

APPENDIX B
ARBORIST REPORT



CERTIFIED ARBORIST REPORT

PROJECT LOCATION:
4525 Union Avenue
San Jose, CA 95124

PREPARED FOR:
The Harker School
500 Saratoga Avenue
San Jose, CA 95128

PREPARED BY:
HMH
1570 Oakland Road
San Jose, CA 95131

June 18, 2012
REVISED August 1, 2012

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Certified Arborist #RM-7281A

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SCOPE OF WORK

HMH was contracted by The Harker School to conduct a tree survey, assessment and arborist report for its property located at 4525 Union Avenue in San Jose, California. Our scope of services did not tag and assess the condition of every tree within the site boundary, but focused mainly along the northern and southern property limits and the interior portion of the campus, relative to the proposed site plan prepared by HMH. In addition, we measured and assessed a number of trees immediately adjacent to, but outside the project's southern boundary limit (See *Exhibit A for Limit of Work Diagram and Tables 1 and 2 for Tree Evaluation Summaries*)

SITE ANALYSIS

The site is a former Santa Clara County children's shelter, encompassing approximately 7.5 acres. The property is relatively level and slopes gently west to east, toward Union Avenue. Currently, the site is mostly abandoned, but still partially occupied by the children's shelter. The main administration building, including a cafeteria and assembly space, fronts Union Avenue. A parking lot separates the administration building from the street. Six detached residential cottages are positioned to the west of the main administration building in the middle of the campus and arranged around a main courtyard. Positioned along the rear (west) property limit are the school building and recreation center. A large open lawn area, outdoor amphitheater and children's playground are nearby. Several small courtyards and turf areas are also scattered throughout the project site.

PLANNED IMPROVEMENTS

The planned Harker School site plan proposes several changes to the existing campus. These include the addition of a new two story multi-purpose building, a 20' wide driveway and turnabout with student drop off along the southern property limit, emergency vehicle access, pool, pool building/locker room expansion, basketball courts, turf field and the demolition of two existing buildings.

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.
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, 2012, HMM conducted a site visit and visual inspection of 121 trees deemed to be affected by the proposed future development at the Harker site. Later, we returned on August 1, 2012 and surveyed an additional 59 onsite and 27 offsite trees that could also be affected. Overall, there is a mix of mature and young trees, native and non-native species, some healthy and others not. Generally, the health of the trees inspected is reasonably good, albeit many are lacking care that would greatly improve structure and appearance. Most will be potentially affected by the proposed development.

We observed 13 different species of trees onsite: Australian Willow, Bradford Pear, Brazilian Pepper, Chinese Pistache, Coast Live Oak, Crape Myrtle, Evergreen Pear, Goldenrain Tree, Jacaranda, Japanese Flowering Crabapple, London Plane Tree, Mayten Tree, Southern Magnolia and Tulip Tree.

Offsite, there were 5 varieties: Flowering Cherry, Loquat, Purple Leaf Plum, Southern Live Oak and White Gum.

The range in size was 2.5 inches to 23.6 inches DBH onsite and 11.5 inches to 33.1 inches DBH offsite.

Of the 19 species observed, only one is native to California - the Coast Live Oak, though the City of San Jose does give special consideration to the London Plane Tree. According to Guidelines for Inventorying, Evaluating, and Mitigating Impacts to Landscaping Trees in the City of San Jose: "*Native means San Jose Native, including but not limited to Oaks, Willow, Maple, Ash, Cottonwood, Buckeye, and Sycamore.*"

Of the 207 trees tagged overall, only two onsite trees are considered ordinance-size by the City of San Jose: #75 London Plane Tree and #97 Coast Live Oak. Offsite, there are 22 ordinance-size trees: #181-184, #187-191, #193-194, #196-197, #199, #201 -204, #206 White Gum Tree and #201 Purple Leaf Plum.

(Please see Exhibit B for Tree Location Map and Tables 1 and 2 for Tree Evaluation Summary for specifications, notes and recommendations regarding each tree).

GENERAL OBSERVATIONS, RECOMMENDATIONS AND PHOTOS



Australian Willow #5, #4, #6 and #7 (L-R)



Species: Australian Willow (*Geijera parviflora*)

Tree tag: #4-13, #17-22, #128-131, #133, #135-137, #139-149

Observations: All of the Australian Willows have been planted in a row along the northern and southern property limits and are immediately adjacent to an existing perimeter site wall. The trees are generally in good condition, albeit neglected. Some have been improperly staked and are severely leaning, often against the perimeter site wall. In addition, there is evidence of leaf scale and suppressed growth as a result of stress and overcrowding.

Recommendations: Remove trees in declining health and/or severely leaning, Tree #4, #5, #7, #11, #13, #17, #21, #128, #130-131, #133, #137, #139, #141 and #147.



Jacaranda #1, #81, #80, #79 (L-R)



Species: Jacaranda (*Jacaranda mimosifolia*)

Tree tag: #1, #79-81, #122, #157-159

Observations: Generally, the Jacarandas observed on site are in relatively good condition, albeit stressed. All harbor thin crowns, the result of frost damage commonly found on tropical natives planted in Northern California. Tree #81 is leaning severely and #159 has incurred trunk damage and is in decline.

