California Tree and Landscape Consulting, Inc.

January 25, 2021

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Via Email: todd@jsasphalt.net

PRE CONSTRUCTION ARBORIST REPORT & TREE PRESERVATION PLAN

RE: 3998 Del Mar Avenue [APN #045-011-015-000 & 045-011-016-000], City of Rocklin Jurisdiction

Summary

Todd Johnson of J&S Asphalt contacted Ed Stirtz of California Tree and Landscape Consulting, Inc. to inventory and evaluate the protected trees on the site within 25 feet of development for purposes of evaluating the impacts to the trees from the proposed development plans. In addition, we are to provide a Tree Preservation Plan for protection of the trees to remain during the development process. The property is located at 3998 Del Mar Avenue in Rocklin, California, and is subject to the jurisdiction of the City of Rocklin. See Tree Location Map – Appendix 1.

Nicole Harrison, ISA Certified Arborist #WE-6500AM, and Ed Stirtz, ISA Certified Arborist #WE-0510A, were on site February 12, 2020. The survey does not include all trees on the parcel. Trees along the west property line within the creek setback area, outside of the grading impacts, were not included. The following evaluation of impacts was based on the plans provided for the project labeled 'Civil Improvement Plans for J&S Asphalt's Grading and Drainage Sheet C3.0 by Cartwright NorCal, dated 12/27/2019, and Site Plans by MB Arcstudio dated 12/6/2018.

Tree Species	Surveyed Trees	Protected Surveyed Trees on Site	Heritage Trees[1] Included as Surveyed	Trees Proposed for Removal Oak Trees/ Heritage Trees	TDBH – Oak Trees Proposed for Removal	TDBH – Heritage Trees Proposed for Removal
Valley Oak *(Quercus lobate)*	1	0	0	-	-	-
Interior Live Oak *(Quercus wislizeni)*	4	4	2	0 [0/0]	0	0
Blue Oak *(Quercus douglasii)*	1	1	0	0 [0/0]	0	0
Total	**6**	**5**	**2**	**0 [0/0]**	**0**	**0**

A total of 6 trees were included in the survey, 5 of which are protected.

[1] Rocklin Municipal Code, Chapter 17.77 – Oak Tree Preservation, Heritage trees have a trunk diameter of 24" or greater.

Tree Replacement Formula	TDBH	TDBH of Dead, Dying or Diseased Trees	TDBH of all Healthy Trees	Discount %	Discount Diameter	Mitigation Requirement by Inch
TDBH of all Protected Surveyed Trees on the Site	93	0	93	N/A	N/A	N/A
TDBH of Protected Trees Proposed for Removal	0	0	0	N/A	N/A	N/A

See Appendices for specific information on each tree and preservation requirements and/or restrictions.

Methods

The protected trees evaluated as part of this report have a numbered tag that was placed on each one that is 1-1/8 inches x 1-3/8 inches, green anodized aluminum, "acorn" shaped, and labeled: CalTLC, Auburn, CA with ¼-inch pre-stamped tree number and tree tag. They are attached with a nail, installed at approximately 6 feet above ground level on the approximate north side of the tree, unless visibility or access was inhibited. In these instances, the tags were placed at the most visible location.

A Level 2 – Basic Visual Assessment was performed in accordance with the International Society of Arboriculture's best management practices. This assessment level is limited to the observation of conditions and defects which are readily visible. Additional limiting factors, such as blackberries, poison oak, and/or debris piled at the base of a tree can inhibit the visual assessment.

Tree Location: The GPS location of each tree was collected using the ESRI's ArcGIS collector application on an Apple iPhone or Samsung. The data was then processed in ESRI's ArcMap by Julie McNamara, M.S. GISci, to produce the tree location map.

Tree Measurements: DBH (diameter breast high) is normally measured at 4'6" (above the average ground height for "Urban Forestry"), but if that varies then the location where it is measured is noted. A Swedish caliper was used to measure the DBH for trees less than 24 inches in diameter or less, and a steel diameter tape for trees greater than 24 inches. Canopy radius measurements were measured using a Stanley distance laser. In some cases, the radius may have been estimated due to obstructions, such as steep slopes or other trees.

