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11/27/2016



SUMMARY

During construction of your proposed garage, the three coastal live oaks indicated below will require monitoring and protection. However, the tree roots encountered during air spading indicate that they will not be a barrier to the construction of your garage.

BACKGROUND AND ASSIGNMENT

This report, which you asked me to write, addresses the potential impact of demolition and reconstruction of your garage on three oaks at the address listed here. The footprint of the existing garage, which will be expanded for the proposed garage, is located within the drip-lines of three mature coast live oaks, *Quercus agrifolia*, shown on the site sketch on page 4.

OBSERVATIONS

Tree #1 is a large *Quercus agrifolia*, (coast live oak.) It is located just outside a lattice fence to the back area that contains the compost bins, and is the one nearest to the swimming pool gate – that leads to a large swimming pool co-owned by four of the nearby homes. The old garage that is to be torn down is just behind the compost bins. This tree has a large central trunk, and is in good condition.

Tree #2 is a is a large *Quercus agrifolia*, (coast live oak.) It is located on the opposite side of the old garage that is to be torn down, next to the paved area and a walkway leading to the third oak tree and the large redwood trees at the back of the property. It has an extremely low large limb extending out toward the house – that is held up by a large prop. However, the tree is in good condition.

Tree #3 is a is also a large *Quercus agrifolia*, (coast live oak.) It is located near the fence at the back of the property, on the same side of the old garage as Tree #2. It has two large trunks, and is growing out over the neighboring property, since it is competing for light with Tree #2 and the redwoods behind it farther along the walkway. However, even though the tree is leaning out toward the light, it is also in good condition.

DIAMETERS OF THE TREES AND THEIR DISTANCES FROM THE PROPOSED FOUNDATION
(The trees were measured at the dbh, or 4.5' above the ground.)

Tree # Area	DBH	Distance From New Proposed Garage	Critical Root
1	35.8" (2.93')	44" (3.67') from the corner of the proposed studio	35.8'
2	33.6" (2.8')	68.5" (5.71') from the front corner of the proposed garage	33.6'
3	23" (1.92')	77.25" (6.44') from the corner of the new-garage	23'

Air spading, with an Air Spade^R, and hand excavation has been performed along all the proposed critical foundation areas. The soil has been found to be extremely well drained and sandy. No roots larger than 3" in diameter have been found above a depth of 18" near tree #1 and no large roots were found to impact construction near trees #2 and #3.

DISCUSSION

Coast live oaks are quite tolerant to construction damage, (Matheny, N.P. and J.R. Clark, 1998). But, because this work is being done close to the trunks, special protection of the roots and soil will be required, since soil compaction, mechanical injury to the roots and soil contamination must not occur. This area is defined as the soil within the dripline of each tree. This is equivalent to one foot of radius per inch of trunk diameter at the dbh. For example, if a tree's dbh is 10", then its critical root radius is 10'. Wherever possible, this area should be isolated from construction disturbance. In this case, pier and grade beam construction of the new garage will be required, along with the placing of mulch and steel plates over areas within the drip-lines of the trees where construction equipment will be required.

Since coast live oaks are valuable trees, the tree preservation recommendations listed below should be followed during the pre-construction and construction phases of this project. Care should be made in the placement of the temporary chain link fencing and mulch beneath steel plates, so they can't be moved or disturbed during the time that the construction work is done.

RECOMMENDATIONS

Any construction plans affecting your trees shall be reviewed by an arborist with regard to tree impacts. These include, but are not limited to, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans, and demolition plans. Site and grading plans shall be modified to prevent intrusion within the Tree Protection Zone of the trees to be preserved.

Tree Preservation Notes shall be included on all plans.

In the Critical Root Area, any trenching for underground services, including utilities, sub-drains, water, or sewer lines, shall be done between whatever large roots might be encountered. Extreme caution must be taken to avoid damage to the root structures. This work shall be done by hand and not with a backhoe or trencher.

No excess soil, chemicals, oil, gasoline, debris, equipment or other materials shall be dumped or stored within the Tree Protection Zones or in drainage channels, swales, or in areas that may lead to the drip-line of any tree. Accidental spills shall be cleaned up immediately. Any herbicides placed under paving

materials, or used in drainage channels, swales, or areas that may lead to the drip-line of any tree, must be labeled as safe for use around trees. Accidental spills shall be cleaned up immediately.

No wires, signs and ropes shall be attached to any protected tree.

