

CERTIFIED ARBORIST REPORT

Date: September 25, 2014
Project #4411.10

PROJECT

Hayes Mansion Development
Edenvale Avenue
San Jose, CA

PREPARED FOR

Ponderosa Homes

PREPARED BY

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SCOPE OF WORK

HMH was contracted by Ponderosa Homes to conduct a tree survey, assessment and arborist report for vacant parcel (APN 685-03-002) located at approximately 215 Edenvale Avenue in San Jose. Our scope of services includes tagging, measuring DBH, assessing, and photographing the condition of each tree within the limit of work. Disposition and health recommendations relevant to the future development of the site each for tree are included.

SITE ANALYSIS

The project site is currently vacant and fenced off with chain link and wood fence. The parcel is rectangular shaped and relatively flat and open with seasonal grasses growing on the ground plane. The site mainly consists of mature trees and a few smaller volunteers. The back up area between back of curb and chain link fence parallel to Edenvale Avenue consists mainly of a row of large agave and several insignificant Quercus and Sambucus volunteers. Two significant trees border the easternmost portion of the property. One of these is a 50.1"DBH Coast Live Oak (Tree #105) and the other is a 42" DBH California Pepper (#106). Additionally, several Mexican Fan Palms are located along the eastern portion of the parcel. Off-site trees that may be impacted with development are included in report Tables 1 and 2.

PLANNED IMPROVEMENTS

The scope of improvements includes development of the 2.68 acre parcel with 28 single family homes. There will be a right of way dedication and new public sidewalk along Edenvale Avenue which will likely impact the row of agave and volunteer trees. Additional amenities proposed or required may include stormwater treatment and open space.

METHODOLOGY

Our tree survey work is a deliberate and systematic methodology for cataloging trees on site:

1. Identify each tree species.
2. Tag each tree with a metal tag and note its location on a map.
3. Measure each trunk circumference at 24" above grade per City of San Jose requirements.
4. Evaluate the health and structure of each tree using the following numerical standard:
 - 5 - A healthy, vigorous tree, reasonably free of disease, with good structure and form typical of the species.*
 - 4 - A tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.*
 - 3 - A tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that may that might be mitigated with care.*
 - 2 - A tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.*
 - 1 - A tree in severe decline, dieback of scaffold branches and or trunk, mostly epicormic growth; extensive structural defects that cannot be abated.*

MUNICIPAL CODE GOVERNING TREES

The City of San Jose Municipal Code includes two chapters regarding trees:

Chapter 13.28 Trees, Hedges and Shrubs

Chapter 13.32 Tree Removal Controls

Per the municipal code, a tree is defined as: *"any growing plant exceeding six feet in height, whether planted singly or as a hedge"* (13.28.010).

"Heritage tree" is defined as: *"Any tree which, because of factors including but not limited to its history, girth, height, species or unique quality, has been found by the city council to have a special significance to the community shall be designated a heritage tree. Such trees shall be placed on a heritage tree list which shall be adopted by the city council by resolution, which resolution may be amended from time to time to add to or delete certain trees therefrom"* (13.28.330).

"Ordinance tree" is defined as: *"a tree defined in this section herein below and whose removal or topping is covered by and subject to the provisions of this chapter....tree means any live or dead woody perennial plant characterized by having a main stem or trunk which measures fifty-six inches or more in circumference at a height of twenty four inches above natural grade slope. For purposes of this chapter, a multi-trunk tree shall be considered a single tree and measurement of that tree shall include the sum of the circumference of the trunks of that tree at a height of twenty-four inches above natural grade slope. "Tree" shall include the plural of that term"* (13.32.020).

"Remove" means *eliminate, take away, uproot or destroy...also means taking any action that reasonably and foreseeably will lead to the death of a tree or to permanent significant damage to the health or structural integrity of a tree. Such actions can include, without limitation and by way of example, excessive pruning, cutting, girding, poisoning, or watering of a tree; the unauthorized relocation or transportation of a tree; excessive excavation, alteration, or grading of the soil within the dripline of a tree, or excessively bruising, tearing or breaking the roots, bark, trunk or branches of a tree"* (13.32.020).

"Topping" means *cutting the branches of an ordinance tree in a manner that destroys the existing symmetrical appearance or natural shape of the tree and involves the removal of main lateral branches and leaving the trunk of the tree or major branches of the tree with a stub appearance"* (13.32.020).

The City of San Jose Guidelines for Inventorying, Evaluating, and Mitigating Impacts to Landscaping Trees in the City of San Jose, rev 5/31/06 states: *"Multi-stem trees - all tree stems shall be measured at two feet above the ground, the sum of all these measurements equals the diameter of the tree for ordinance and mitigation purposes."*

SUMMARY OF FINDINGS

On June 12, 2014, HMM conducted a tree inventory of 74 trees located on site. On July 8, 2014 HMM conducted a tree survey along the Eastern boundary including 32 additional trees. 87 on-site tree and 19 off-site trees are included in this report for a total of 106 trees. See Tables 1 and 2 for quantities of trees by location, species and size. Locations of trees within the fenced area and along the Eastern boundary have been verified by field survey. Approximate locations for all other trees, including volunteer trees in the back up area along Edenvale Avenue (Trees #63-#74) is based on the aerial photo. See Exhibit A (Tree Map) for tree locations. Additionally, the location of tree #105 and its dripline were verified by field survey. Any driplines depicted on Exhibit A have been confirmed by field survey. Spot grades around the driplines of these trees is available.

Table 1 - Tree Quantity Summary summarizes tree quantities by both species and size. Each species that was inventoried as part of this scope is included. This is a useful tool for analyzing the mixture of trees as part of the project. The size table is useful when calculating mitigation requirements in the case of tree removal as well as aiding in determining tree maturity.

Table 2 - Tree Evaluation Summary lists each tree tag number, botanical name, common name, DBH, circumference, ordinance sized trees, health rating, preservation suitability, general notes and observations and recommendations based on the draft site plan.

The range of in size inventories is 4.0" DBH (Tree#19, Coast Live Oak) to 60.9" DBH (Tree #56, Coast Live Oak). The DBH of multi-stemmed trees is reported on Table 1 as a sum of all stems at 24" above finished grade. The size of each stem is reported in the "notes" column.

The following tree species considered to be native by the City of San Jose were observed: *Quercus agrifolia*, *Quercus lobata*. Both size and health vary. See Table 2 for trees that are considered native. (Native means San Jose Native, including but not limited to Oaks, Willow, Maple, Ash, Cottonwood, Buckeye, and Sycamore)

See Exhibit A for Tree Location Map

See Table 1 for Tree Quantity Summary by species, size and location.

See Table 2 for Tree Evaluation Summary for sizes, notes and recommendations regarding each tree.

GENERAL OBSERVATIONS AND RECOMMENDATIONS

General observations and recommendations are made with consideration of proposed development of the site and the preliminary site plan.

Species: *Eucalyptus globulus (Blue Gum)*

Quantity: 9

Observations: The 9 Blue Gums are in a grove like setting in the Southwest portion of the property. The trees are mature and mostly in good condition. Tree #9 is the largest of the *Eucalyptus* and measures 80.7" DBH. There is a wasp nest located in the enclave at the trunk near finished grade. The tree has a large lateral limb at risk of breaking. While this is not a concern with the current use of the land, limb drop is a concern with the proposed residential use of the development.

Recommendations: *Eucalyptus* have brittle bark and are prone to limb drop. They perform best in groves where they can shield each other from wind and exposure. The trees occupy a significant portion of the site and it would be difficult to maintain this grove without both limiting the use of the site and reducing the potential hazards with the residential use. Preservation of select trees would not be advised as they perform best in groves and are not as well suited to be stand along specimen trees. Therefore, the preservation suitability of these *Eucalyptus* is poor.

Species: *Grevillea robusta (Silky Oak)*

Quantity: 3

Observations: The 3 *Grevillea* on site have reached maturity and are in decline. Both trees #40 and #41 have co-dominant stems. Tree #40 has a broken limb and decay at the base and crown dieback. Tree #41 has extensive galls and decay at the base as well as crown dieback. Tree #47 is located within a grove of mostly Oak trees and has a thin canopy.

Recommendations: Remove trees #40 and #41. Tree #47 is not a likely candidate for preservation as it is not native and most likely reaching decline since it was planted at the same time as trees #40 and #41.

Species: *Olea europaea (Olive)*

Quantity: 1

Observations: The one olive on site, Tree # 72, is located in the back up landscape area along Edenvale amongst volunteer trees and aloe plants.

Recommendations: Tree #72 is likely to be impacted by improvements and is not significant. It can be removed.

Species: *Quercus agrifolia (Coast Live Oak)*

Quantity: 28

Observations: Coast Live Oak are considered native trees by the City of San Jose. There are several large specimen Coast Live Oaks on site. Tree #46 and Tree #105 are located along the edges of the property and are prime candidates for preservation. Impact to these trees should be minimal. However, it is possible there could be an issue with the western portion of the root system of tree #105. An unknown black substance was observed on the trunk and ground. (See tree picture) Other large noteworthy Coast Live Oaks are Trees #56, and #58. Tree #56 is measures 60.9" DBH and is located in the far Northeast corner of the property. It provides sufficient screening and shade and most of the canopy is loaded on the east side of the tree and

is the largest tree on-site. Tree #58 measures 21.7" DBH. It has a nice upright form and an elliptical canopy.

Many of the other Coast Live Oak are smaller volunteers. These include the following trees: #3, #18, #19, #31, #35, #61, #62, #63, #64, #65, #73.

The condition of these trees vary. Tree #36 appears to be recovering from a severe bark beetle attack, but is likely susceptible to stresses, including construction activity. Several strikes were observed on the tree and a large amount of frass was found at the base of the tree.

Tree #38 is unbalanced and has a severe westward lean. There is active bleeding on the tree although it is accompanied by signs of new growth. The included bark and the crotch could be a hazard for limb drop.