Terms

Field Tag #:	The pre-stamped tree number on the tag which is installed at approximately 6 feet above ground level on the north side of the tree.
Species:	The species of a tree is listed by our local and correct common name and botanical name by genus (capitalized) and species (lower case). Oaks frequently cross-pollinate and hybridize, but the identification is toward the strongest characteristics.
DBH:	Diameter breast height is normally measured at 4'6" (above the average ground height for "Urban Forestry"), but if that varies then the location where it is measured is noted in the next column "measured at."
Measured at:	Height above average ground level where the measurement of DBH was taken if it varied from the standard.
Canopy radius:	The farthest extent of the crown composed of leaves and small twigs. Most trees are not evenly balanced. This measurement represents the longest extension from the trunk to the outer canopy. The dripline measurement is from the center point of the tree and is shown on the Tree Location Map as a circle. This measurement can further define a protection zone if specified in the local ordinance as such or can indicate if pruning may be required for development.

Protected Root Zone: The radius of the protected root zone is a circle equal to the trunk diameter inches converted to feet and factored by tree age, condition and health pursuant to the industry standard. Best Management Practices: Managing Trees During Construction, the companion publication to the Approved American National Standard, provides guidance regarding minimum tree root protection zones for long term survival. In instances where a tree is multi-stemmed the protected root zone is equal to the extrapolated diameter (sum of the area of each stem converted to a single stem) factored by tree age, condition and health.

Arborist Rating: Subjective to condition and is based on both the health and structure of the tree. All of the trees were rated for condition, per the recognized national standard as set up by the Council of Tree and Landscape Appraisers and the International Society of Arboriculture (ISA) on a numeric scale of 5 (being the highest) to 0 (the worst condition, dead) as in Chart A. The rating was done in the field at the time of the measuring and inspection.

CHART A

	Rocklin Municipal Code, Chapter 17.77 – Oak Tree Preservation	**Arborist Rating**	**Description**
No problem(s)	Healthy	**5**	No problems found from a visual ground inspection. Structurally, these trees have properly spaced branches and near perfect
No apparent problem(s)	Healthy	**4**	The tree is in good condition and there are no apparent problems that a Certified Arborist can see from a visual ground inspection. If potential structural or health problems are tended to at this stage future hazard can be reduced and more serious health problems can be averted.
Minor problem(s)	Healthy	**3**	The tree is in fair condition. There are some minor structural or health problems that pose no immediate danger. When the recommended actions in an arborist report are completed correctly the defect(s) can be minimized or eliminated and/or health can be improved.
Major or uncorrectable problems (2)	Dead/Diseased or Dying – Category 2	**2**	The tree has major problems. If the option is taken to preserve the tree, additional evaluation to identify if health or structure can be improved with correct arboricultural work including, but not limited to: pruning, cabling, bracing, bolting, guying, spraying, mistletoe removal, vertical mulching, fertilization, etc. Additionally, risk should be evaluated as a tree rated 2 may have structural conditions which indicate there is a high likelihood of some type of failure. Tree rated 2 should be removed if these additional evaluations will not be performed.
Extreme problem(s)	Dead/Diseased or Dying – Category 1	**1**	The problems are extreme. This rating is assigned to a tree that has structural and/or health problems that no amount of work or effort can change. The issues may or may not be considered a dangerous situation.
Dead	Dead	**0**	This indicates the tree has no significant sign of life.

Notes: Provide notable details about each tree which are factors considered in the determination of the tree rating including: (a) condition of root crown and/or roots; (b) condition of trunk; (c) condition of limbs and structure; (d) growth history and twig condition; (e) leaf appearance; and (f) dripline environment. Notes also indicate if the standard tree evaluation procedure was not followed (for example - why DBH may have been measured at a location other than the standard 54”). Additionally, notes will list any evaluation limiting factors such as debris at the base of a tree.

Actions: Recommended actions to increase health and longevity.

