clearances	26'
3	Quercus agrifolia	Coast live oak	9.0"	Driveway clearances	18'
4	Quercus agrifolia	Coast live oak	22.5"	Driveway clearances	45'
5	Quercus agrifolia	Coast live oak	16.0"	Driveway clearances	32'
6	Quercus agrifolia	Coast live oak	13.0"	Cut back northwest side	26'
7	Quercus agrifolia	Coast live oak	14.5",16.7",15.5"	Driveway clearances	54'
9	Quercus agrifolia	Coast live oak	11.5"	None	23'
10	Quercus agrifolia	Coast live oak	11.7"	None	24'
11	Quercus agrifolia	Coast live oak	7.3"	None	15'
12	Quercus agrifolia	Coast live oak	18.6"	South side clearances	37'

Table 3.0 – Tree Protection

Root Collar Protection and Root Collar Excavations

Trees 1, 2, 3, 4, 5, 6, 9 and 12

The root collars of trees 1, 2, 3, 4, 5 and 6 are currently partially buried under fill soil. The fill soil is either from grading or accumulation over time. The excess soil should be removed to a distance of 2 feet on all sides of each tree. The embankment created by

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excavation should be supported by a dry stacked wall, similar to the wall currently in place, although materials may vary. This work must be completed under the direction of the Project Arborist.

Soil cannot be placed within any TPZ area at any time. The TPZ areas cannot be regraded or raised to accommodate excess soil, tailings or fill soil.

Similarly, soil cannot be graded down, cut away, or otherwise moved or removed within any TPZ except as shown on the Lea & Braze utility plan sheet C-3.0 and as specified in this report,

Site and Soil Conditions

The site has soil conditions that are deep, sandy loam that has formed in place from native Franciscan sandstone. The soil has drainage, nutritional and chemical properties as necessary to support normal and healthy growth of all tree species found on the site. Of particular note, native tree species are normal and healthy, and appeared to be generally free of serious diseases that would indicate either a disease court, poor drainage or soil compaction, all of which are damaging to trees and to the horticultural properties of soil. Based on these observations, it appears that native species of coastal trees and shrubs are well-suited to the site and could be used in future landscaping.

To maintain favorable conditions for trees and landscaping, only native soil should be used in filled areas such as behind retaining walls near the leach field. To preserve horticultural properties of the soil, soil placed atop the leach field should be laid down without tamping, vibration, rolling, saturating or otherwise causing compaction that exceeds 85 percent.

Construction Footprints

Trees 7 and 12

Various construction footprints requiring excavation may affect remaining trees:

- 1. A retaining wall along the east edge of the new entry
- 2. Foundations for the house
- 3. Utility connections for the sanitary sewer system
- 4. Utility connections for water, gas and electrical
- 5. Driveway re-grading as part of new pavement

A new wall is needed to provide access to the front of the house at the driveway and security gate. This new wall has been pulled away from Tree 7 by 9 feet, and the grade of the driveway has been kept higher and close to the pre-construction grade to minimize root impacts. The TPZ of Tree 7 extends past the property lines and through



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the nearby driveway areas. Since roots from Tree 7 are likely to be encountered, work must be done under the supervision of the Project Arborist.

Foundations for the new house will encroach on the southwest part of the TPZ for Tree 12. The tree protective fence must be placed and secured before excavation work begins. The root system extending up hill and toward the foundation excavation is likely fairly minimal, but could include some larger roots, and therefore must be done under the supervision of the Project Arborist.

Utility connections for the new sanitary sewer system will be placed outside the foundations and will further encroach on part of the TPZ for Tree 12. This trenching will require that excavation tailings be placed on a temporary root buffer, that all work be done by hand, that common trenches be used whenever possible, and that the work be done under the supervision of the Project Arborist.

Utility connections that are placed underground are to travel down the landslide area. Use of this area will avoid trenching damage to the roots of the neighbor's oak trees along the driveway.

Driveway re-grading and new gravel as designed will likely have little impact on tree roots, except at retaining wall footings.

- I recommend that the retaining wall near Tree 7 be supported on drilled piers with above grade beams tying them together to support the wall.
- I recommend that base rock and new pavement be placed atop the existing grades without disturbance of the sub-grade. To avoid the need for compaction, I recommend the use of a geo-grid membrane to distribute loads and stabilize the base rock without any compaction of the sub-grade.

The Project Arborist must provide oversight of all work on the retaining wall footings, sub-grade compaction or grading, and the installation of a geo-grid membrane.