A few of the larger oaks have a low branching habit or severe leans, both of which are natural for the species. However, these forms tend to be less conducive to the development of a site.

Trees #99 and #104 should be verified by field survey to determine if they are located on-site or off-site.

Recommendations: Consider preservation of trees of significance : #46, #54, #56, #58 and #105. Perform end weight limb reduction pruning to minimize hazard and improve form on trees #54 and #56. Prune to improve form as necessary. Oak trees are extremely sensitive to changes in grade and spray irrigation. Grade changes under the dripline shall be minimized and spray irrigation or extensive irrigation should not be installed under the dripline. Provide tree protection fencing with adequate signage prior to the commencement of any work on-site. Trees should be monitored by a Certified Arborist during construction. (see *Addendum A - ANSI A300 - Part 1- Pruning Standards*).

Species: *Quercus lobata* (*Valley Oak*)

Quantity: 2

Observations: Trees #37 and #59 are Valley Oaks in good health and form that can be considered for preservation. Both have a mostly upright habit with a high branching pattern. Tree #37 shows minor signs of stress. Tree #59 has a wasp nest located in lowest limb.

Recommendations: If trees are to be preserved, tree #37 should be pruned with an end weight reduction. For tree #59, a professional should remove the wasp nest. Once removed, the nest site should be sealed with mesh to prevent the return of the wasps. An end weight reduction can be performed to improve structure. Again, oak trees are extremely sensitive to changes in grade and spray irrigation. Grade changes under the dripline shall be minimized and spray irrigation or extensive irrigation should not be installed under the dripline. Provide tree protection fencing with adequate signage prior to the commencement of any work on-site. Trees should be monitored by a Certified Arborist during construction. (see *Addendum A - ANSI A300 - Part 1- Pruning Standards*).

Species: *Sambucus caerulea* (*Blue Elderberry*)

Quantity: 6

Observations: The Blue Elderberry are located in the back up landscape area parallel to Edenvale Avenue. They are bushy multi-stems that are currently screening the view into the site.

Recommendations: Since they are not of significant size and are will be impacted by the addition of a public sidewalk along Edenvale Avenue, removal is necessary. Note: only select trees in this area were tagged.

Species: *Schinus molle* (*California Pepper*)

Quantity: 7

Observations: California Pepper trees are resilient trees. However, several of these have major decay and are in slow decline. Tree #50, #55 and #57 have a significant amount of decay and abundant sucker growth. Tree #60 has a large hollow portion that appears to have been light on fire at some point as well as Peppertree psyllid. Tree #57 has sucker growth and a fair amount of decay. Tree #74 is immature and will be impacted by the sidewalk construction along Edenvale Avenue. Tree #106 has several cavities is potentially located off-site.

Recommendations: Given the poor condition of these trees and conflict with the required sidewalk, removal of all but tree #106 is recommended. The location of tree #106 should be verified by field survey to determine if it is on-site or off-site. If the tree is on-site, removal is recommended. However, due to its proximity to tree #105, care should be taken during removal not to damage any portion of tree #105, especially roots and limbs.

Species: *Washingtonia robusta* (*Mexican Fan Palm*)

Quantity: 50

Observations: Mexican Fan Palms compose the majority of the trees on site. They border both the eastern and northern boundaries. There is also a large stand of Palms near the middle of the site. Marks from skinning climbing spikes are present on nearly all of the trees, which is standard on cared for specimen of this species. Their habit is typical of the species, tall and leaning. Terminal buds exhibit strong new growth. Typically Palm trees are not a desirable tree in the City of San Jose. Trees #85-98 and #100-103 are offsite palms. Verification by field survey should be performed for trees #75-#80, and #82-#84. Note that these trees were tagged as part of a previous survey with different numbers. Trees were not re-tagged. See Table 2 for reference tag numbers.

Recommendations: Some of the palms are situated in locations where it may be possible, if desired to preserve them. The large stand of trees near the middle of the site is less conducive to preservation.

RECOMMENDATIONS FOR TREE PROTECTION DURING CONSTRUCTION

Site preparation: All existing trees shall be fenced off within, at or outside the drip line (foliar spread) of the tree using the following formula: five inches in distance from the trunk for every inch in trunk diameter, measured 4.5 feet above the average ground level. Example: a 24 inch diameter tree would have a fence erected 10 feet from the base of the tree ($24 \times 5 = 120 / 12 = 10$). The fence should be a minimum of four feet high, made of pig wire with steel stakes or any material superior in quality, such as cyclone fencing. If the fence is within the drip line of the trees, the foliar fringe shall be raised to offset the chance of limb breakage from construction equipment encroaching within the drip line. All contractors, subcontractors and other personnel shall be warned that encroachment within the fenced area is forbidden without the consent of the certified arborist on the job. This includes, but is not limited to, storage of lumber and other materials, disposal of paints, solvents or other noxious materials, parked cars, grading equipment or other heavy equipment. Penalties, based on the cost of remedial repairs and the evaluation guide published by the international society of arboriculture, shall be assessed for damages to the trees.

Grading/excavating: All grading plans that specify grading within the drip line of any tree, or within the distance from the trunk as outlined in the site preparation section above when said distance is outside the drip line, shall first be reviewed by a certified arborist. Provisions for aeration, drainage, pruning, tunneling beneath roots, root pruning or other necessary actions to protect the trees shall be outlined by an arborist. If trenching is necessary within the area as described above, said trenching shall be undertaken by hand labor and dug directly beneath the trunk of the tree. All roots 2 inches or larger shall be tunneled under and other roots shall be cut smoothly to the trunk side of the trench. The trunk side should be draped immediately with two layers of untreated burlap to a depth of 3 feet from the surface. The burlap shall be soaked nightly and left in place until the trench is back filled to the original level. An arborist shall examine the trench prior to back filling to ascertain the number and size of roots cut, so as to suggest the necessary remedial repairs.

Remedial repairs: An arborist shall have the responsibility of observing all ongoing activities that may affect the trees, and prescribing necessary remedial work to ensure the health and stability of the trees. This includes, but is not limited to, all arborist activities brought out in the previous sections. In addition, pruning, as outlined in the "pruning standards" of the western chapter of the International Society of Arboriculture, shall be prescribed as necessary. Fertilizing, aeration, irrigation, pest control and other activities shall be prescribed according to the tree needs, local site requirements, and state agricultural pest control laws. All specifications shall be in writing. For pest control operations, consult the local county agricultural commissioner's office for individuals licensed as pest control advisors or pest control operators.

Final inspection: Upon completion of the project, the arborist shall review all work undertaken that may impact the existing trees. Special attention shall be given to cuts and fills, compacting, drainage, pruning and future remedial work. An arborist should submit a final report in writing outlining the ongoing remedial care following the final inspection.

MAINTENANCE RECOMMENDATIONS FOR TREES TO REMAIN

Regular maintenance, designed to promote plant health and vigor, ensures longevity of existing trees. Regular inspections and the necessary follow-up care of mulching, fertilizing, and pruning, can detect problems and correct them before they become damaging or fatal.

Tree Inspection: Regular inspections of mature trees at least once a year can prevent or reduce the severity of future disease, insect, and environmental problems. During tree inspection, four characteristics of tree vigor should be examined: new leaves or buds, leaf size, twig growth, and absence of crown dieback (gradual death of the upper part of the tree). A reduction in the extension of shoots (new growing parts), such as buds or new leaves, is a fairly reliable cue that the tree's health has recently changed. Growth of the shoots over the past three years may be compared to determine whether there is a reduction in the tree's typical growth pattern. Further signs of poor tree health are trunk decay, crown dieback, or both. These symptoms often indicate problems that began several years before. Loose bark or deformed growths, such as trunk conks (mushrooms), are common signs of stem decay. Any abnormalities found during these inspections, including insect activity and spotted, deformed, discolored, or dead leaves and twigs, should be noted and observed closely.

Mulching: Mulch, or decomposed organic material, placed over the root zone of a tree reduces environmental stress by providing a root environment that is cooler and contains more moisture than the surrounding soil. Mulch can also prevent mechanical damage by keeping machines such as lawn mowers and string trimmers away from the tree's base. Furthermore, mulch reduces competition from surrounding weeds and turf. To be most effective, mulch should be placed 2 to 4 inches deep and cover the entire root system, which may be as far as 2 or 3 times the diameter of the branch spread of the tree. If the area and activities happening around the tree do not permit the entire area to be mulched, it is recommended that as much of the area under the drip line of the tree is mulched as possible. When placing mulch, care should be taken not to cover the actual trunk of the tree. This mulch-free area, 1 to 2 inches wide at the base, is sufficient to avoid moist bark conditions and prevent trunk decay. An organic mulch layer 2 to 4 inches deep of loosely packed shredded leaves, pine straw, peat moss, or composted wood chips is adequate. Plastic should not be used as it interferes with the exchange of gases between soil and air, which inhibits root growth. Thicker mulch layers, 5 to 6 inches deep or greater, may also inhibit gas exchange.

Fertilization: Trees require certain nutrients (essential elements) to function and grow. Urban landscape trees may be growing in soils that do not contain sufficient available nutrients for satisfactory growth and development. In certain situations, it may be necessary to fertilize to improve plant vigor. Fertilizing a tree can improve growth; however, if fertilizer is not applied wisely, it may not benefit the tree at all and may even adversely affect the tree. Mature trees making satisfactory growth may not require fertilization. When considering supplemental fertilizer, it is important to consider nutrients deficiencies and how and when to amend the deficiencies. Soil conditions, especially pH and organic matter content, vary greatly, making the proper selection and use of fertilizer a somewhat complex process. To that end, it is recommended that the soil be tested for nutrient content. A soil testing laboratory can give advice on application rates, timing, and the best blend of fertilizer for each tree and other landscape plants on site. Mature trees have expansive root systems that extend from 2 to 3 times the size of the leaf canopy. A major portion of actively growing roots is located outside the tree's drip line. Understanding the actual size and extent of a tree's root system before applying fertilizer is paramount to determine quantity, type and rate at which to best apply fertilizer. Always follow manufacturer recommendations for use and application.