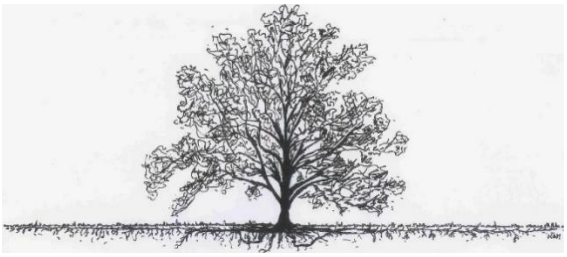
Impact Term:	Long Term Result of Impact:
Negligible	Tree is unlikely to show any symptoms. Chance of survival post development is excellent. Impacts to the Protected Root Zone are less than 5%.
Minor	Tree is likely to show minor symptoms. Chance of survival post development is good. Impacts to the Protected Root Zone are less than 15% and species tolerance is good.
Moderate	Tree is likely to show moderate symptoms. Chance of survival post development is fair. Impacts to the Protected Root Zone are less than 35% and species tolerance is good or moderate.
Severe	Tree is likely to show moderate symptoms annually and a pattern of decline. Chance of long-term survival post development is low. Impacts to the Protected Root Zone are up to 50% and species tolerance is moderate to poor.
Critical	Tree is likely to show moderate to severe symptoms annually and a pattern of decline. Chance of long-term survival post development is negligible. Impacts to the Protected Root Zone are up to 80%.

Discussion

Trees need to be protected from normal construction practices if they are to remain on the site and are expected to survive long term. While construction damage in the root zone is often the death of a tree, the time from when the damage occurs to when the symptoms begin and/or the tree dies can be years. Our recommendations are based on experience and the local ordinance requirements to enhance tree longevity. It requires the root zone must remain intact as an underground ecosystem despite the use of heavy equipment to install foundations, driveways, underground utilities, and landscape irrigation systems. Simply walking and driving on soil can have serious consequences to tree health. The Tree Preservation Requirements and General Development Guidelines should be incorporated into the site plans and enforced onsite. The project arborist should be included in the development team during construction to provide expertise and make recommendations if additional impacts occur or tree response is poor.

ROOT STRUCTURE

The majority of a tree's roots are contained in a radius from the main trunk outward approximately two to three times the canopy of the tree. These roots are located in the top 6" to 3' of soil. It is a common misconception that a tree underground resembles the canopy. The correct root structure of a tree is in the drawing below. All plants' roots need both water and air for survival. Poor canopy development or canopy decline in mature trees after development is often the result of inadequate root space and/or soil compaction.



The reality of where roots are generally located (Menzer, 2008)

PRUNING MATURE TREES FOR RISK REDUCTION AND/OR DEVELOPMENT CLEARANCE

There are few good reasons to prune mature trees. Removal of deadwood, directional pruning, removal of decayed or damaged wood, and end-weight reduction as a method of mitigation for structural faults are the only reasons a mature tree should be pruned. Live wood over 3" should not be pruned unless absolutely necessary. Pruning cuts should be clean and correctly placed. Pruning should be done in accordance with the American National Standards Institute (ANSI) A300 standards.

Pruning causes an open wound in the tree. Trees do not "heal" they compartmentalize. It is far better to use more small cuts than a few large cuts as small pruning wounds reduce risk while large wounds increase risk. Any wound made today will always remain, but a healthy tree, in the absence of decay in the wound, will 'cover it' with callus tissue. Large, old pruning wounds which did not close with callous tissue often have advanced decay. These wounds are a likely failure point. Mature trees with large wounds have a high risk of failure.

Overweight limbs are a common structural fault in suppressed trees. There are two remedial actions for over- weight limbs (1) prune the limb to reduce the extension of the canopy, or (2) cable the limb to reduce movement. Cables do not hold weight they only stabilize the limb and additionally require annual inspection.

ARBORIST CLASSIFICATIONS

There are different types of Arborists:

Tree Removal and/or Pruning Companies: These companies may be licensed by the State of California to do business as a tree removal company, but they do not necessarily know anything about trees biology.