There are two protective steps that shall be taken to protect the entire critical root area shown on the chart of page 1 of this letter. 1) Protective temporary chain link fencing shall enclose all critical root areas where construction activity will be performed. The fencing shall enclose low branches, and shall protect the trunk. 2) 4-6" of mulch with metal plates on top of the mulch shall be installed within the critical root areas of the trees where construction activity will be performed. The steel plates shall be anchored into the ground where possible, and placed on top of the mulch. Fencing and mulching with steel plates shall be done prior to any grading or construction and shall remain until all grading and construction is complete - in order to protect the soil and roots beneath the trees from trampling by construction workers. No fill soil shall be added to this area.

Within the critical root area for each tree, as described on page 1, care should be made in the excavation of the footings for the foundation of the garage to avoid cutting tree roots greater than 3" in diameter. If piers are needed, orient the piers between the major roots to avoid damaging them. The piers should be installed to an appropriate depth as determined by a structural engineer, and adjusted as needed if roots greater than 3" are encountered. The garage can then be built on grade beams, which are floated at the appropriate level on the piers. Where smaller roots must be removed, they shall be cut cleanly with appropriate equipment, such as a rock saw. Equipment that pulls or shatters roots, such as a backhoe or trencher, may not be used to cut tree roots, (Matheny, N.P. and J.R. Clark, 1998, p. 96).

If injury should occur to any tree during construction, the consulting arborist or an Alameda city arborist shall evaluate the injury right away, so that appropriate treatments can be applied. Any tree wounds should be cleaned up as soon as possible.

Root-injured trees have a limited capacity to absorb water. Therefore it is important to insure adequate soil moisture in the area of active roots. One to several irrigations may be needed for trees that are at risk. The consulting arborist should specify the irrigation schedule.

Where surface grades are to be modified, water should always flow away from tree trunks, so that trunk bases are not at the lowest point. If the base of a tree's trunk is at a low point, a drain system should be designed with the least impact to the roots.

The consulting arborist should periodically monitor the project site, to assure that the health of trees to be preserved is maintained. The arborist should also be present whenever activities occur which pose a potential threat to the health of a tree to be preserved.

Any additional tree pruning needed for thinning, heading or clearance during construction must be performed by a certified arborist and not by construction personnel.

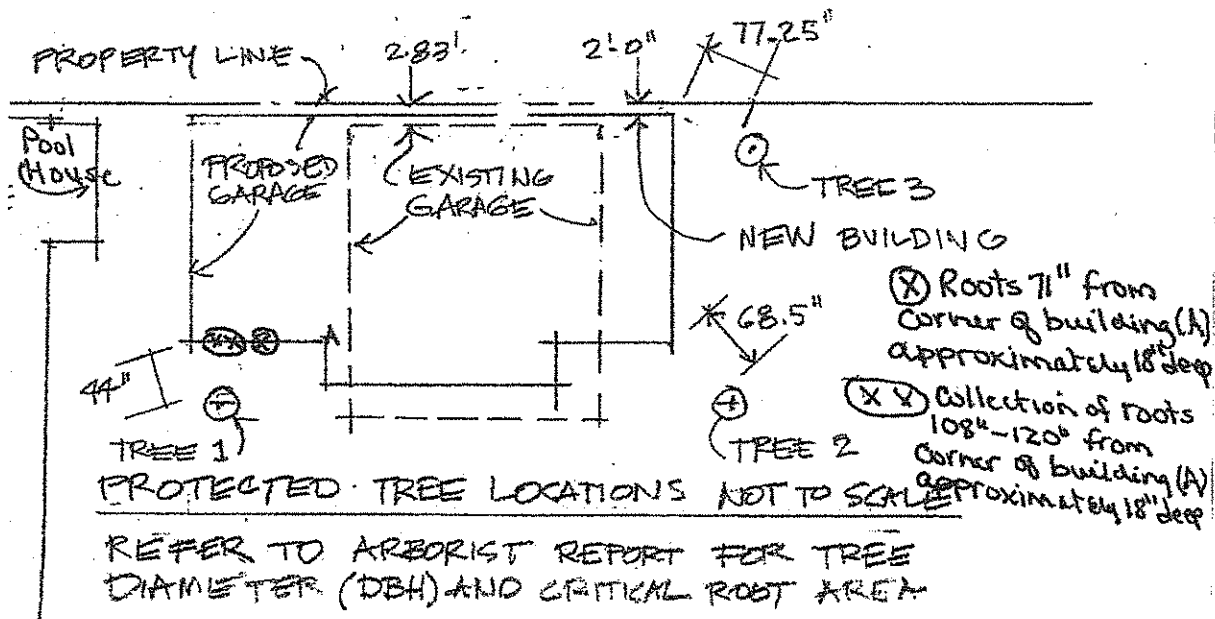
CONCLUSIONS

While all three oaks indicated above will require monitoring and protection during the construction of the garage, the short distances between the foundation and the three oak trees on this project are not a barrier to construction. Using the proper construction and tree preservation techniques outlined above, this project can be completed without damage to the three oak trees.

