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10/6/16

## 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 future 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.

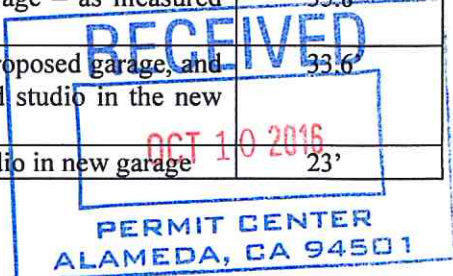
Tree #2 is a is a large *Quercus agrifolia*, (coast live oak.) It is located on the opposite side of the old garage that is to be torn down, next to the paved area and a walkway leading to the third oak tree and the large redwood trees at the back of the property. It has an extremely low large limb extending 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 EXISTING FOUNDATION

(The trees were measured at the dbh, or 4.5' above the ground.)

Tree #	DBH	Distance From New Proposed Garage	Critical Root Area
1	35.8" (2.93')	25" from the corner of the new proposed garage – as measured diagonally.	35.8'
2	33.6" (2.8')	76" (6.33') from the front corner of the new proposed garage, and 51" (4'3") from the wall of the new proposed studio in the new garage.	33.6'
3	23" (1.92')	48" (4') from the wall of the new proposed studio in new garage	23'



## CONCLUSIONS

All three oaks indicated above will require monitoring and protection during the construction of the garage. Coast live oaks are quite tolerant to construction damage, (Matheny, N.P. and J.R. Clark, 1998). But, because this work is being done so 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. The City of Alameda requires efforts to be made to protect coast live oak trees. 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 snow 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 should 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 should be modified to prevent intrusion within the Tree Protection Zone of the trees to be preserved.

Tree Preservation Notes should be included on all plans.

No underground services, including utilities, sub-drains, water, or sewer lines, shall be placed in the Tree Protection Zones. In the event that this is unavoidable, all trenching should be done beneath the tree's roots, taking extreme caution to avoid damage to the root structures. This work shall be done by hand or with an Air Spade<sup>®</sup>, 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 should 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.

Prohibit the attachment of wires, signs and ropes to any protected tree.

For all three trees, protective fencing shall enclose the entire critical root radius areas shown in the chart on page 1 of this letter. Snow fencing and 4-6" of mulch with metal plates on top of the mulch shall be installed within the critical root areas of the trees, shown in the chart on page 1, to protect the soil around the base of the trees from the impacts of the construction work. This fencing should be done prior to any grading or construction. Fences are to remain until all grading and construction is complete, in order to protect the soil and roots beneath the trees from trampling by construction workers. This fencing shall enclose low branches, and shall protect the trunk. No fill soil should be added to this area. Where traffic cannot be diverted in soil areas beneath the trees to be retained, the soil surface shall be protected with thick mulch and steel plates. The steel plates should be anchored into the ground where possible, and placed on top of the mulch.

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. Use pier

foundations with grade beams above grade instead of a slab foundation; and orient the piers between the major roots to avoid damaging them. This can be accomplished with the use of an Air Spade<sup>R</sup>. The Air Spade<sup>R</sup> will expose the major roots within the protection zones of the trees, so that the piers can be successfully installed between them into the ground where they are needed. The piers should be installed to a depth of 36", and adjusted as needed if roots greater than 3" are encountered. The garage can then be built on the grade beams, which are floated at or above soil level on the piers - to reduce loss of feeder roots. The use of an Air Spade<sup>R</sup> will expose the major buttress roots of the trees where the piers will be installed more quickly than hand digging the soil out from between the roots – without harming them. 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).

The Air Spade<sup>R</sup> work for tree #1 will be needed 25" from the corner of the new proposed garage, in both directions along the new foundation.

The Air Spade<sup>R</sup> work for tree #2 will be needed 76" (6.33') from the front corner of the new proposed garage, and 51" (4'3") from the wall of the new proposed studio in the new garage, in both directions along the new foundation.

The Air Spade<sup>R</sup> work for tree #3 will be needed 48" (4') from the wall of the new proposed studio in the new garage, in both directions along the new foundation.

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.