Arborists: Arborist is a broad term intended to mean someone with specialized knowledge of trees, but it is often used to imply knowledge that is not there.

ISA Certified Arborist: An International Society of Arboriculture Certified Arborist is someone who has trained, met the qualifications for application, and been tested to have specialized knowledge of trees. You can look up certified arborists at the International Society of Arboriculture website: isa-arbor.org.

Consulting Arborist: An American Society of Consulting Arborists Registered Consulting Arborist is someone who has been trained and then tested to have specialized knowledge of trees; and trained and tested to provide high quality reports and documentation. You can look up registered consulting arborists at the American Society of Consulting Arborists website: ASCA-consultants.org.

OAK TREE IMPACTS

Our native oak trees are easily damaged or killed by having the soil within the Protected Root Zone (PRZ) disturbed or compacted. All of the work initially performed around protected trees that will be saved should be done by people rather than by wheeled or track type tractors. Oaks are fragile giants that can take little change in soil grade, compaction, or warm season watering. Don't be fooled into believing that warm season watering has no adverse effects on native oaks. Decline and eventual death can take as long as 5-20 years with poor care and inappropriate watering. Oaks can live hundreds of years if treated properly during construction, as well as later with proper pruning, and the appropriate landscape/irrigation design (Menzer, 2008).

RECOMMENDATIONS: Summary of Tree Protection Measures

The Owner and/or Developer should ensure the project arborist's protection measures are incorporated into the site plans and followed. Tree specific protection measures can be found in Appendix 2 – Tree Information Data.

- The project arborist should inspect the fencing and proposed access ways prior to grading and/or grubbing for compliance with the recommended protection zones.
- Trees to be removed should be chipped and chips reserved onsite.
- Any trees to be removed within the protection zone of a tree to be preserved shall be cut and the stump ground. They shall not be removed by equipment excavation of the stump.
- Clearance pruning, if required, should include removal of all the lower foliage that may interfere with equipment PRIOR to having grading or other equipment on site. The Project Arborist must approve the extent of foliage elevation and oversee the pruning to be performed by a contractor who is an ISA Certified Arborist.
- Clearly designate an area on the site outside the drip line of all trees where construction materials may be stored, and parking can take place. No materials or parking shall take place within the root zones of any protected trees.
- Follow all of the General Development Guidelines, Appendix 3, unless otherwise indicated in Appendix 2.

Report Prepared by:

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ISA Certified Arborist #WC-6500AM, TRAQ
Member: American Society of Consulting Arborists

Project Arborist:

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Member: American Society of Consulting Arborists

Attachments

Appendix 1 – Tree Inventory Exhibit
Appendix 2 – Tree Data
Appendix 3 – General Development Guidelines