Construction Procedures

EXCAVATION

All tree protective fencing, root buffers, mulch and irrigation must be in place prior to demolition.

At no time is any wheeled equipment, a Bobcat® or an excavator allowed to enter or cross over TPZ areas, except where existing road surfaces remain as a temporary root buffer during construction.

NEW DRIVEWAY CONSTRUCTION

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Because of the Tree Protection Zones associated with the new driveway, the subgrade cannot be compacted or graded in any way.

The new driveway gravel will be laid atop a Tensar® geogrid (or equivalent) weightdisbursing membrane that is laid directly on uncompacted native soil and/or the existing gravel surface.

EXISTING DRIVEWAY AS A ROOT BUFFER

Retain the existing driveway as a temporary root buffer to protect Trees 1, 2, 3, 4, 5, 6 and 7 from soil compaction root damage.

If work occurs when rain is likely (November through April), additional protection is required in the TPZ of Tree 7. Place 1 1/8-inch thick sub-floor plywood over all soil areas, including the driveway, and secure the sheets together with clips or mending plates. This will offer further prevention of soil compaction and root damage.

The existing driveway will serve as the access point for all equipment and deliveries, and for staging of materials and debris.

STAGING AREAS

Staging areas are available in the areas of the existing driveway, and on the new leach field. Consult with Lea & Braze regarding protection needs for the leach field if it is used in this manner.

Any other or additional staging areas that are within TPZ areas will need to be placed on root buffers, subject to review and approval of the Project Arborist. The duration of root buffers within TPZ areas may be limited by the Project Arborist.

Tree Protection Implementation

Tree Protective Fencing

To implement tree protection measures effectively, precise measurement for fence locations is critical. Proper skills and equipment are required to place fences where they belong. It is essential that the fence installer refer to a copy of this Arborist Report and Table 3.0 at all times. Measurement of distances must be to within 6 inches, and cannot be completed properly by using either estimated or "paced off" distances. Required equipment will include an appropriate Engineer's scale and either a laser range finder or a 100-foot tape measure with a helper.



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It is recommended that fence posts be installed first. Measure each Tree Protection Zone (TPZ) and marking the TPZ locations with marking paint. Measure fence locations at the appropriate distance away from each footing, as shown on the Site Plan.

Fence boundaries must meet, match and enclose areas defined by existing fences. The exact location of existing fences is not known and must be determined in the field.

Following surface installations, chain link fencing must be strung tightly and closed off at all locations, including where abutting existing wooden fences.

TREE PROTECTIVE FENCING AND WARNING SIGNS

<u>Placement:</u> all fence installation lines are indicated on the Site Plan. Trees affected will include Trees 1, 2, 3, 4, 5, 6, 7, 9, 10, 11 and 12.

<u>Type and Size:</u> 5 or 6-foot high chain link fencing shall be placed on 2 inch tubular galvanized iron posts driven a minimum of 2 feet into undisturbed soil and spaced not more than 10 feet on center.

<u>Duration</u>: Tree fencing shall be erected prior to any demolition activity, and shall remain in place for the duration of the project, except where a gap is needed for access to the detached garage.

<u>'Warning' Signs:</u> 'Warning' signs shall posted on Tree Protective Fencing not more than every 20 feet stating "WARNING – *Tree Protective Zone* – This fence shall not be removed"

Maintenance and Ongoing Care

Tree maintenance and ongoing care is necessary in preparation for construction, and throughout the entire timeline for construction. Anticipated needs include pruning, irrigation and tree protection during landscaping:

PRUNING

All pruning must be completed under the direction of the Project Arborist.

Pre-construction Pruning

Pre-construction pruning as specified above will remove limbs proactively to prevent broken branches and injury to the protected trees. This pruning will have some branches cut back part way, and trees will not necessarily be fully pruned or maintained as will ultimately be needed. Although the purpose of this pruning is to establish clearances for construction, it is also possible that some branch breakage will have occurred during the construction

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process. In the event that small branches are damaged, re-pruning to repair or correct any issue will likely best be left until the close of construction. Any branches larger than 1-inch diameter that are damaged should be reported immediately to the Project Arborist for their evaluation.

Post-construction Pruning

Pruning for overall structural improvement of the protected trees should occur at the close of construction, and before landscape installation. The exact pruning needs will need to be determined at that time, but will include improving the balance of canopies, shortening branches that are end-heavy and prone to breakage, and re-cutting or removing any branches that were broken during construction.