Pruning: Pruning is often desirable or necessary to remove dead, diseased, or insect-infested branches and to improve tree structure, enhance vigor, or maintain safety. Because each cut has the potential to change the growth of (or cause damage to) a tree, no branch should be removed without reason. Removing foliage from a tree has two distinct effects on growth: (1) it reduces photosynthesis and, (2) it may reduce overall growth. Pruning should always be performed sparingly. Caution must be taken not to over-prune as a tree may not be able to gather and process enough sunlight to survive. Pruning mature trees may require special equipment, training, and experience. Arborists are equipped to provide a variety of services to assist in performing the job safely and reducing risk of personal injury and property damage (*See also Addendum A - ANSI A300 Part 1 Pruning Standards*).

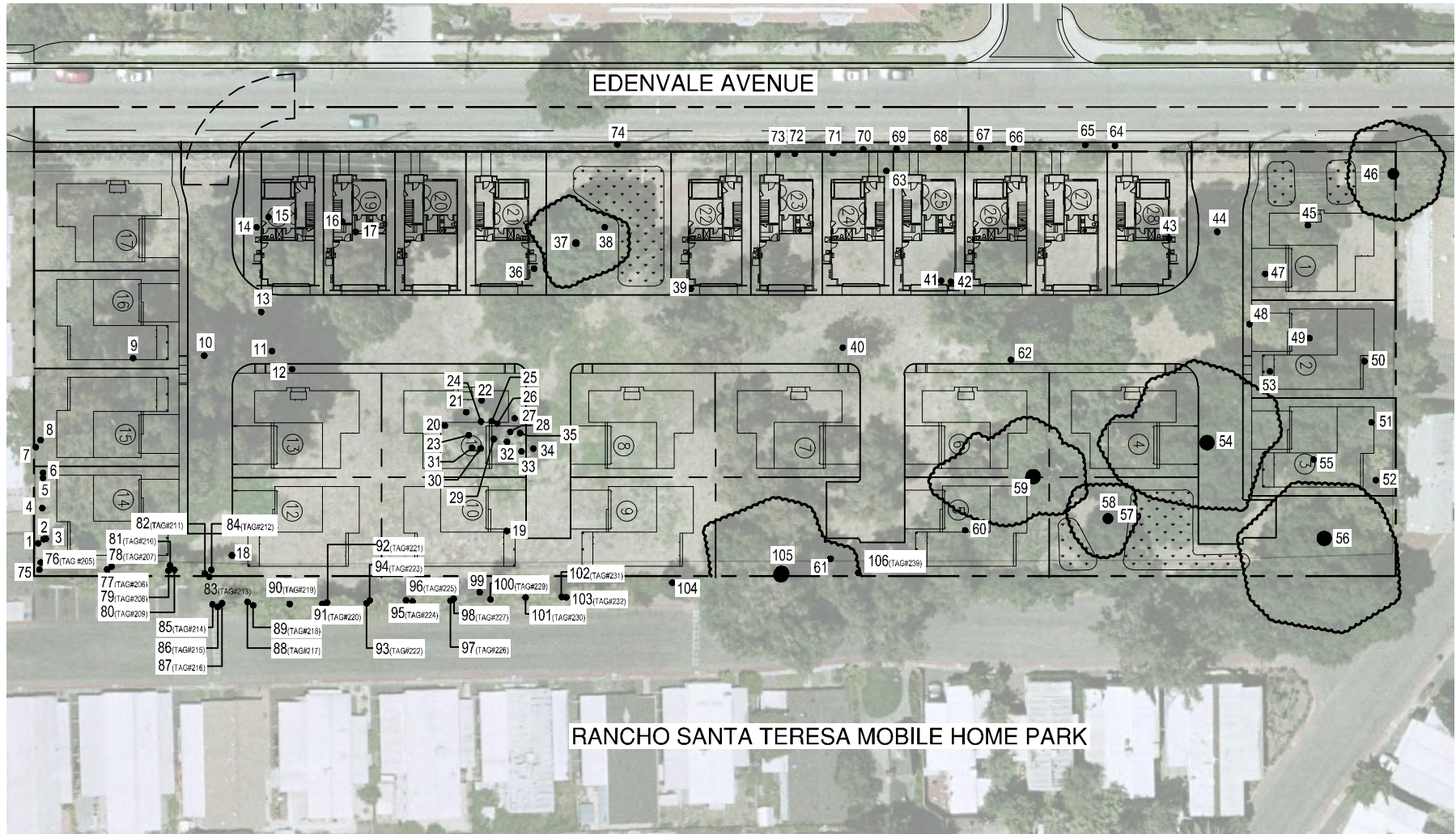
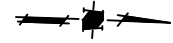
Removal: Although tree removal is a last resort, there are circumstances when it is necessary. An arborist can help decide whether or not a tree should be removed. Professionally trained arborists have the skills and equipment to safely and efficiently remove trees. Removal is recommended when a tree: (1) is dead, dying, or considered irreparably hazardous; (2) is causing an obstruction or is crowding and causing harm to other trees and the situation is impossible to correct through pruning; (3) is to be replaced by a more suitable specimen, and; (4) should be removed to allow for construction. Pruning or removing trees, especially large trees, can be dangerous work. It should be performed only by those trained and equipped to work safely in trees.

TERMS AND CONDITIONS

The following terms and conditions apply to all oral and written reports and correspondence pertaining to consultations, inspections and activities of HMM.

1. The scope of any report or other correspondence is limited to the trees and conditions specifically mentioned in those reports and correspondence. HMM assumes no liability for the failure of trees or parts of trees, either inspected or otherwise. HMM assumes no responsibility to report on the condition of any tree or landscape feature not specifically requested by the named client.
2. No tree described in this report was climbed, unless otherwise stated. HMM does not take responsibility for any defects, which could have only been discovered by climbing. A full root collar inspection, consisting of excavating the soil around the tree to uncover the root collar and major buttress roots was not performed unless otherwise stated. HMM does not take responsibility for any root defects, which could only have been discovered by such an inspection.
3. HMM shall not be required to provide further documentation, give testimony, be deposed, or attend court by reason of this appraisal or report unless subsequent contractual arrangements are made, including payment of additional fees for such services as described by HMM or in the schedule of fees or contract.
4. HMM guarantees no warranty, either expressed or implied, as to the suitability of the information contained in the reports for any reason. It is the responsibility of the client to determine applicability to his/her case.
5. Any report and the values, observations and recommendations expressed therein represent the professional opinion of HMM, and the fee for services is in no manner contingent upon the reporting of a specified value nor upon any particular finding to be reported.
6. Any photographs, diagrams, graphs, sketches or other graphic material included in any report, being intended solely as visual aids, are not necessarily to scale and should not be construed as engineering reports or surveys, unless otherwise noted in the report. Any reproductions of graphic material or the work produced by other persons, is intended solely for the purpose of clarification and ease of reference. Inclusion of said information does not constitute a representation by HMM as to the sufficiency or accuracy of that information.
7. 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 all trees.

EXHIBIT A - TREE LOCATION MAP



NOTE: PRELIMINARY SITE PLAN SHOWN FOR CONTEXT ONLY.

TABLE 1 - TREE QUANTITY SUMMARY

Tree Quantity by Species	
Species	Quantity
Eucalyptus globulus	9
Grevillea robusta	3
Olea europaea	1
Quercus agrifolia	28
Quercus lobata	2
Sambucus caerulea	6
Schinus molle	7
Washingtonia robusta	50
Total Trees	106

Tree Quantity by Size	
DBH	Quantity
<12"	9
12-18"	27
18" +	70
Total	106

Tree Quantity by Location*	
Location	Quantity
On-site	87
Off-site	19
Total	106

*Off-site trees along the eastern project are included for reference

TABLE 2 -TREE EVALUATION SUMMARY

DBH MEASUREMENT HEIGHT: 24"

Suitability for Preservation is based on the following:

Good - Trees with good health and structural stability that have the potential for longevity at the site.

Moderate - Trees in somewhat declining health and/or exhibits structural defects that cannot be abated with treatment. Trees will require more intense management and will have a shorter lifespan than those in the 'Good' category.

Poor - Trees in poor health or with significant structural defects that cannot be mitigated. Tree is expected to decline, regardless of treatment.

Note: Off-site trees are noted in table below.

Health Rating

5	A healthy, vigorous tree, reasonably free of disease, with good structure and form typical of the species.
4	A tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
3	A tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that may that might be mitigated with care.
2	A tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
1	A tree in severe decline, dieback of scaffold branches and or trunk, mostly epicormic growth; extensive structural defects that cannot be abated.

Abbreviations and Definitions

CDB	Dieback in Crown	Condition where branches in the tree crown die from the tips toward the center.
DBH	Diameter at Breast Height	Measurement of tree diameter in inches. Measurement height varies by City and is noted above.
FB	Fireblight	A disease in fruit trees resulting in burnt looking foliage.
H	Hazardous	A tree that in it's current condition, presents a hazard.
HD	Headed	Poor pruning practice of cutting back branches. Often practiced under utility lines to limit tree height.
IB	Included Bark	Structural defect where bark is included between the branch attachment so the wood can't join. Such defect can have a higher probability of failure.
LN	Leaning Tree	Tree leaning, see notes for severity.
ML	Multiple Leaders	More than one upright primary stem
MS	Multi-stem	A tree having 2 or more trunks, either originating at grade or branching after DBH height measurement.
ND	Nitrogen Deficiency	Deficiency often resulting in lack of growth and yellow or pale green leaves.
S	Suckers	Shoot arising from the roots.
SC	Soil Compaction	Compaction of soil around tree root system which can damage vitality.
SD	Structural Defects	Naturally or secondary conditions including cavities, poor branch attachments, cracks, or decayed wood in any part of the tree that may contribute to structural failure.
SR	Surface Roots	Roots visible at finished grade.
SS	Sunscald	Injury to bark tissues on the trunk/branches caused by rapid temperature changes
WC	Weak Crotch	Weak union or fork in tree branching structure.