Bibliography

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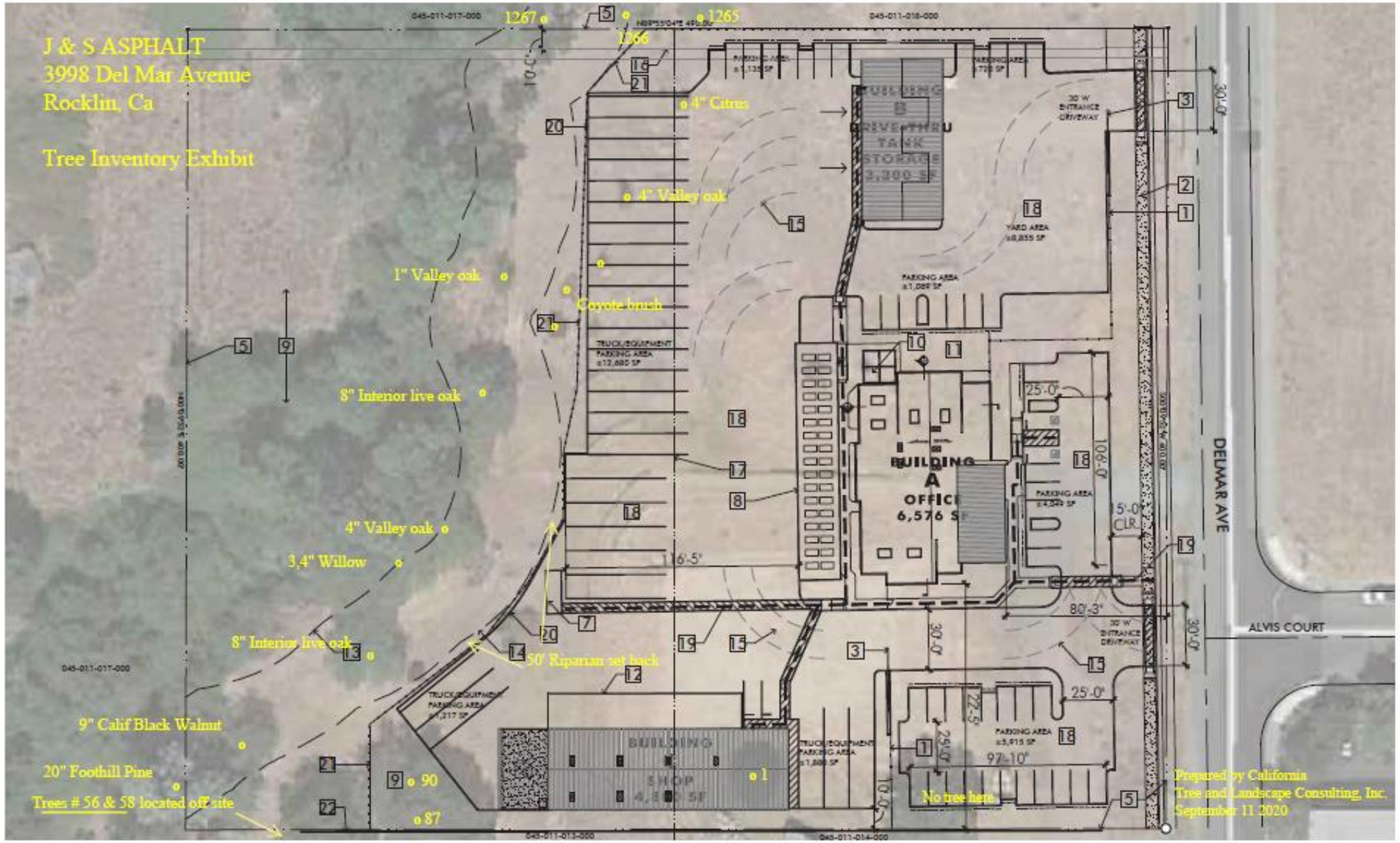
APPENDIX 1 – TREE INVENTORY EXHIBIT



APPENDIX 2 – TREE DATA

Tree #	Common Name	Species	Multi Stems (in.)	Total DBH (in.)*	DLR (ft.)	CONDITIONAL ASSESSMENT						Rating (0-5)	Preser-vation G/M/P	Protected City Tree	Development Disposition	Construction Removals	Notable Characteristics
						RT CR	TRUNK	LIMBS	FOLIAGE	STRUCTURE	VIGOR						
1	Interior Live Oak	*(Quercus wislizeni)*		11	13	Fair	Fair	Fair	Fair	Fair	Fair	3	M	11	Proposed for removal.		Located within the footprint of Bldg. B. Slightly above average amount of deadwood.
56	Interior Live Oak	*(Quercus wislizeni)*	17,19,25	25	32	Fair	Fair	Fair	Fair	Fair	Fair	3	M	25	Proposed for removal with adjacent project.		Offsite tree. Slightly above average amount of deadwood.
58	Interior Live Oak	*(Quercus wislizeni)*		31	27	Fair	Poor to fair	Fair	Fair	Poor to fair	Fair	3	M	31	Proposed for removal with adjacent project.		Offsite tree. Pruning wounds on north side 5’ above grade which is callusing with slight decay. Recent pruning wounds on south and east sides. Above average amount of deadwood. Primary branching at 7’ above grade with weakly attached codominant stems. Write-on tag was used; original tag not found.
87	Blue Oak	*(Quercus douglasii)*		14	30	Poor to fair	Fair	Poor to fair	Fair	Poor	Poor to fair	3	M	14	Will sustain zero to minor encroachment for grading activities.		Root collar abuts Tree 56. Trunk has extreme lean to north. South side suppressed by Tree 56. Above average amount of deadwood.
90	Interior Live Oak	*(Quercus wislizeni)*		12	14	Fair	Poor to fair	Fair	Fair	Poor to fair	Fair	3	M	12	Will sustain zero to minor encroachment for grading activities.		Out of balance northeast. Above average amount of deadwood.
1267	Valley Oak	*(Quercus lobata)*		5	4	Fair	Fair	Fair	Fair	Fair	Fair	3	M		No encroachment.		Offsite tree.