Recommendations: Remove Trees #81 and #159. Water more frequently and deeply during dry season to encourage full canopy and deeper root growth. When frost damage occurs, prune damaged limbs after threat of frost has passed in late spring (see *Addendum A - ANSI A300 - Part 1- Pruning Standards*).



Goldenrain Tree # 85, #84, #88, #87 and #86 (L-R)

Species: Goldenrain Tree (*Koelreuteria paniculata*)

Tree tag: #84-88, #124-127, #132, #134, #138

Observations: Some of the Goldenrain Trees appear to be in reasonably good condition and health considering the limited width of planting strip in which they have been planted. A few, #124, #126, #133 and #135 exhibit severe dieback and are in decline.

Recommendations: Remove trees # 123, #125, #132 and #134. Consider balanced fertilizer injections, 8-8-8 or 10-10-10, outside drip line to encourage lateral root growth and to improve lateral stability. After leaf drop, thin canopy 10% to reduce wind load and potential for shearing (see *Addendum A - ANSI A300 - Part 1- Pruning Standards*).



Crape Myrtle #117, #105, #115 and #119 (L-R)

Species: Crape Myrtle (*Lagerstroemia indica*)

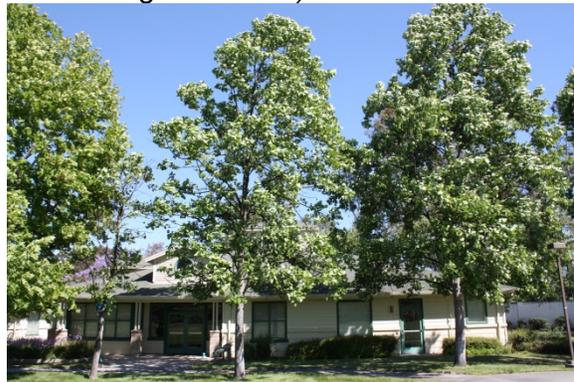
Tree tag: #55, #61, #105, #115, #117-121

Observations: There are 5 mature Crape Myrtles positioned near the existing cafeteria, 4 juveniles, 2 within the main school courtyard and 2 near the gymnasium. All have excellent structure and appear in good health.

Recommendations: Thin and reduce canopies of mature species near cafeteria 10-15% to limit crowding (see Addendum A - ANSI A300 - Part 1- Pruning Standards).



Tulip Tree #93, #92, #91, #90, #72, #71 and #70 (L-R)



Species: Tulip Tree (*Liriodendron tulipifera*)

Tree tag: #54, #56-60, #69-72, #74, #90-96

Observations: Overall, the Tulip trees are in distress. Like the Jacaranda, the Tulip tree is a tropical native and is challenged to thrive in Northern California. The trees on site all exhibit evidence of tree scale, clearly manifested in sticky "honeydew" secretions left behind on the leaves and trunk by the tulip tree scale (*Toumeyella liriodendri*).

Recommendations: Control infestation with Imidacloprid, commonly sold as Admire, Condifor, Gaucho, Premier, Premise, Provado, and Marathon, applied at a rate of 0.05-0.125lbs/acre. It's best applied in early spring before new growth occurs and after the danger of freezing temperatures has passed. Always follow manufacturer recommendations for use and application.



Tree #49, #48, #51 and #50 (L-R)



Species: Southern Magnolia (*Magnolia grandiflora*)

Tree tag: #48-52, #180

Observations: Five of the six Magnolia specimens, Trees #48-51 and #180, are undersized and weak. They are confined to a very small planter space, exhibit severe trunk sunscald, general maintenance neglect and possible root girdling.

Recommendations: Remove unhealthy trees, #48-51 and #180. Wrap remaining Tree #52 trunk with burlap to protect. Amend soil with peat moss and water regularly, especially in the dry season. If root girdling has occurred, remove this tree also.



Japanese Flowering Crabapple #29, #30, #31, #36, #37 and #38 (L-R)

Species: Japanese Flowering Crabapple (*Malus floribunda*)

Tree tag: #2-3, #29-38, #100-104, #106-114, #116, #160-169

Observations: Based on the estimated age of the existing campus, the lifespan of these trees has reached its end; all trees are dead, dying or will be in decline soon.

Recommendations: Advise removing all trees and replacing with a longer lifespan species, such as Crape Myrtle.



London Plane Tree #75, #73, #53 and #15 (L-R)

Species: London Plane Tree (*Platanus x acerifolia*)

Tree tag: #15-16, #53, #73, #75

Observations: Four of five are very good specimen trees, with good structure and health. Some evidence of anthracnose, or lesions or cankers found along major veins and curling/dying along edges of young leaves. Tree # 15 is exhibiting some moderate crown thinning, likely as a result of its location within an impervious courtyard/children's playground.

Recommendations: Anthracnose is not typically fatal for London Plane trees and is relatively easily controlled with fertilization, pruning, watering and pest control practices to encourage vigorous growth. Otherwise, fungicides, mancozeb (Fore, Dithane, Mancozeb), chlorothalonil (Daconil, Bravo, otho-multipurpose fungicide), thiophanate-methyl (Cleary's 3336, Domain) and

propiconazole (Banner) can be effective if properly applied during the infection period. Always follow manufacturer recommendations for use and application.