TREE #	BOTANICAL NAME	COMMON NAME	DBH	CIRCUMFERENCE	(DBH ≥ 18")	OFF-SITE	HEALTH	PRESERVATION SUITABILITY	NOTES	RECOMMENDATIONS
1	Washingtonia robusta	Mexican Fan Palm	19.2	60	X		4	Moderate	LN, Tree climbing spike strikes present	
2	Washingtonia robusta	Mexican Fan Palm	19.2	60	X		4	Moderate	LN, Tree climbing spike strikes present	
3	Quercus agrifolia	Coast Live Oak	16.0	50			3	Poor	MS (5.6+5.3+5.1), Volunteer, damage at trunk base, low crotch	
4	Washingtonia robusta	Mexican Fan Palm	17.0	53			3	Moderate	Ivy growing around trunk for full height of tree.	remove ivy if tree is to remain
5	Washingtonia robusta	Mexican Fan Palm	16.3	51			3	Moderate	Tree climbing spike strikes present, yellowing fronds	fertilize if tree is to remain
6	Washingtonia robusta	Mexican Fan Palm	19.5	61	X		3	Moderate	LN, Tree climbing spike strikes present	
7	Washingtonia robusta	Mexican Fan Palm	16.8	53			3	Moderate	LN, Tree climbing spike strikes present	
8	Washingtonia robusta	Mexican Fan Palm	15.2	48			3	Moderate	Ivy growing around trunk for full height of tree.	remove ivy if tree is to remain
9	Eucalyptus globulus	Blue Gum	80.7	253	X		4	Poor	large lateral limb, wasp nest, enclave at base	prune lateral limb if tree is to remain
10	Eucalyptus globulus	Blue Gum	55.9	176	X		3	Poor	galls, parasite growing at base	
11	Eucalyptus globulus	Blue Gum	40.4	127	X		4	Poor		
12	Eucalyptus globulus	Blue Gum	28.3	89	X		3	Poor	slight LN, wounds on smaller limbs, eucalyptus bark beetle	treat for bark beetles if tree is to remain
13	Eucalyptus globulus	Blue Gum	28.3	89	X		4	Poor	small woodpecker holes, enlarged leaves, several leaf tips brown	
14	Eucalyptus globulus	Blue Gum	29.0	91	X		4	Poor	slight LN	

TREE #	BOTANICAL NAME	COMMON NAME	DBH	CIRCUMFERENCE	(DBH ≥ 18")	OFF-SITE	HEALTH	PRESERVATION SUITABILITY	NOTES	RECOMMENDATIONS
15	Eucalyptus globulus	Blue Gum	36.5	115	X		3	Poor	CD at approx. 10' above grade	
16	Eucalyptus globulus	Blue Gum	33.0	104	X		3	Poor	CD at approx. 12' above grade, upright form	
17	Eucalyptus globulus	Blue Gum	44.2	139	X		4	Poor	thickened trunk base with suckers, eucalyptus bark beetle observed	
18	Quercus agrifolia	Coast Live Oak	10.6	33			3	Moderate	IB, cankers, enlarged leaves, brown spots on leaves, low branching	
19	Quercus agrifolia	Coast Live Oak	4.0	13			4	Moderate	slight LN, roughly 8' tall tree	
20	Washingtonia robusta	Mexican Fan Palm	17.4	55			2	Poor	Tree climbing spike strikes present, rodent damage irregular trunk growth (hourglass shape)	
21	Washingtonia robusta	Mexican Fan Palm	17.2	54			3	Moderate	Tree climbing spike strikes present, slight LN	
22	Washingtonia robusta	Mexican Fan Palm	15.5	49			1	Poor	severe damage of trunk, Tree climbing spike strikes present	
23	Washingtonia robusta	Mexican Fan Palm	17.7	56			3	Poor	Tree climbing spike strikes present	
24	Washingtonia robusta	Mexican Fan Palm	18.8	59	X		3	Moderate	Tree climbing spike strikes present, trunk dieback, erosion at base	
25	Washingtonia robusta	Mexican Fan Palm	12.5	39			3	Moderate	LN, volunteer roughly 7' tall	
26	Washingtonia robusta	Mexican Fan Palm	14.7	46			2	Poor	Tree climbing spike strikes present	
27	Washingtonia robusta	Mexican Fan Palm	20.6	65	X		3	Moderate	Tree climbing spike strikes present	
28	Washingtonia robusta	Mexican Fan Palm	20.0	63	X		3	Moderate	Tree climbing spike strikes present	

TREE #	BOTANICAL NAME	COMMON NAME	DBH	CIRCUMFERENCE	(DBH ≥ 18")	OFF-SITE	HEALTH	PRESERVATION SUITABILITY	NOTES	RECOMMENDATIONS
29	Washingtonia robusta	Mexican Fan Palm	19.5	61	X		4	Moderate	Tree climbing spike strikes present	
30	Washingtonia robusta	Mexican Fan Palm	15.3	48			3	Moderate	Tree climbing spike strikes present	
31	Quercus agrifolia	Coast Live Oak	8.5	27			3	Moderate	MS (5.2+3.3), low branching volunteer	
32	Washingtonia robusta	Mexican Fan Palm	17.4	55			3	Moderate	Tree climbing spike strikes present, damage at base and on trunk	
33	Washingtonia robusta	Mexican Fan Palm	18.5	58	X		2	Moderate	Tree climbing spike strikes present	
34	Washingtonia robusta	Mexican Fan Palm	15.8	50			2	Moderate	Tree climbing spike strikes present, slight LN, yellowing fronds	
35	Quercus agrifolia	Coast Live Oak	7.6	24			3	Moderate	MS (4.7+2.9), low crotch at finished grade, roughly 10' tall tree	
36	Quercus agrifolia	Coast Live Oak	25.0	79	X		4	Moderate	cracks in limbs, extensive bark beetle frass and strikes, galls, possible risk of limb breakage, tree growth strong, minor browning in spots of canopy	
37	Quercus lobata	Valley Oak	22.5	71	X		4	Good	nice specimen with upright form, minor CDB	consider preservation, end limb weight reduction pruning
38	Quercus agrifolia	Coast Live Oak	22.3	70	X		4	Moderate	severe westward LN, minor bark beetle strikes, weakened crotch, vigorous	
39	Schinus molle	California Pepper	36.2	114	X		2	Moderate	minor cavity/decay at base, small cankers, secondary decay insects	remove
40	Grevillea robusta	Silky Oak	18.8	59	X		1	Poor	decay, CDB, CD, broken limb	remove
41	Grevillea robusta	Silky Oak	22.5	71	X		1	Poor	CD, galls, CDB, narrow habit	remove

TREE #	BOTANICAL NAME	COMMON NAME	DBH	CIRCUMFERENCE	(DBH ≥ 18")	OFF-SITE	HEALTH	PRESERVATION SUITABILITY	NOTES	RECOMMENDATIONS
42	Quercus agrifolia	Coast Live Oak	33.9	106	X		3	Poor	splits to multi-stem at roughly 30". Decay at base, severe lean, woodpecker holes	
43	Quercus agrifolia	Coast Live Oak	24.8	78	X		4	Moderate	bark beetle infestation, southward LN	
44	Quercus agrifolia	Coast Live Oak	37.0	116	X		4	Moderate	eastward LN, lopsided canopy with minor dieback	
45	Quercus agrifolia	Coast Live Oak	34.1	107	X		2	Poor	bark beetle holes present, galls at exposed roots, open decay, termites	remove
46	Quercus agrifolia	Coast Live Oak	23.5	74	X		5	Good	growing under power lines, minor bark beetle strikes present	located in far NW corner of site, possibility of retention is good-consider
47	Grevillea robusta	Silky Oak	27.0	85	X		3	Poor	CD	remove
48	Quercus agrifolia	Coast Live Oak	30.5	96	X		4	Moderate	CD at 20' above finished grade, LN, bark beetle strikes present	
49	Quercus agrifolia	Coast Live Oak	25.9	81	X		4	Moderate	1 large conk at base, S	
50	Schinus molle	California Pepper	35.7	112	X		2	Poor	decay, S, large 16" gall	
51	Washingtonia robusta	Mexican Fan Palm	23.0	72	X		3	Poor	LN, Borer holes present	
52	Washingtonia robusta	Mexican Fan Palm	27.8	87	X		3	Poor	hourglass shaped trunk, borer holes present	
53	Quercus agrifolia	Coast Live Oak	31.1	98	X		4	Moderate	IB at base, LN	
54	Quercus agrifolia	Coast Live Oak	45.5	143	X		5	Good	IB, minor DB in crown	consider preservation