TOTAL INVENTORIED TREES = 6 trees (120 aggregate diameter inches)

TOTAL RECOMMENDED REMOVALS = None

Conditional Rating (0-5): 3=6 trees

Suitability for Preservation (Good/Moderate/Poor): M=6 trees

Total Protected Trees = 5 trees (93 aggregate diameter inches)

Total Construction Removals = None

***Note: Multi-trunked trees are total DBH of largest trunk only.**

CITY OF ROCKLIN CONDITIONAL RATING KEY:

5 (Excellent) = No problem(s)

4 (Good) = No apparent problem(s)

3 (Fair) = Minor problem(s)

2 (Poor) = Major problem(s)

1 (Hazardous, non-correctable) = Extreme problem(s)

0 (Dead) = Dead

APPENDIX 3 - GENERAL DEVELOPMENT GUIDELINES

Definitions

Root zone: The roots of trees grow fairly close to the surface of the soil, and spread out in a radial direction from the trunk of tree. A general rule of thumb is that they spread 2 to 3 times the radius of the canopy, or 1 to 1 ½ times the height of the tree. It is generally accepted that disturbance to root zones should be kept as far as possible from the trunk of a tree.

Inner Bark: The bark on most large trees is quite thick, usually 1" to 2". If the bark is knocked off a tree, the inner bark, or cambial region, is exposed and/or removed. The cambial zone is the area where tissues responsible for adding new layers to the tree each year are located. Removing or damaging this tissue results in a tree that can only grow new tissue from the edges of the wound. In addition, the interior wood of the tree is exposed to decay fungi and becomes susceptible to decay. Tree protection measures require that no activities occur which can knock the bark off the trees.

Methods Used in Tree Protection:

No matter how detailed Tree Protection Measures are in the initial Arborist Report, they will not accomplish their stated purpose unless they are applied correctly and a Project Arborist oversees the construction. The Project Arborist should have the ability to enforce the Protection Measures. It is advisable for the Project Arborist to be present at the Pre-Construction meeting to answer questions the contractors may have about Tree Protection Measures. This also lets the contractors know how important tree preservation is to the developer.

Root Protection Zone (RPZ): Since in most construction projects it is not possible to protect the entire root zone of a tree, a Root Protection Zone is established for each tree to be preserved. The minimum Root Protection Zone is the area calculated as 1 to 1.25' for every inch of trunk diameter (ie. A 10" diameter tree will have an RPZ of 10') or the dripline, whichever is greater. The Project Arborist must approve work within the RPZ.

Irrigate, Fertilize, Mulch: Prior to grading on the site near any tree, the area within the Tree Protection fence should be fertilized with 4 pounds of nitrogen per 1000 square feet, and the fertilizer irrigated in. The irrigation should percolate at least 24 inches into the soil. This should be done no less than 2 weeks prior to grading or other root disturbing activities. After irrigating, cover the RPZ with at least 12" of leaf and twig mulch. Such mulch can be obtained from chipping or grinding the limbs of any trees removed on the site. Acceptable mulches can be obtained from nurseries or other commercial sources. Fibrous or shredded redwood or cedar bark mulch shall not be used anywhere on site.