Bradford Callery Pear #45, #46, #47, #39 and #40 (L-R)

Species: Bradford Callery Pear (*Pyrus calleryana* 'Bradford')

Tree tag: #14, #39-40, #45-47, #66-68, #76-78, #151-156

Observations: All but one of these specimens are planted within 10 feet of existing structures. The other is adjacent to a children's playground. All are susceptible to breakage and two have lost large limbs recently. Overall, health is satisfactory at best, some faring better than others.

Recommendations: Due to close proximity to structures and play area, and recent evidence of failure, it is recommended that all trees be removed.



Evergreen Pear #99, #98, #89 and #82 (L-R)

Species: Evergreen Pear (*Pyrus kawakami*)

Tree tag: #82-83, #89, #98-99

Observations: Generally, all appear in reasonably good condition and health, exhibiting good structure. Some mild dieback was noted on a few, likely the result of fireblight (*Erwinia amylovora*), a bacterium common among Evergreen Pear species.

Recommendations: Inject balanced fertilizer (10-10-10) along dripline and avoid subjecting the Evergreen Pear to prolonged periods of drought. Promptly prune all areas afflicted by fireblight. Pruning shears must be sterilized in part water, one part bleach after each cut to prevent spread of the disease to other parts of the tree (see Addendum A - ANSI A300 - Part 1-

Pruning Standards). Spray trees during dormant months with neem oil, copper sulfate or bordeaux mix to help control any overwintering fireblight pathogens.



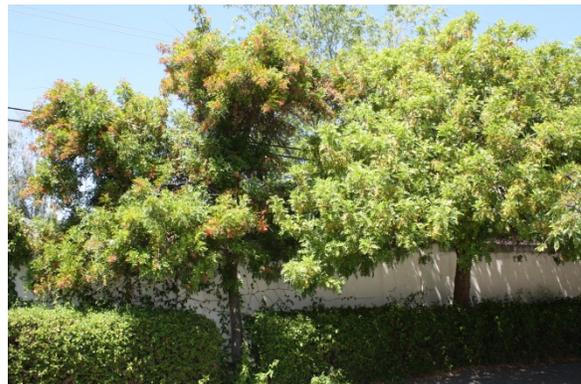
Coast Live Oak #97, #65, #64, #63, #62 (L-R)

Species: Coast Live Oak (*Quercus agrifolia*)

Tree tag: #62-65, #97

Observations: Tree #97 is an ordinance sized tree and is in excellent health. The remaining four are less healthy and attractive, all exhibiting signs of anthracnose or browning leaf margins (*Discula umbrinella*).

Recommendations: Consider preserving, protecting and incorporating the ordinance tree into the new site as a specimen, if possible. Canopy should be thinned 10% to enhance structure and appearance (see *Addendum A - ANSI A300 - Part 1- Pruning Standards*). At minimum, future site improvements must plan impervious paving and grading changes outside existing dripline of tree. For oaks #62-65, weather has dramatic effect on anthracnose: dry summer weather should help clear disease. Otherwise, sprays of thiophanate-methyl (Cleary 3336) can be used, per manufacturers recommendations.



Brazilian Pepper Tree #26, #25, #42 and #41 (L-R)

Species: Brazilian Pepper Tree (*Shinus terebinthefolius*)

Tree tag: #23-28, #41-44, #170-178

Observations: Like the Willow trees, the Pepper trees have been planted in a row along the northern and southern property limits and are immediately adjacent to an existing perimeter site wall separating the neighboring residential community from the site. They are generally in good condition with very dense crowns. A few have been improperly staked and are leaning, some against the perimeter site wall. The adjacent asphalt pathway has been lifted by the Pepper's root system. In California, it is considered invasive in coastal regions by the California Invasive Plant Council.

Recommendations: Overall, this species could benefit from some crown thinning, 10-15% and a reduction (50%) in the overall number of trees to allow the remaining species to reach unsuppressed maturity (see *Addendum A - ANSI A300 - Part 1- Pruning Standards*).

Species: Chinese Pistache Tree

Tree tag: #127

Observations: The only Pistache on the site is planted adjacent to the sidewalk along Union Avenue and complements planting scheme that currently exists within the right of way. It is a very attractive young specimen.

Recommendations: To achieve specimen status, it will need more room to expand its canopy. Consider removing nearby Australian Willow.



Mayten Tree #150 and #179 (L-R)

Species: Mayten Tree

Tree tag: #150, #179

Observations: Both trees are squeezed into small planters adjacent to a large wall and are extremely undersized for their presumed age. This species needs ample root space to grow and thrive.

Recommendations: Remove both trees.

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.

Tree relocation: Trees to be relocated shall be relocated during the fall months. For deciduous trees, relocation shall occur after leaf drop. The soil beneath the dripline of trees to be relocated shall be watered 72 hours prior to relocation so the soil is moist, but not saturated at the time of relocation. A landscape architect or arborist shall supervise the relocation so tree can be transplanted in a optimal orientation. Root ball excavation shall be no less than 30 inches deep. The root ball excavation diameter shall be no less than 10 inches per 1 inch of trunk diameter. Rootball shall be supported during transport and wrapped in wire or burlap. All trees shall be transplanted within 48 hours of excavation. Transplant hole shall be prepared at two times the diameter of the rootball, but no deeper than the depth of the rootball. Trimming and pruning of relocated tree shall be limited to diseased or damaged limbs for the year following the transplant.