TREE #	BOTANICAL NAME	COMMON NAME	DBH	CIRCUMFERENCE	(DBH ≥ 18")	OFF-SITE	HEALTH	PRESERVATION SUITABILITY	NOTES	RECOMMENDATIONS
55	Schinus molle	California Pepper	33.2	104	X		1	Poor	several locations show decay and rot	remove
56	Quercus agrifolia	Coast Live Oak	60.9	191	X		5	Good	CD at crotch, canopy leans east	consider preservation
57	Schinus molle	California Pepper	21.1	66	X		2	Poor	decay, LN, S	remove
58	Quercus agrifolia	Coast Live Oak	21.7	68	X		4	Moderate		consider preservation
59	Quercus lobata	Valley Oak	40.0	126	X		4	Good	signs of bleeding, large dead limb hornet nest in dead limb	prune lateral limb, remove nest and mesh over pruning cut, consider
60	Schinus molle	California Pepper	29.9	94	X		1	Poor	LN, several points of decay, Peppertree psyllid	
61	Quercus agrifolia	Coast Live Oak	5.2	16			3	Moderate	close to chainlink fence, roughly 15' tall	
62	Quercus agrifolia	Coast Live Oak	31.5	99	X		1	Poor	MS (4.2+3.1+3+3.4+1.6+3.8+4.6+2.8+2.5+2.5), low crotch at finished grade, half of tree is dead	remove
63	Quercus agrifolia	Coast Live Oak	4.1	13			3	Poor	mixed in with small bushes along chainlink fence	remove
64	Quercus agrifolia	Coast Live Oak	12.5	39			2	Poor	LN, CD, tree location not surveyed	remove
65	Quercus agrifolia	Coast Live Oak	22.8	72	X		2	Poor	MS (6+5.5+2.5+1.3+3+2.1+1.2+1.2), bushy form, tree location not surveyed	remove
66	Sambucus caerulea	Blue Elderberry	15.0	47			2	Poor	tree location not surveyed	remove
67	Sambucus caerulea	Blue Elderberry	13.0	41			2	Poor	borer holes present, tree location not surveyed	remove

TREE #	BOTANICAL NAME	COMMON NAME	DBH	CIRCUMFERENCE	(DBH ≥ 18")	OFF-SITE	HEALTH	PRESERVATION SUITABILITY	NOTES	RECOMMENDATIONS
68	Sambucus caerulea	Blue Elderberry	14.5	46			2	Poor	MS(3.5+3.5+2.5+2.5+2.5), tree location not surveyed	remove
69	Sambucus caerulea	Blue Elderberry	9.0	28			2	Poor	MS(4.5+4.5), tree location not surveyed	remove
70	Sambucus caerulea	Blue Elderberry	15.5	49			2	Poor	MS (4.5+6+5), tree location not surveyed	remove
71	Sambucus caerulea	Blue Elderberry	16.0	50			2	Poor	MS (5+6+5), tree location not surveyed	remove
72	Olea europaea	Olive	15.0	47			2	Poor	tree location not surveyed	remove
73	Quercus agrifolia	Coast Live Oak	9.0	28			2	Poor	tree location not surveyed	remove
74	Schinus molle	California Pepper	13.2	41			3	Poor	tree location not surveyed	remove
75	Washingtonia robusta	Mexican Fan Palm	18.5	58	X		5	Moderate		
76	Washingtonia robusta	Mexican Fan Palm	19.2	60	X		4	Moderate	tag #205, LN	
77	Washingtonia robusta	Mexican Fan Palm	20.0	63	X		4	Moderate	tag #206, joined at grade with tree #78	
78	Washingtonia robusta	Mexican Fan Palm	18.5	58	X		4	Moderate	tag #207, joined at grade with tree #77, LN	
79	Washingtonia robusta	Mexican Fan Palm	21.0	66	X		4	Moderate	tag #208, joined at grade with tree #80, LN	
80	Washingtonia robusta	Mexican Fan Palm	19.2	60	X		4	Moderate	tag #209, joined at grade with tree #79, LN	
81	Quercus agrifolia	Coast Live Oak	17.5	55			4	Moderate	tag #210, bark beetle strikes	

TREE #	BOTANICAL NAME	COMMON NAME	DBH	CIRCUMFERENCE	(DBH ≥ 18")	OFF-SITE	HEALTH	PRESERVATION SUITABILITY	NOTES	RECOMMENDATIONS
82	Washingtonia robusta	Mexican Fan Palm	17.3	54			4	Moderate	tag #211	
83	Washingtonia robusta	Mexican Fan Palm	19.1	60	X		4	Moderate	tag #213	
84	Washingtonia robusta	Mexican Fan Palm	17.7	56			4	Moderate	tag #212	
85	Washingtonia robusta	Mexican Fan Palm	21.0	66	X	X	4	Good	tag #214	be cautious of off-site trees during construction
86	Washingtonia robusta	Mexican Fan Palm	20.0	63	X	X	4	Good	tag #215	be cautious of off-site trees during construction
87	Washingtonia robusta	Mexican Fan Palm	18.2	57	X	X	4	Good	tag #216	be cautious of off-site trees during construction
88	Washingtonia robusta	Mexican Fan Palm	21.7	68	X	X	4	Good	tag #217, joined at finished grade with tree #89, LN	be cautious of off-site trees during construction
89	Washingtonia robusta	Mexican Fan Palm	21.0	66	X	X	4	Good	tag #218, joined at finished grade with tree #88, LN	be cautious of off-site trees during construction
90	Washingtonia robusta	Mexican Fan Palm	22.8	72	X	X	4	Good	tag #219	be cautious of off-site trees during construction
91	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #220, DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction
92	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #221, DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction
93	Washingtonia robusta	Mexican Fan Palm	18.4	58	X	X	4	Good	tag #222	be cautious of off-site trees during construction
94	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #223, DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction

TREE #	BOTANICAL NAME	COMMON NAME	DBH	CIRCUMFERENCE	(DBH ≥ 18")	OFF-SITE	HEALTH	PRESERVATION SUITABILITY	NOTES	RECOMMENDATIONS
95	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #224, DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction
96	Washingtonia robusta	Mexican Fan Palm	32.3	101	X	X	5	Good	tag #225, shorter specimen tree	be cautious of off-site trees during construction
97	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #226, DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction
98	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #227, DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction
99	Quercus agrifolia	Coast Live Oak	14.4	45			4	Moderate	bark beetle strikes, black sooty mold	treat black sooty mold
100	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #229, DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction
101	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #230 DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction
102	Washingtonia robusta	Mexican Fan Palm	16.3	51		X	4	Good	tag #231	be cautious of off-site trees during construction
103	Washingtonia robusta	Mexican Fan Palm	18.0	57	X	X	4	Good	tag #232 DBH not measured (visual verification 18"+)	be cautious of off-site trees during construction
104	Quercus agrifolia	Coast Live Oak	10.5	33		X	4	Moderate	no tag, vigorous new growth, westward LN, severe bark beetle strikes	
105	Quercus agrifolia	Coast Live Oak	50.1	157	X		5	Good	oily residue at base, located east of chain link fence	consider preservation
106	Schinus molle	California Pepper	42.0	132	X		3	Moderate	tag #239	