Fence: Fence around the Root Protection Zone and restrict activity therein to prevent soil compaction by vehicles, foot traffic or material storage. The fenced area shall be off limits to all construction equipment, unless there is express written notification provided by the Project Arborist, and impacts are discussed and mitigated prior to work commencing.

> No storage or cleaning of equipment or materials, or parking of any equipment can take place within the fenced off area, known as the RPZ.

The fence should be highly visible, and stout enough to keep vehicles and other equipment out. I recommend the fence be made of orange plastic protective fencing, kept in place by t-posts set no farther apart than 6'.

In areas of intense impact, a 6' chain link fence is preferred.

In areas with many trees, the RPZ can be fenced as one unit, rather than separately for each tree.

Where tree trunks are within 3' of the construction area, place 2" by 4" boards vertically against the tree trunks, even if fenced off. Hold the boards in place with wire. Do not nail them directly to the tree. The purpose of the boards is to protect the trunk, should any equipment stray into the RPZ.

Elevate Foliage: Where indicated, remove lower foliage from a tree to prevent limb breakage by equipment. Low foliage can usually be removed without harming the tree, unless more than 25% of the foliage is removed. Branches need to be removed at the anatomically correct location in order to prevent decay organisms from entering the trunk. For this reason, a contractor who is an ISA Certified Arborist should perform all pruning on protected trees.[2]

Expose and Cut Roots: Breaking roots with a backhoe, or crushing them with a grader, causes significant injury, which may subject the roots to decay. Ripping roots may cause them to splinter toward the base of the tree, creating much more injury than a clean cut would make. At any location where the root zone of a tree will be impacted by a trench or a cut (including a cut required for a fill and compaction), the roots shall be exposed with either a backhoe digging radially to the trunk, by hand digging, or by a hydraulic air spade, and then cut cleanly with a sharp instrument, such as chainsaw with a carbide chain. Once the roots are severed, the area behind the cut should be moistened and mulched. A root protection fence should also be erected to protect the remaining roots, if it is not already in place. Further grading or backhoe work required outside the established RPZ can then continue without further protection measures.

Protect Roots in Deeper Trenches: The location of utilities on the site can be very detrimental to trees. Design the project to use as few trenches as possible, and to keep them away from the major trees to be protected. Wherever possible, in areas where trenches will be very deep, consider boring under the roots of the trees, rather than digging the trench through the roots. This technique can be quite useful for utility trenches and pipelines.

Protect Roots in Small Trenches: After all construction is complete on a site, it is not unusual for the landscape contractor to come in and sever a large number of "preserved" roots during the installation of irrigation systems. The Project Arborist must therefore approve the landscape and irrigation plans. The irrigation system needs to be designed so the main lines are located outside the root zone of major trees, and the secondary lines are either laid on the surface (drip systems), or carefully dug with a hydraulic or air spade, and the flexible pipe fed underneath the major roots.

Design the irrigation system so it can slowly apply water (no more than ¼" to ½" of water per hour) over a longer period of time. This allows deep soaking of root zones. The system also needs to accommodate infrequent irrigation settings of once or twice a month, rather than several times a week.

Monitoring Tree Health During and After Construction: The Project Arborist should visit the site at least twice a month during construction to be certain the tree protection measures are being followed, to monitor the health of impacted trees, and make recommendations as to irrigation or other needs. After construction is

[2] International Society of Arboriculture (ISA), maintains a program of Certifying individuals. Each Certified Arborist has a number and must maintain continuing education credits to remain Certified.

complete, the arborist should monitor the site monthly for one year and make recommendations for care where needed.

Chemical Treatments: The owner or developer shall be responsible to contact an arborist with a pesticide applicators license to arrange for an application of a root enhancing hormone, such as Paclobutrazol, to mitigate the stress produced by the development. Additionally, at the discretion of the project arborist, an insect infestation preventative for both boring insects and leaf feeding insects and/or fungal preventative for leaf surfaces may be required. Roots pruned during the course of performing a cut may be required to be treated with a bio-fungicide such as Bio-Tam.