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 nutrient 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 roots 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.

LIMIT OF WORK

UNION AVENUE



NOTE: SURVEY WORK ALONG THE SOUTHERN PROPERTY INCLUDED ASSESSMENT OF TREES ON BOTH SIDES OF THE BOUNDARY WALL



EXHIBIT A
LIMIT OF WORK DIAGRAM
CERTIFIED ARBORIST REPORT
THE HARKER SCHOOL
NOT TO SCALE

8/1/2012



UNION AVENUE



NOTE: SURVEY WORK ALONG THE SOUTHERN PROPERTY INCLUDED ASSESSMENT OF TREES ON BOTH SIDES OF THE BOUNDARY WALL



EXHIBIT B
 TREE LOCATION MAP
 CERTIFIED ARBORIST REPORT
 THE HARKER SCHOOL
 NOT TO SCALE
 8/1/2012

TABLE 1

TREE EVALUATION SUMMARY - ONSITE TREES

THE HARKER SCHOOL - UNION AVENUE SITE

August 1, 2012

TREE #	BOTANICAL NAME	COMMON NAME	DIAMETER BREAST HEIGHT* (in inches)	TRUNK CIRCUMFERENCE (in inches)	SAVE	REMOVE	SUITABILITY FOR PRESERVATION**	ORDINANCE SIZE TREES***	HEALTH**** 1=Poor 5=Good	COMMENTS
1	Jacaranda mimosifolia	Jacaranda	9.5	30	X		Good	No	4	Slight lean, good structure
2	Malus floribunda	Japanese Flowering Crabapple	5.1	16		X	Poor	No	2	Suppressed growth, moderate dieback
3	Malus floribunda	Japanese Flowering Crabapple	4.5	14		X	Poor	No	2	Suppressed growth, moderate dieback
4	Geijera parviflora	Australian Willow	8.3	26		X	Poor	No	3	Severe lean
5	Geijera parviflora	Australian Willow	7.6	24		X	Poor	No	3	Severe lean, thinning crown
6	Geijera parviflora	Australian Willow	8.9	28	X		Good	No	4	Slight lean, good structure
7	Geijera parviflora	Australian Willow	9.9	31		X	Moderate	No	3	Thinning crown
8	Geijera parviflora	Australian Willow	8.0	25	X		Good	No	4	Good structure
9	Geijera parviflora	Australian Willow	8.0	25	X		Good	No	4	Good structure
10	Geijera parviflora	Australian Willow	8.3	26	X		Good	No	4	Good structure
11	Geijera parviflora	Australian Willow	5.7	18		X	Poor	No	3	Severe lean
12	Geijera parviflora	Australian Willow	8.3	26	X		Good	No	4	Good structure
13	Geijera parviflora	Australian Willow	5.4	17		X	Poor	No	3	In decline, severe lean, one sided growth
14	Pyrus calleryana 'Bradford'	Bradford Callery Pear	13.1	41		X	Moderate	No	4	Entomosporium leaf spot, mild fireblight
15	Platanus x acerifolia	London Plane Tree	8.3	26	X		Good	No	3	Thinning crown, anthracnose
16	Platanus x acerifolia	London Plane Tree	13.1	41	X		Good	No	4	Anthracnose, good structure
17	Geijera parviflora	Australian Willow	5.4	17		X	Poor	No	3	In decline, thinning crown, leaf scale
18	Geijera parviflora	Australian Willow	5.7	18	X		Good	No	4	Slight lean, good structure
19	Geijera parviflora	Australian Willow	5.4	17	X		Good	No	4	Slight lean, good structure
20	Geijera parviflora	Australian Willow	5.7	18	X		Good	No	4	Slight lean, good structure
21	Geijera parviflora	Australian Willow	5.7	18		X	Moderate	No	3	Thinning crown