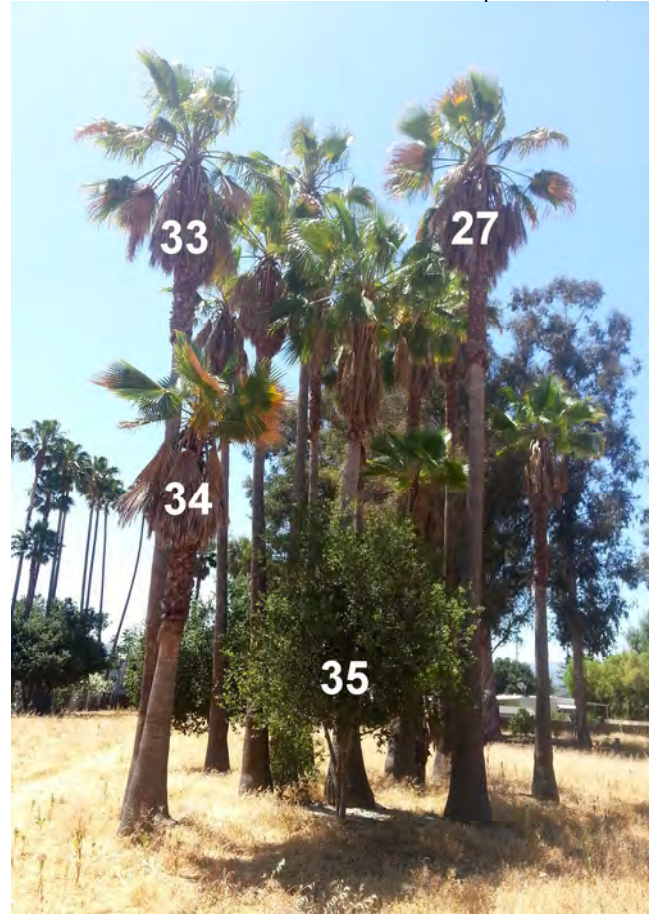














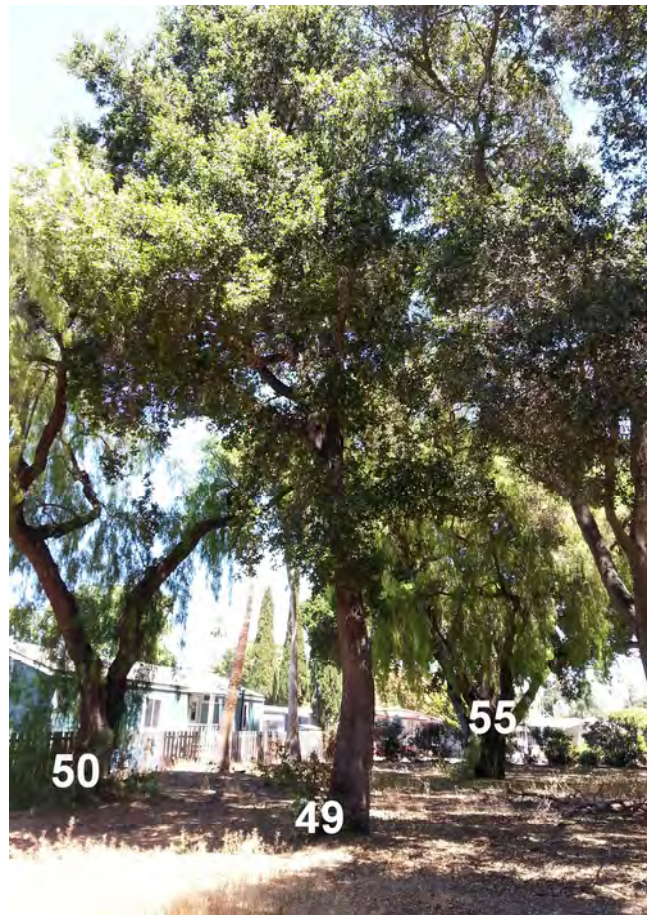


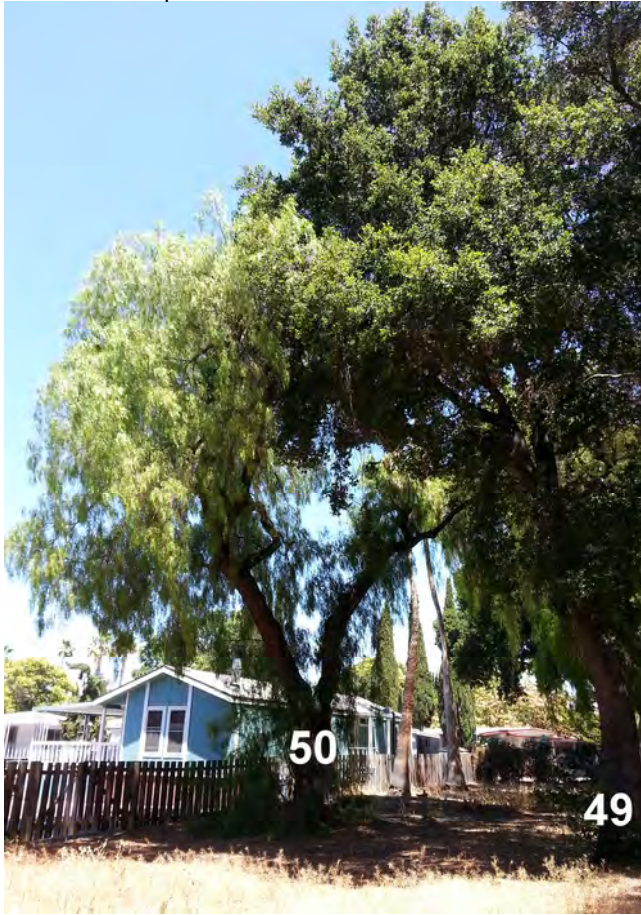










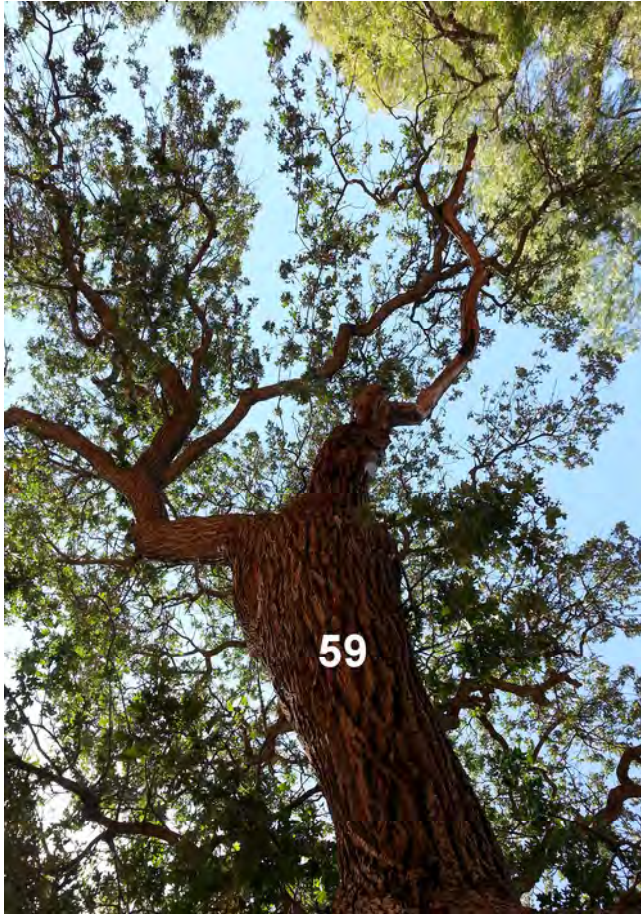


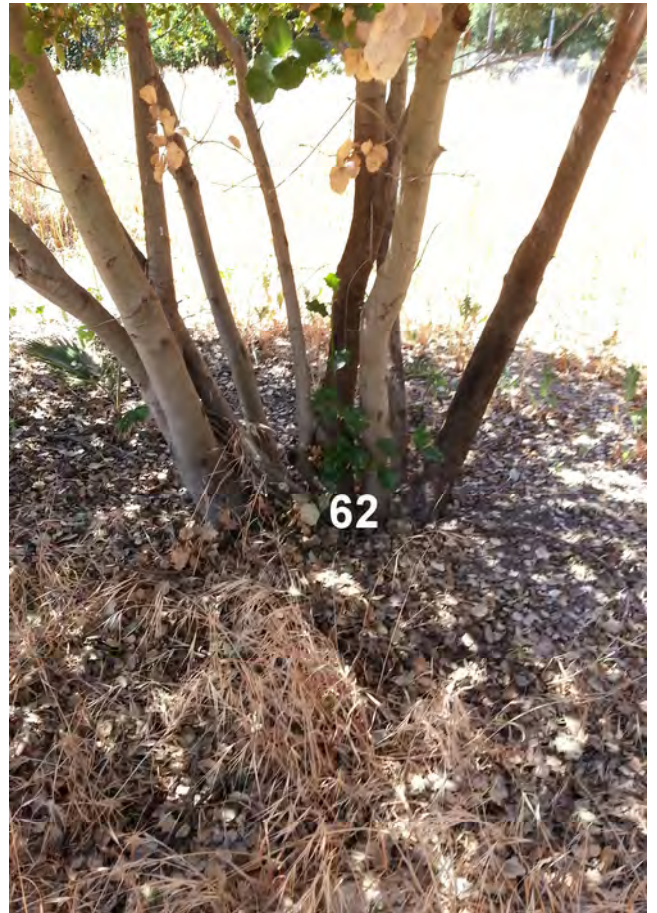




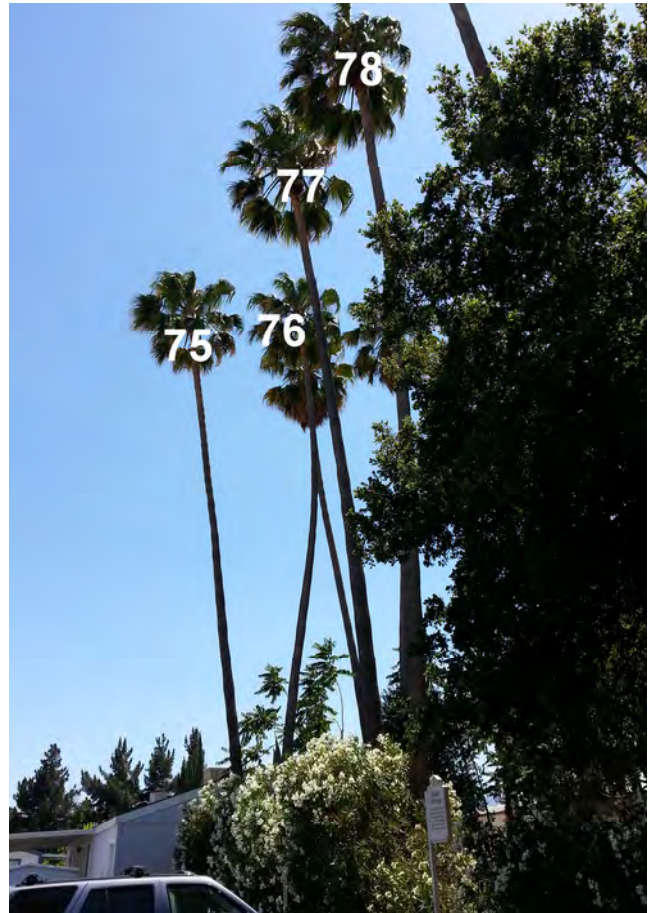




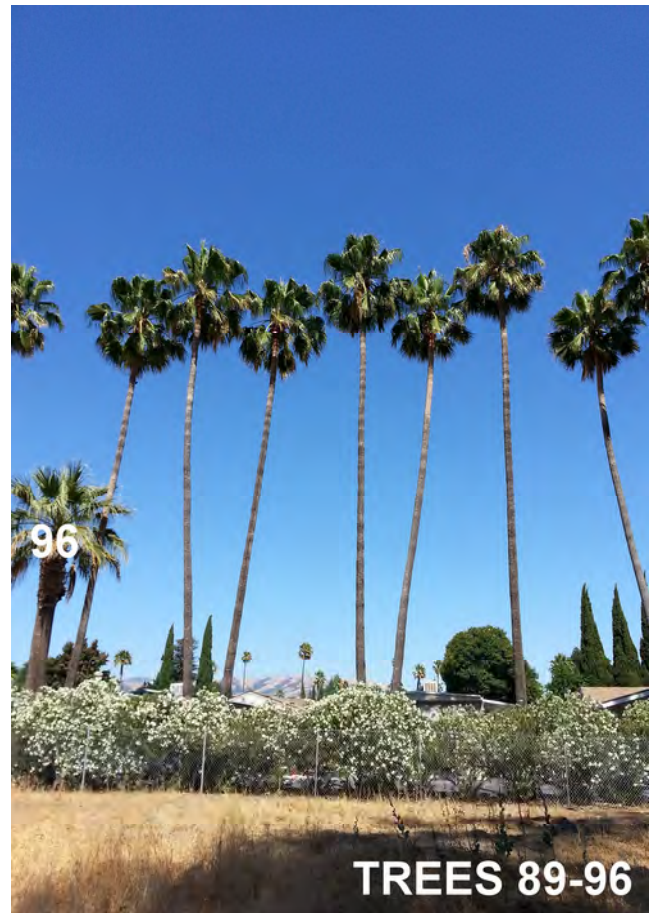
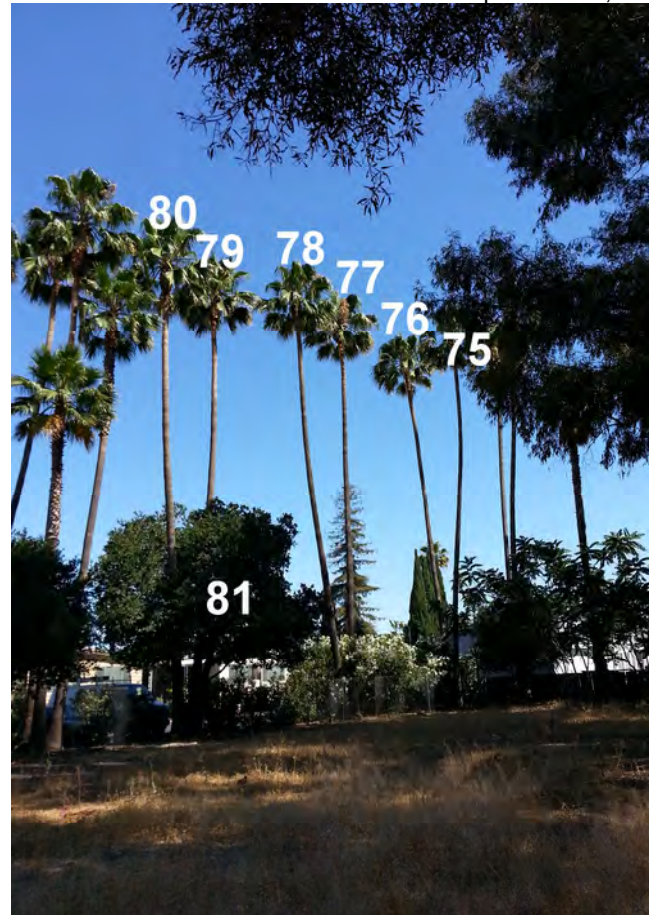


















APPENDIX A - ANSI A300 - PART 1 - PRUNING STANDARDS

American National Standard for Tree Care Operations –
Tree, Shrub, and Other Woody Plant
Maintenance – Standard Practice
(Pruning)

1 ANSI A300 standards

1.1 Scope

ANSI A300 standards present performance standards for the care and maintenance of trees, shrubs, and other woody plants.

1.2 Purpose

ANSI A300 standards are intended as guides for federal, state, municipal and private authorities including property owners, property managers, and utilities in the drafting of their maintenance specifications.

1.3 Application

ANSI A300 standards shall apply to any person or entity engaged in the business, trade, or performance of repairing, maintaining, or preserving trees, shrubs, or other woody plants.

1.4 Implementation

Specifications for tree maintenance should be written and administered by an arborist.

2 Part 1 – Pruning standards

2.1 Purpose

The purpose of this document is to provide standards for developing specifications for tree pruning.

2.2 Reasons for pruning

The reasons for tree pruning may include, but are not limited to, reducing risk, maintaining or improving tree health and structure, improving aesthetics, or satisfying a specific need. Pruning practices for agricultural, horticultural production, or silvicultural purposes are exempt from this standard.

2.3 Safety

2.3.1 Tree maintenance shall be performed only by arborists or arborist trainees who, through related training or on-the-job experience, or both, are familiar with the practices and hazards of arboriculture and the equipment used in such operations.

2.3.2 This standard shall not take precedence over arboricultural safe work practices.

2.3.3 Operations shall comply with applicable Occupational Safety and Health Administration (OSHA) standards, ANSI Z133.1, as well as state and local regulations.

3 Normative references

The following standards contain provisions, which, through reference in the text, constitute provisions of this American National Standard. All standards are subject to revision, and parties to agreements based on this American National Standard shall apply the most recent edition of the standards indicated below.

- ANSI Z60.1, Nursery stock
- ANSI Z133.1, Tree care operations - Pruning, trimming, repairing, maintaining, and removing trees, and cutting brush - Safety requirements
- 29 CFR 1910, General industry
- 29 CFR 1910.268, Telecommunications
- 29 CFR 1910.269, Electric power generation, transmission, and distribution
- 29 CFR 1910.331 - 335, Electrical safety-related work practices

4 Definitions

4.1 anvil-type pruning tool: A pruning tool that has a sharp straight blade that cuts against a flat metal cutting surface, in contrast to a hook-and-blade type pruning tool (4.21).

4.2 apical dominance: Inhibition of growth of lateral buds by the terminal bud.

4.3 arboriculture: The art, science, technology, and business of commercial, public, and utility tree care.

4.4 arborist: An individual engaged in the profession of arboriculture who, through experience, education, and related training, possesses the competence to provide for or supervise the management of trees and other woody plants.

4.5 arborist trainee: An individual undergoing on-the-job training to obtain the experience and the competence required to provide for or supervise the management of trees and other woody plants. Such trainees shall be under the direct supervision of an arborist.

4.6 branch bark ridge: The raised area of bark in the branch crotch that marks where the branch and parent meet.

4.7 branch collar: The swollen area at the base of a branch.

4.8 callus: Undifferentiated tissue formed by the cambium around a wound.

4.9 cambium: The dividing layer of cells that forms sapwood (xylem) to the inside and inner bark (phloem) to the outside.

4.10 cleaning: Selective pruning to remove one or more of the following parts: dead, diseased, and/ or broken branches (5.6.1).

4.11 climbing spurs: Sharp, pointed devices affixed to a climber's boot used to assist in climbing trees. (syn.: gaffs, hooks, spurs, spikes, climbers)

4.12 closure: The process of woundwood covering a cut or other tree injury.

4.13 crown: The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree.