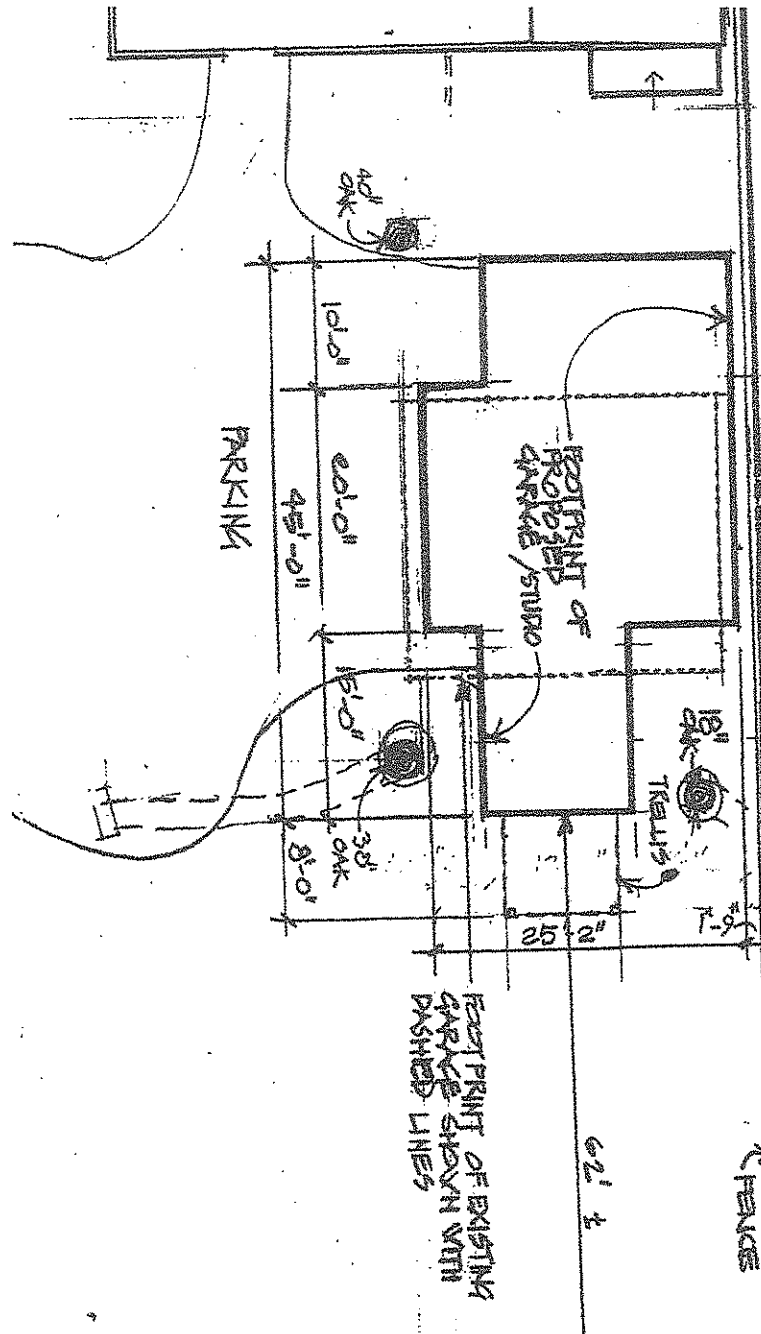
Root-injured trees have a limited capacity to absorb water. Therefore it is important to insure adequate soil moisture in the area of active roots. One to several irrigations may be needed for trees that are at risk. The consulting arborist should specify the irrigation schedule.

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.

This site sketch pdf file, blown up from the drawing provided by you on 9/15/16, 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. The large lower limb on it, extending toward the house, is indicated with dashed lines. 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.

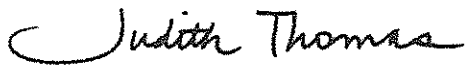
My analysis, opinions and conclusions were developed and this report prepared according to commonly accepted arboricultural practices.

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".

10/6/16

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Full-Time Merritt College Landscape Horticulture Instructor, 1977-2007  
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