22	Geijera parviflora	Australian Willow	7.6	24	X		Good	No	4	Slight lean, good structure
23	Schinus terebinthefolius	Brazilian Pepper Tree	5.7	18		X	Moderate	No	3	Suppressed growth
24	Schinus terebinthefolius	Brazilian Pepper Tree	11.1	35	X		Good	No	4	Slight lean, good structure
25	Schinus terebinthefolius	Brazilian Pepper Tree	13.4	42		X	Moderate	No	3	Specimen, with care
26	Schinus terebinthefolius	Brazilian Pepper Tree	11.1	35	X		Good	No	4	Suppressed growth
27	Schinus terebinthefolius	Brazilian Pepper Tree	11.8	37		X	Moderate	No	3	Severe lean
28	Schinus terebinthefolius	Brazilian Pepper Tree	11.5	36		X	Moderate	No	3	Suppressed growth
29	Malus floribunda	Japanese Flowering Crabapple	6.4	20		X	Poor	No	1	Severe dieback
30	Malus floribunda	Japanese Flowering Crabapple	5.7	18		X	Poor	No	2	Moderate dieback
31	Malus floribunda	Japanese Flowering Crabapple	6.0	19		X	Poor	No	1	Dead
32	Malus floribunda	Japanese Flowering Crabapple	6.0	19		X	Poor	No	1	Dead
33	Malus floribunda	Japanese Flowering Crabapple	5.4	17		X	Poor	No	2	Moderate dieback
34	Malus floribunda	Japanese Flowering Crabapple	5.7	18		X	Poor	No	2	Moderate dieback
35	Malus floribunda	Japanese Flowering Crabapple	3.8	12		X	Poor	No	1	Dead
36	Malus floribunda	Japanese Flowering Crabapple	7.0	22		X	Poor	No	2	Moderate dieback
37	Malus floribunda	Japanese Flowering Crabapple	4.5	14		X	Poor	No	1	Severe dieback
38	Malus floribunda	Japanese Flowering Crabapple	5.4	17		X	Poor	No	1	Severe dieback
39	Pyrus calleryana 'Bradford'	Bradford Callery Pear	14.6	46		X	Moderate	No	3	Suppressed, one sided growth
40	Pyrus calleryana 'Bradford'	Bradford Callery Pear	15.0	47		X	Moderate	No	3	Suppressed, one sided growth
41	Schinus terebinthefolius	Brazilian Pepper Tree	14.4	45	X		Good	No	4	Slight lean, good structure
42	Schinus terebinthefolius	Brazilian Pepper Tree	7.6	24		X	Poor	No	3	Slight lean, poor structure
43	Schinus terebinthefolius	Brazilian Pepper Tree	11.8	37	X		Moderate	No	3	Slight lean, poor structure
44	Schinus terebinthefolius	Brazilian Pepper Tree	15.3	48	X		Good	No	4	Good structure
45	Pyrus calleryana 'Bradford'	Bradford Callery Pear	14.0	44		X	Poor	No	2	Branch split, one sided growth
46	Pyrus calleryana 'Bradford'	Bradford Callery Pear	14.0	44		X	Moderate	No	4	Codominant structure
47	Pyrus calleryana 'Bradford'	Bradford Callery Pear	14.0	44		X	Poor	No	3	Branch split, suppressed growth
48	Magnolia grandiflora	Southern Magnolia	3.8	12		X	Poor	No	2	Suppressed growth, trunk sunscald
49	Magnolia grandiflora	Southern Magnolia	3.5	11		X	Poor	No	2	Suppressed growth, trunk sunscald
50	Magnolia grandiflora	Southern Magnolia	4.1	13		X	Poor	No	2	Suppressed growth, trunk sunscald
51	Magnolia grandiflora	Southern Magnolia	4.1	13		X	Poor	No	2	Suppressed growth, trunk sunscald