- 4.14 decay:** The degradation of woody tissue caused by microorganisms.
- 4.15 espalier:** The combination of pruning, supporting, and training branches to orient a plant in one plane (5.7.2).
- 4.16 establishment:** The point after planting when a tree's root system has grown sufficiently into the surrounding soil to support shoot growth and anchor the tree.
- 4.17 facility:** A structure or equipment used to deliver or provide protection for the delivery of an essential service, such as electricity or communications.
- 4.18 final cut:** A cut that completes the removal or reduction of a branch or stub.
- 4.19 frond:** A leaf of a palm.
- 4.20 heading:** 1. Cutting a currently growing, or a 1-year-old shoot, back to a bud. 2. Cutting an older branch or stem back to a stub in order to meet a defined structural objective. 3. Cutting an older branch or stem back to a lateral branch not large enough to assume apical dominance in order to meet a defined structural objective. Heading may or may not be an acceptable pruning practice, depending on the application.
- 4.21 hook-and-blade-type pruning tool:** A pruning tool that has a sharp curved blade that overlaps a supporting hook; in contrast to an anvil-type pruning tool (4.1). (syn.: by-pass pruner)
- 4.22 interfering branches:** Crossing, rubbing, or upright branches that have the potential to damage tree structure and/or health.
- 4.23 internodal cut:** A cut located between lateral branches or buds.
- 4.24 lateral branch:** A shoot or stem growing from a parent branch or stem.
- 4.25 leader:** A dominant or co-dominant, upright stem.
- 4.26 limb:** A large, prominent branch.
- 4.27 lion's tailing:** The removal of an excessive number of inner, lateral branches from parent branches. Lion's tailing is not an acceptable pruning practice (5.5.7).
- 4.28 mechanical pruning:** A utility pruning technique where large-scale power equipment is used to cut back branches (5.9.2.2).
- 4.29 parent branch or stem:** A tree trunk, limb, or prominent branch from which shoots or stems grow.
- 4.30 peeling:** For palms: The removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue. (syn.: shaving)
- 4.31 petiole:** A stalk of a leaf or frond.

- 4.32 phloem:** Inner bark conducting tissues that transport organic substances, primarily carbohydrates, from leaves and stems to other parts of the plant.
- 4.33 pollarding:** The maintenance of a tree by making internodal cuts to reduce the size of a young tree, followed by the annual removal of shoot growth at its point of origin (5.7.3).
- 4.34 pruning:** The selective removal of plant parts to meet specific goals and objectives.
- 4.35 qualified line-clearance arborist:** An individual who, through related training and on-the-job experience, is familiar with the equipment and hazards in line clearance and has demonstrated the ability to perform the special techniques involved. This individual may or may not be currently employed by a line-clearance contractor.
- 4.36 qualified line-clearance arborist trainee:** An individual undergoing line-clearance training and who, in the course of such training, is familiar with the hazards and equipment involved in line clearance and has demonstrated ability in the performance of the special techniques involved.
- 4.37 raising:** Selective pruning to provide vertical clearance (5.6.3).
- 4.38 reduction:** Selective pruning to decrease height and/or spread (5.6.4).
- 4.39 remote/rural areas:** Locations associated with very little human activity, land improvement, or development.
- 4.40 restoration:** Selective pruning to improve the structure, form, and appearance of trees that have been severely headed, vandalized, or damaged (5.7.4).
- 4.41 shall:** As used in this standard, denotes a mandatory requirement.
- 4.42 should:** As used in this standard, denotes an advisory recommendation.
- 4.43 stub:** An undesirable short length of a branch remaining after a break or incorrect pruning cut is made.
- 4.44 thinning:** Selective pruning to reduce density of live branches (5.6.2).
- 4.45 throwline:** A small, lightweight line with a weighted end used to position a climber's rope in a tree.
- 4.46 topping:** The reduction of a tree's size using heading cuts that shorten limbs or branches back to a predetermined crown limit. Topping is not an acceptable pruning practice (5.5.7).
- 4.47 tracing:** The removal of loose, damaged tissue from in and around the wound.
- 4.48 urban/residential areas:** Locations, such as populated areas including public and private property, that are normally associated with human activity.
- 4.49 utility:** An entity that delivers a public service, such as electricity or communications.