Air spading and hand excavation has been performed along all the proposed critical foundation areas. The soil has been found to be extremely well drained and sandy. No roots larger than 3" in diameter have been found above a depth of 18" near tree #1 and no large roots above 4' were found to impact construction near trees #2 and #3. Therefore, if using pier and grade beam construction on this site, any large roots can easily have piers installed between them and the grade beams placed on them either at or below grade.

SITE SKETCH

This site sketch pdf file provided by your architect, shows the solid lines of the proposed new garage relative to the three oaks that will require protection. Tree #1 is shown above, near the path to the swimming pool gate. Tree #2 is below on the left, near the paved area. Tree #3 is below on the right near the fence to the property.



I, Judy Thomas, certify that:

I have personally inspected your plants and property referred to in this report and have stated my findings accurately.

I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.

The analysis, opinions and conclusions stated herein are my own and are based on current scientific procedures and facts.

My analysis, opinions and conclusions were developed and this report prepared according to commonly accepted arboricultural practices.

No one provided significant professional assistance to me.

My compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

I further certify that I am a member in good standing of the American Society of Consulting Arborists and the International Society of Arboriculture. I have been involved in the field of Arboriculture since 1977.

Respectfully submitted,

A handwritten signature in cursive script that reads "Judith Thomas". The signature is written in black ink and is positioned above the date and contact information.

11/27/16

Judy Thomas, Bay Area Plant Consultants
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Full-Time Merritt College Landscape Horticulture Instructor, 1977-2007
ISA Board Certified Master Arborist WE-0113B, ASCA RCA #484,
Tree Risk Assessment Qualified with the ISA,
APA (Aesthetic Pruners Association) Certified Aesthetic Pruner #9

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SERVICES OFFERED

PLANT CONSULTATIONS

- Identification of Trees, Shrubs, Groundcovers, Vines and Turf Types
- Landscape Design and Plant Selection for New Landscapes with Consideration for Drought, Fire, Freeze and Ease of Maintenance
- Modification of Existing Landscape Designs
- Replacement Plant Selection for Established Gardens
- Specifications for Planting, Pruning and Long Term Care
- Specifications for Establishment of New Turf Areas
- Pre- and Post-Construction Site Preservation Measures
- Casualty Loss Assessments for Landscapes Damaged by Fire, Flood, Drought or Negligence
- Value Appraisal of Landscape Plants
- Arbitration of Tree Disputes

LANDSCAPE MANAGEMENT

- Landscape Appraisal, Evaluation and Inventory
- Tree Hazard Evaluation
- Tree and Landscape Problem Identification
- Recommendations for Long Term Care of Plants
- Assessment of Plant Health and Site Restrictions for Plant Growth
- Tree Preservation for Construction Sites
- Tree Care Supervision

RESUMÉ

- Board Certified Master Arborist WE-0113B and Tree Risk Assessment Qualified with the International Society of Arboriculture; Registered Consulting Arborist #484 with The American Society of Consulting Arborists; Aesthetic Pruning Certificate from Merritt College, 1998; Certified Aesthetic Pruner with the Aesthetic Pruners Assoc., 2011.
- Retired 5/26/07 as a Full-time Landscape Horticulture Instructor, Merritt College, Oakland CA (1977-2007); taught courses in Arboriculture, Forestry, Plant Diseases, Turf Management, General Horticulture, Ecology, Plant Terminology and identification courses in Trees, Shrubs, CA Native Plants, Groundcovers & Vines and Herbaceous Plants. Past President of the Northern CA Turf & Landscape Council (NCTLC), and editor of their quarterly online newsletter. Serves on the N CA Advisory and Executive committees of the Mediterranean Garden Society.
- Member of the American Society of Consulting Arborists, the California Arborist's Association, Inc., the International Society of Arboriculture, the Aesthetic Pruners Association, the CA Horticultural Society, the CA Native Plant Society, and the Diablo Firesafe Council.
- Has a Bachelor's degree in Biology from Stanford University. Holds a Master's degree in Biology from San Jose State University and a Master's Degree in Education from Stanford University. Received the 1985 Education Award from the Northern CA Turf and Landscape Council.
- Serves as a featured speaker for the East Bay Master Gardener Program, the International Society of Arboriculture, the NCTLC, the Diablo Firesafe Council, the Nevada Shade Tree Conference, the N CA Landscape Expo. and numerous garden clubs and civic groups. Has been an education chair for the I.S.A., an editor for the Ortho book *Gardening Techniques* and was a 1985 Horticultural Delegate to China. Her garden was photographed for two Sunset books and was one of those featured on the Park Day School tour in 1989. Her new garden has been described in the MGS Journal No. 57 in July 2009.