TABLE 1

TREE EVALUATION SUMMARY - ONSITE TREES

THE HARKER SCHOOL - UNION AVENUE SITE

August 1, 2012

TREE #	BOTANICAL NAME	COMMON NAME	DIAMETER BREAST HEIGHT* (in inches)	TRUNK CIRCUMFERENCE (in inches)	SAVE	REMOVE	SUITABILITY FOR PRESERVATION**	ORDINANCE SIZE TREES***	HEALTH**** 1=Poor 5=Good	COMMENTS
52	Magnolia grandiflora	Southern Magnolia	4.1	13	X		Good	No	4	Good structure
53	Platanus x acerifolia	London Plane Tree	11.1	35	X		Good	No	4	Good structure
54	Liriodendron tulipifera	Tulip Tree	7.6	24	X		Good	No	4	Thinning crown, tree scale
55	Lagerstroemia indica	Crape Myrtle	2.5	8	X		Good	No	4	Good structure
56	Liriodendron tulipifera	Tulip Tree	7.0	22	X		Good	No	4	Thinning crown, tree scale
57	Liriodendron tulipifera	Tulip Tree	8.9	28	X		Moderate	No	3	Thinning crown, tree scale
58	Liriodendron tulipifera	Tulip Tree	7.3	23	X		Moderate	No	3	Thinning crown, tree scale
59	Liriodendron tulipifera	Tulip Tree	8.6	27	X		Moderate	No	3	Thinning crown, tree scale
60	Liriodendron tulipifera	Tulip Tree	7.6	24	X		Good	No	4	Thinning crown, tree scale
61	Lagerstroemia indica	Crape Myrtle	2.9	9	X		Good	No	4	Good structure
62	Quercus agrifolia	Coast Live Oak	12.7	40	X		Good	No	4	Anthraxnose
63	Quercus agrifolia	Coast Live Oak	6.4	20	X		Moderate	No	3	Anthraxnose
64	Quercus agrifolia	Coast Live Oak	12.7	40	X		Good	No	4	Anthraxnose
65	Quercus agrifolia	Coast Live Oak	14.0	44	X		Good	No	4	Anthraxnose
66	Pyrus calleryana 'Bradford'	Bradford Callery Pear	11.8	37		X	Moderate	No	4	Codominant structure
67	Pyrus calleryana 'Bradford'	Bradford Callery Pear	11.8	37		X	Moderate	No	4	Codominant structure
68	Pyrus calleryana 'Bradford'	Bradford Callery Pear	13.1	41		X	Moderate	No	4	Codominant structure
69	Liriodendron tulipifera	Tulip Tree	9.5	30	X		Moderate	No	3	Thinning crown, tree scale
70	Liriodendron tulipifera	Tulip Tree	14.3	45	X		Good	No	4	Good structure, tree scale
71	Liriodendron tulipifera	Tulip Tree	12.1	38	X		Moderate	No	3	Thinning crown, tree scale
72	Liriodendron tulipifera	Tulip Tree	8.0	25	X		Poor	No	2	Moderate dieback, suppressed growth
73	Platanus x acerifolia	London Plane Tree	15.9	50	X		Good	No	4	Thinning crown
74	Liriodendron tulipifera	Tulip Tree	8.6	27	X		Poor	No	2	Moderate dieback, suppressed growth
75	Platanus x acerifolia	London Plane Tree	19.1	60	X		Good	Yes	4	Thinning crown
76	Pyrus calleryana 'Bradford'	Bradford Callery Pear	14.6	46		X	Moderate	No	3	Suppressed, one sided growth
77	Pyrus calleryana 'Bradford'	Bradford Callery Pear	12.1	38		X	Moderate	No	3	Suppressed growth
78	Pyrus calleryana 'Bradford'	Bradford Callery Pear	15.0	47		X	Moderate	No	3	Suppressed, one sided growth
79	Jacaranda mimosifolia	Jacaranda	12.4	39	X		Good	No	4	Slight lean, thinning crown
80	Jacaranda mimosifolia	Jacaranda	8.6	27	X		Moderate	No	3	Slight lean, suppressed growth
81	Jacaranda mimosifolia	Jacaranda	10.5	33	X		Poor	No	3	Severe lean, thinning crown
82	Pyrus kawakami	Evergreen Pear	7.0	22	X		Good	No	3	Slight lean, thinning crown
83	Pyrus kawakami	Evergreen Pear	9.9	31	X		Good	No	4	Suppressed growth
84	Koelreuteria paniculata	Goldenrain Tree	12.1	38	X		Good	No	4	Good structure, suppressed growth
85	Koelreuteria paniculata	Goldenrain Tree	12.7	40	X		Good	No	4	Good structure, suppressed growth
86	Koelreuteria paniculata	Goldenrain Tree	12.7	40	X		Good	No	4	Good structure, suppressed growth
87	Koelreuteria paniculata	Goldenrain Tree	12.4	39	X		Good	No	4	Good structure, suppressed growth
88	Koelreuteria paniculata	Goldenrain Tree	11.1	35	X		Good	No	4	Slight lean, suppressed growth
89	Pyrus kawakami	Evergreen Pear	14.0	44	X		Good	No	4	Good structure
90	Liriodendron tulipifera	Tulip Tree	9.2	29	X		Poor	No	2	Moderate dieback
91	Liriodendron tulipifera	Tulip Tree	12.1	38	X		Moderate	No	3	Thinning crown
92	Liriodendron tulipifera	Tulip Tree	10.5	33	X		Poor	No	2	Moderate dieback
93	Liriodendron tulipifera	Tulip Tree	8.0	25	X		Poor	No	2	Moderate dieback
94	Liriodendron tulipifera	Tulip Tree	10.5	33	X		Moderate	No	3	Thinning crown
95	Liriodendron tulipifera	Tulip Tree	11.1	35	X		Moderate	No	3	Thinning crown
96	Liriodendron tulipifera	Tulip Tree	13.7	43	X		Moderate	No	3	Thinning crown
97	Quercus agrifolia	Coast Live Oak	23.6	74	X		Good	Yes	4	Specimen, with care
98	Pyrus kawakami	Evergreen Pear	11.5	36	X		Good	No	3	Moderate dieback
99	Pyrus kawakami	Evergreen Pear	9.9	31	X		Good	No	4	Thinning crown
100	Malus floribunda	Japanese Flowering Crabapple	7.0	22		X	Poor	No	2	Moderate dieback, trunk damage
101	Malus floribunda	Japanese Flowering Crabapple	5.7	18		X	Poor	No	2	Moderate dieback, trunk damage
102	Malus floribunda	Japanese Flowering Crabapple	9.5	30		X	Poor	No	2	Moderate dieback, trunk damage
103	Malus floribunda	Japanese Flowering Crabapple	6.0	19		X	Poor	No	2	Moderate dieback, trunk damage