4.50 utility space: The physical area occupied by a utility's facilities and the additional space required to ensure its operation.

4.51 vista pruning: Selective pruning to allow a specific view (5.7.5).

4.52 watersprouts: New stems originating from epicormic buds. (syn.: epicormic shoots)

4.53 wound: An opening that is created when the bark of a live branch or stem is penetrated, cut, or removed.

4.54 woundwood: Partially differentiated tissue responsible for closing wounds. Woundwood develops from callus associated with wounds.

4.55 xylem: Wood tissue. Active xylem is sapwood; inactive xylem is heartwood.

4.56 young tree: A tree young in age or a newly transplanted tree.

5 Pruning practices

5.1 Tree inspection

5.1.1 An arborist or arborist trainee shall visually inspect each tree before beginning work.

5.1.2 If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.

5.2 Tools and equipment

5.2.1 Equipment and work practices that damage living tissue and bark beyond the scope of the work should be avoided.

5.2.2 Climbing spurs shall not be used when climbing and pruning trees. Exceptions:

-when limbs are more than throwline distance apart and there is no other means of climbing the tree;

-when the bark is thick enough to prevent damage to the cambium;

-in remote or rural utility rights-of-way.

5.3 Pruning cuts

5.3.1 Pruning tools used in making pruning cuts shall be sharp.

5.3.2 A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

5.3.3 A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem (see Figure 5.3.3).

5.3.4 The final cut shall result in a flat surface with adjacent bark firmly attached.

5.3.5 When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

5.3.6 Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

5.3.7 A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb (see Figure 5.3.7).

5.3.8 Severed limbs shall be removed from the crown upon completion of the pruning, at times when the tree would be left unattended, or at the end of the workday.

Figure 5.3.2. – A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark.

Figure 5.3.3. – A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem .

Figure 5.3.7. – A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb.

5.4 Wound treatment

5.4.1 Wound treatments should not be used to cover wounds or pruning cuts, except when recommended for disease, insect, mistletoe, or sprout control, or for cosmetic reasons.

5.4.2 Wound treatments that are damaging to tree tissues shall not be used.

5.4.3 When tracing wounds, only loose, damaged tissue should be removed.

5.5 Pruning objectives

5.5.1 Pruning objectives shall be established prior to beginning any pruning operation. To obtain the defined objective, the growth cycles and structure of individual species and the type of pruning to be performed should be considered.

5.5.3 Not more than 25 percent of the foliage should be removed within an annual growing season. The percentage and distribution of foliage to be removed shall be adjusted according to the plant's species, age, health, and site.

5.5.4 Not more than 25 percent of the foliage of a branch or limb should be removed when it is cut back to a lateral. That lateral should be large enough to assume apical dominance.

5.5.5 Pruning cuts should be made in accordance with 5.3 Pruning cuts.

5.5.6 Heading should be considered an acceptable practice for shrub or specialty pruning when needed to reach a defined objective.

5.5.7 Topping and lion's tailing shall be considered unacceptable pruning practices for trees.

5.6 Pruning types

Specifications for pruning should consist of, but are not limited to, one or more of the following types:

5.6.1 Clean: Cleaning shall consist of selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches.

5.6.1.1 Location of parts to be removed shall be specified.

5.6.1.2 Size range of parts to be removed shall be specified.

5.6.2 Thin: Thinning shall consist of selective pruning to reduce density of live branches.

5.6.2.1 Thinning should result in an even distribution of branches on individual limbs and throughout the crown.

5.6.2.2 Not more than 25 percent of the crown should be removed within an annual growing season.

5.6.2.3 Location of parts to be removed shall be specified.

5.6.2.4 Percentage of foliage and size range of parts to be removed shall be specified.

5.6.3 Raise: Raising shall consist of selective pruning to provide vertical clearance.

5.6.3.1 Vertical clearance should be specified.

5.6.3.2 Location and size range of parts to be removed should be specified.

5.6.4 Reduce: Reduction shall consist of selective pruning to decrease height and/or spread.

5.6.4.1 Consideration shall be given to the ability of a species to tolerate this type of pruning.

5.6.4.2 Location of parts to be removed and clearance should be specified.

5.6.4.3 Size range of parts should be specified.

5.7 Specialty pruning

Consideration shall be given to the ability of a species to tolerate specialty pruning, using one or more pruning types (5.6).

5.7.1 Young trees

5.7.1.1 The reasons for young tree pruning may include, but are not limited to, reducing risk, maintaining or improving tree health and structure, improving aesthetics, or satisfying a specific need.

5.7.1.2 Young trees that will not tolerate repetitive pruning and have the potential to outgrow their space should be considered for relocation or removal.

5.7.1.3 At planting

5.7.1.3.1 Pruning should be limited to cleaning (5.6.1).

5.7.1.3.2 Branches should be retained on the lower trunk.

5.7.1.4 Once established

5.7.1.4.1 Cleaning should be performed (5.6.1).

5.7.1.4.2 Rubbing and poorly attached branches should be removed.

5.7.1.4.3 A central leader or leader(s) as appropriate should be developed.

5.7.1.4.4 A strong, properly spaced scaffold branch structure should be selected and maintained.

5.7.1.4.5 Interfering branches should be reduced or removed.

5.7.2 Espalier

5.7.2.1 Branches that extend outside the desired plane of growth shall be pruned or tied back.

5.7.2.2 Ties should be replaced as needed to prevent girdling the branches at the attachment site.

5.7.3 Pollarding

5.7.3.1 Consideration shall be given to the ability of the individual tree to respond to pollarding.

5.7.3.2 Management plans shall be made prior to the start of the pollarding process for routine removal of watersprouts.

5.7.3.3 Internodal cuts shall be made at specific locations to start the pollarding process. After the initial cuts are made, no additional internodal cut shall be made.

5.7.3.4 Watersprouts growing from the cut ends of branches (knuckles) should be removed annually during the dormant season.

5.7.4 Restoration

5.7.4.1 Restoration shall consist of selective pruning to improve the structure form, and appearance of trees that have been severely headed, vandalized, or damaged.

5.7.4.2 Location in tree, size range of parts, and percentage of watersprouts to be removed should be specified.

5.7.5 Vista pruning

5.7.5.1 Vista pruning shall consist of selective pruning to allow a specific view.

5.7.5.2 Size range of parts, location in tree, and percentage of foliage to be removed should be specified.

5.8 Palm pruning

5.8.1 Palm pruning should be performed when fronds, fruit, or loose petioles may create a dangerous condition.

5.8.2 Live healthy fronds, initiating at an angle of 45 degrees or greater from horizontal, with frond tips at or below horizontal, should not be removed.

5.8.3 Fronds removed should be severed close to the petiole base without damaging living trunk tissue.

5.8.4 Palm peeling (shaving) should consist of the removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue.

5.9 Utility pruning

5.9.1 General

5.9.1.1 The purpose of utility pruning is to prevent the loss of service, comply with mandated clearance laws, prevent damage to equipment, avoid access impairment, and uphold the intended usage of the facility/utility space.

5.9.1.2 Only a qualified line clearance arborist or line clearance arborist trainee shall be assigned to line clearance work in accordance with ANSI Z133.1, 29, CFR 1910.331 – 335, 29 CFR 1910.268 or 29 CFR 1910.269.

5.9.1.3 Utility pruning operations are exempt from requirements in 5.1 Tree Inspection:

5.1.1 An arborist or arborist trainee shall visually inspect each tree before beginning work.

5.1.2 If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.

5.9.1.4 Safety inspections of the work area are required as outlined in ANSI Z133.1 4.1.3, job briefing.

5.9.2 Utility crown reduction pruning

5.9.2.1 Urban/residential environment

5.9.2.1.1 Pruning cuts should be made in accordance with 5.3, Pruning cuts. The following requirements and recommendations of 5.9.2.1.1 are repeated from 5.3 Pruning cuts.

5.9.2.1.1.1 A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting in the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

5.9.2.1.1.2 A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem (see Figure 5.3.3).

5.9.2.1.1.3 The final cut shall result in a flat surface with adjacent bark firmly attached.

5.9.2.1.1.4 When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

5.9.2.1.1.5 Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be pre-cut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

5.9.2.1.1.6 A final cut that removes a branch with a narrow angle of attachment should be made from the bottom of the branch to prevent damage to the parent limb (see Figure 5.3.7).

5.9.2.1.2 A minimum number of pruning cuts should be made to accomplish the purpose of facility/utility pruning. The natural structure of the tree should be considered.

5.9.2.1.3 Trees directly under and growing into facility/utility spaces should be removed or pruned. Such pruning should be done by removing entire branches or by removing branches that have laterals growing into (or once pruned, will grow into) the facility/utility space.

5.9.2.1.4 Trees growing next to, and into or toward facility/utility spaces should be pruned by reducing branches to laterals (5.3.3) to direct growth away from the utility space or by removing entire branches. Branches that, when cut, will produce watersprouts that would grow into facilities and/or utility space should be removed.

5.9.2.1.5 Branches should be cut to laterals or the parent branch and not at a pre-established clearing limit. If clearance limits are established, pruning cuts should be made at laterals or parent branches outside the specified clearance zone.

5.9.2.2 Rural/remote locations – mechanical pruning

Cuts should be made close to the main stem, outside of the branch bark ridge and branch collar. Precautions should be taken to avoid stripping or tearing of bark or excessive wounding.

5.9.3 Emergency service restoration

During a utility-declared emergency, service must be restored as quickly as possible in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268, or 29 CFR 1910.269. At such times it may be necessary, because of safety and the urgency of service restoration, to deviate from the use of proper pruning techniques as defined in this standard. Following the emergency, corrective pruning should be done as necessary.

Annex A (informative)

Reference publications

International Society of Arboriculture (ISA). 1995. Tree Pruning Guidelines. Savoy, IL: International Society of Arboriculture (ISA).