IRRIGATION

No supplemental irrigation is needed for the protected trees. These are all native species that are adapted to summer drought conditions. Summer irrigation of oak trees would put the trees at risk of developing root rot diseases. Construction impacts to the root systems are not expected to be severe enough to warrant the risks posed by summer irrigation.

New landscaping will require irrigation, and the plans are subject to review and approval by the Project Arborist. As a guideline, the new irrigation system should be low water use, should only operate during the dry season, and should be set up for drought tolerant and low water use plant material. It is our recommendation that plants native to the area be used for landscape purposes, and that the new irrigation system be designed for use on a minimal level and such that it is not necessary during drought conditions.

LANDSCAPING

New landscape designs are subject to reviewed and approval by the Project Arborist.

The new irrigation system must be designed to avoid the use of trenches across existing TPZ areas. If sub-surface trenches must be installed, common trenches should be used and they should stay as far away from the trees as possible. A trench running along a radius line directly toward a tree is preferable to a cross trench. If extensive trenching is done, Air-spade® excavation will be required.

Care must be taken to keep mulch away from the base of all trees and other woody plants. Similarly, soil grades must be carefully monitored to keep excess soil from accumulating around the base of trees and shrubs.



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4

Tree Removal Plan Additions by: Tree Management Experts Consulting Arborists Roy C. Leggitt, III 3109 Sacramento Street San Francisco, CA 94115 (415) 605-3610 Approximate tree locations Tree removals are shown in blue are shown in red DRIVE PALOMAR \odot ŝ (N) LINE OF ROOF ABOVE 1 I ROAD C SETBACK WOOD RETAININ TO BE REMOVED GARAGE WALL SLAB: 93.00 FIRST U

CERROS (N) HOUSE RAVEL 60, Contractor's License #885953 www.treemanagementexperts.blogspot.com Page 10 of 13

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Tree Protection Plan



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Assumptions and Limiting Conditions

- 1. Any legal description provided to the consultant is assumed to be correct. Title and ownership of all property considered are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
- 2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes or other governmental regulations.
- 3. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible. The consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
- 4. Various diagrams, sketches and photographs in this report are intended as visual aids and are not to scale, unless specifically stated as such on the drawing. These communication tools in no way substitute for nor should be construed as surveys, architectural or engineering drawings.
- 5. Loss or alteration of any part of this report invalidates the entire report.
- 6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior written or verbal consent of the consultant.
- 7. This report is confidential and to be distributed only to the individual or entity to whom it is addressed. Any or all of the contents of this report may be conveyed to another party only with the express prior written or verbal consent of the consultant. Such limitations apply to the original report, a copy, facsimile, scanned image or digital version thereof.
- 8. This report represents the opinion of the consultant. In no way is the consultant's fee contingent upon a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
- 9. The consultant shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule, an agreement or a contract.
- 10. Information contained in this report reflects observations made only to those items described and only reflects the condition of those items at the time of the site visit. Furthermore, the inspection is limited to visual examination of items and elements at the site, unless expressly stated otherwise. There is no expressed or implied warranty or guarantee that problems or deficiencies of the plants or property inspected may not arise in the future.

Disclosure Statement

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.



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Treatment, pruning, and removal of trees may involve considerations beyond the scope of the arborist's services such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. An arborist cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate the trees.

Certification of Performance

I, Roy C. Leggitt, III, Certify:

- That we have inspected the trees and/or property evaluated in this report. We have stated findings accurately, insofar as the limitations of the Assignment and within the extent and context identified by this report;
- That we have no current or prospective interest in the vegetation or any real estate that is the subject of this report, and have no personal interest or bias with respect to the parties involved;
- That the analysis, opinions and conclusions stated herein are original and are based on current scientific procedures and facts and according to commonly accepted arboricultural practices;
- That no significant professional assistance was provided, except as indicated by the inclusion of another professional report within this report;
- That compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party.

I am a member in good standing of the American Society of Consulting Arborists and a member and Certified Arborist with the International Society of Arboriculture.

I have attained professional training in all areas of knowledge asserted through this report by completion of a Bachelor of Science degree in Plant Science, by routinely attending pertinent professional conferences and by reading current research from professional journals, books and other media.

I have rendered professional services in a full-time capacity in the field of horticulture and arboriculture for more than 30 years.

Sianed:	Roy	C.	Legg A	14

Date: 12/12/20





