TABLE 1

TREE EVALUATION SUMMARY - ONSITE TREES

THE HARKER SCHOOL - UNION AVENUE SITE

August 1, 2012

TREE #	BOTANICAL NAME	COMMON NAME	DIAMETER BREAST HEIGHT* (in inches)	TRUNK CIRCUMFERENCE (in inches)	SAVE	REMOVE	SUITABILITY FOR PRESERVATION**	ORDINANCE SIZE TREES***	HEALTH**** 1=Poor 5=Good	COMMENTS
104	Malus floribunda	Japanese Flowering Crabapple	7.3	23		X	Poor	No	2	Moderate dieback, trunk damage
105	Lagerstroemia indica	Crape Myrtle	3.8	12	X		Good	No	4	Good structure
106	Malus floribunda	Japanese Flowering Crabapple	8.0	25		X	Poor	No	2	Moderate dieback, trunk damage
107	Malus floribunda	Japanese Flowering Crabapple	6.4	20		X	Poor	No	2	Moderate dieback, trunk damage
108	Malus floribunda	Japanese Flowering Crabapple	5.7	18		X	Moderate	No	3	Thinning crown, trunk damage
109	Malus floribunda	Japanese Flowering Crabapple	7.0	22		X	Poor	No	2	Moderate dieback, trunk damage
110	Malus floribunda	Japanese Flowering Crabapple	6.7	21		X	Poor	No	2	Moderate dieback, trunk damage
111	Malus floribunda	Japanese Flowering Crabapple	8.9	28		X	Moderate	No	3	Thinning crown, trunk damage
112	Malus floribunda	Japanese Flowering Crabapple	7.3	23		X	Poor	No	2	Moderate dieback, trunk damage
113	Malus floribunda	Japanese Flowering Crabapple	6.7	21		X	Poor	No	2	Moderate dieback, trunk damage
114	Malus floribunda	Japanese Flowering Crabapple	8.3	26		X	Poor	No	3	Thinning crown, trunk damage
115	Lagerstroemia indica	Crape Myrtle	2.9	9	X		Good	No	4	Good structure
116	Malus floribunda	Japanese Flowering Crabapple	9.5	30		X	Poor	No	2	Moderate dieback, trunk damage
117	Lagerstroemia indica	Crape Myrtle	8.9	28	X		Good	No	4	Good structure
118	Lagerstroemia indica	Crape Myrtle	7.0	22	X		Good	No	4	Good structure
119	Lagerstroemia indica	Crape Myrtle	8.9	28	X		Good	No	4	Good structure
120	Lagerstroemia indica	Crape Myrtle	7.6	24	X		Good	No	4	Good structure
121	Lagerstroemia indica	Crape Myrtle	7.6	24	X		Good	No	3	Suppressed growth
122	Jacaranda mimosifolia	Jacaranda	0.0		X		Moderate	No	3	One sided
123	Koelreuteria paniculata	Goldenrain Tree	7.3	23		X	Moderate	No	2	Undersized, in decline
124	Koelreuteria paniculata	Goldenrain Tree	6.7	21	X		Moderate	No	3	Crown dieback, frost damage
125	Koelreuteria paniculata	Goldenrain Tree	6.7	21		X	Moderate	No	2	Undersized, in decline
126	Koelreuteria paniculata	Goldenrain Tree	5.1	16	X		Good	No	4	Good structure
127	Pistacia chinensis	Chinese Pistache	8.3	26	X		Good	No	4	Good structure
128	Geijera parviflora	Australian Willow	7.3	23	X		Moderate	No	3	Suppressed growth, one-sided
129	Geijera parviflora	Australian Willow	6.7	21	X		Moderate	No	4	Good structure
130	Geijera parviflora	Australian Willow	6.7	21	X		Moderate	No	3	Thinning crown
131	Geijera parviflora	Australian Willow	5.1	16	X		Moderate	No	3	Thinning crown, one sided
132	Koelreuteria paniculata	Goldenrain Tree	5.7	18		X	Poor	No	2	Severe dieback, in decline
133	Geijera parviflora	Australian Willow	5.4	17		X	Moderate	No	3	Thinning crown, suppressed growth
134	Koelreuteria paniculata	Goldenrain Tree	3.2	10		X	Poor	No	2	Severe dieback, in decline
135	Geijera parviflora	Australian Willow	5.4	17	X		Moderate	No	3	Suppressed growth
136	Geijera parviflora	Australian Willow	5.4	17	X		Moderate	No	3	Suppressed growth
137	Geijera parviflora	Australian Willow	5.7	18		X	Poor	No	1	Dead
138	Koelreuteria paniculata	Goldenrain Tree	9.5	30	X		Moderate	No	2	Codominant structure, broken limb
139	Geijera parviflora	Australian Willow	7.6	24		X	Moderate	No	3	Suppressed growth, one-sided
140	Geijera parviflora	Australian Willow	8.0	25	X		Moderate	No	3	Good structure, thinning crown
141	Geijera parviflora	Australian Willow	8.0	25		X	Moderate	No	3	Thinning crown, slight lean
142	Geijera parviflora	Australian Willow	6.7	21	X		Moderate	No	3	Suppressed growth, one-sided
143	Geijera parviflora	Australian Willow	7.6	24	X		Moderate	No	3	Suppressed growth, one-sided
144	Geijera parviflora	Australian Willow	6.0	19	X		Moderate	No	3	Suppressed growth, one-sided
145	Geijera parviflora	Australian Willow	8.3	26	X		Moderate	No	3	Good structure, thinning crown
146	Geijera parviflora	Australian Willow	5.7	18		X	Moderate	No	3	Thinning crown, suppressed growth
147	Geijera parviflora	Australian Willow	3.8	12		X	Moderate	No	3	Thinning crown, one sided
148	Geijera parviflora	Australian Willow	8.3	26	X		Moderate	No	3	Slight lean
149	Geijera parviflora	Australian Willow	8.6	27	X		Good	No	3	Good structure
150	Maytenus boaria	Mayten tree	7.0	22		X	Moderate	No	3	Severe lean, suppressed growth
151	Pyrus calleryana 'Bradford'	Bradford Callery Pear	12.7	40		X	Good	No	3	Good structure
152	Pyrus calleryana 'Bradford'	Bradford Callery Pear	13.4	42		X	Good	No	3	Good structure
153	Pyrus calleryana 'Bradford'	Bradford Callery Pear	6.7	21		X	Poor	No	2	Severe dieback, in decline
154	Pyrus calleryana 'Bradford'	Bradford Callery Pear	13.1	41		X	Good	No	3	Good structure
155	Pyrus calleryana 'Bradford'	Bradford Callery Pear	14.6	46		X	Moderate	No	3	One sided

TABLE 2

TREE EVALUATION SUMMARY - OFFSITE TREES

THE HARKER SCHOOL - UNION AVE

August 1, 2012

TREE #	BOTANICAL NAME	COMMON NAME	DIAMETER BREAST HEIGHT* (in inches)	TRUNK CIRCUMFERENCE (in inches)	SAVE	REMOVE	SUITABILITY FOR PRESERVATION**	ORDINANCE SIZE TREES***	HEALTH**** 1=Poor 5=Good	COMMENTS
181	Eucalyptus viminalis	White Gum	30.6	96	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
182	Eucalyptus viminalis	White Gum	20.4	64	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
183	Eucalyptus viminalis	White Gum	20.4	64	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
184	Eucalyptus viminalis	White Gum	19.7	62	X		Poor	Yes	2	Evidence of red gum psyllid, tortoise beetle
185	Eucalyptus viminalis	White Gum	15.9	50	X		Moderate	No	2	Evidence of red gum psyllid, tortoise beetle
186	Malus spp.	Flowering Cherry	17.2	54	X		Moderate	No	3	Moderate branch dieback
187	Eucalyptus viminalis	White Gum	22.3	70	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
188	Eucalyptus viminalis	White Gum	22.9	72	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
189	Eucalyptus viminalis	White Gum	24.8	78	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
190	Eucalyptus viminalis	White Gum	33.1	104	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
191	Eucalyptus viminalis	White Gum	17.8	56	X		Moderate	Yes	3	Evidence of red gum psyllid, tortoise beetle
192	Eriobotrya japonica	Loquat	13.1	41	X		Good	No	3	Suppressed growth
193	Eucalyptus viminalis	White Gum	26.1	82	X		Moderate	Yes	3	Evidence of red gum psyllid, tortoise beetle
194	Eucalyptus viminalis	White Gum	23.2	73	X		Moderate	Yes	3	Evidence of red gum psyllid, tortoise beetle
195	Quercus virginiana	Southern Live Oak	11.5	36	X		Good	No	3	Good structure
196	Eucalyptus viminalis	White Gum	23.6	74	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
197	Eucalyptus viminalis	White Gum	30.6	96	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
198	Eucalyptus viminalis	White Gum	15.6	49	X		Good	No	3	Evidence of red gum psyllid, tortoise beetle
199	Eucalyptus viminalis	White Gum	26.7	84	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
200	Eucalyptus viminalis	White Gum	26.1	82	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
201	Prunus cerasifera	Purple Leaf Plum	29.6	93	X		Moderate	Yes	3	Multi trunk, branch dieback
202	Eucalyptus viminalis	White Gum	26.1	82	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
203	Eucalyptus viminalis	White Gum	20.1	63	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
204	Eucalyptus viminalis	White Gum	22.6	71	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
205	Eucalyptus viminalis	White Gum	22.9	72	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
206	Eucalyptus viminalis	White Gum	19.4	61	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
207	Eucalyptus viminalis	White Gum	22.9	72	X		Good	Yes	3	Evidence of red gum psyllid, tortoise beetle
*	<i>DBH is measured at 24" above grade</i>									
**	<i>Suitability for Preservation is based on the following:</i>									
	<i>Good - Trees with good health and structural stability that have the potential for longevity at the site.</i>									
	<i>Moderate - Trees in somewhat declining health and/or exhibits structural defects that cannot be abated with treatment. The tree will require more intense management and will have a shorter lifespan than those in the 'Good' category.</i>									
	<i>Poor - Trees in poor health or with significant structural defects that cannot be mitigated. Tree is expected to decline, regardless of treatment.</i>									
***	<i>Ordinance size trees are defined as 18" DBH or greater</i>									
****	<i>Health is determined based on the following:</i>									
	<i>5 - A healthy, vigorous tree, reasonably free of disease, with good structure and form typical of the species.</i>									
	<i>4 - A tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.</i>									
	<i>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.</i>									
	<i>2 - A tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.</i>									
	<i>1 - A tree in severe decline, dieback of scaffold branches and or trunk, mostly epicormic growth; extensive structural defects that cannot be abated.</i>									

American National Standard for Tree Care Operations –
**Tree, Shrub, and Other Woody Plant
Maintenance – Standard Practices
(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).