



## Arborist Report

**Project: Thousand Oaks Teen Center**

Project # 1642-01-RC19

Location: 1375 & 1385 E Janss Rd  
Thousand Oaks, CA

Date: December 17, 2020

Prepared For: Conejo Recreation and Park District  
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## Introduction and Overview

RRM Design Group was contracted by Conejo Recreation and Park District to complete a tree inventory and arborist report. On March 18, 2020 RRM Design Group conducted a tree inventory of eight (8) trees located within the area of disturbance identified by a proposed retrofit project. The project site is bounded by Conejo Creek North Park to the north, East Janss Road to the south, Thousand Oaks Grant R. Brimhall Library to the east, and Moorpark Freeway to the west. The site is generally flat and drops off into a steep riparian drainage along the northern extent. There are two occupied office/recreational buildings within the limit of work: Thousand Oaks Teen Center and Goebel Adult Community Center.

Our scope of services includes tagging, measuring, assessing, and photographing the condition of all trees within the area of disturbance generated by a proposed retrofit project on the property. Health conditions are based on current site conditions. Site development/design may affect this health assessment.

## 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 (as feasible) with a metal tag and note its location on a map.
3. Measure each trunk circumference at 54" above grade per ISA standards.
4. Evaluate the health and structure of each tree using the following designations:

**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.

## Summary of Findings

Most of the specimens assessed are regionally native species. Of the eight (8) trees studied, three (3) are designated as landmark trees and four (4) are protected oak trees as defined by the City of Thousand Oaks' Municipal Code governing trees. Generally, their health is moderate with variations in their preservation suitability based on proposed site conditions associated with a planned development project and is noted in Table 2, attached.

Several of the specimens evaluated will be affected by the proposed development project primarily due to encroachment within the tree protection zone. The tree protection zones have been identified using a formula developed by an industry trusted source, *Trees and Development: A Technical Guide to Preservation of Trees During Land Development* (Matheny & Clark, 1998). This formula incorporates the species understood tolerance to construction, maturity, and vigor to generate tree protection zone radii for each individual specimen (Matheny & Clark, 1998, pp. 72-75). This technique differs from the City of Thousand Oaks' tree protection zone for both protected oaks and landmark trees, which is identified as "Using the dripline as a point of reference, the protected zone shall commence at a point five (5') feet outside of the dripline and extend inward to the trunk of the tree." (*The City of Thousand Oaks California Municipal Code*, 2019, 9-4.4202 & 9-4.4302). Although this can be an effective technique and can simplify identification and enforcement of the tree protection zone, it does not account for the specific needs of individual specimens. A tree's root zone typically radiates from the center of the root collar and does not necessarily follow the dripline of the tree's crown. The crown shape and location of an individual tree are generally a result of a combination of abiotic factors including,

but not limited to pruning, crowding, slope, wind, and structure. For example, a tree that has a main stem with a severe lean will displace the crown mass off-center respective to the root collar. In extreme examples, the crown may have very little to no overlap with the root collar (refer to tree 213 for an example). Defining the tree protection zone based on the observed dripline may work in some cases, however we feel using several factors unique to each specimen produces more accurate and consistent results.

There is one viable candidate for relocation. Tree 212 is a young coast live oak located near a proposed walkway and storage container. Both proposed improvements encroach within the tree protection zone of this specimen. This specimen has good vigor and should respond well to relocation if performed properly. It presents structural defects consistent with a volunteer tree that has been trimmed to the ground as a seedling and effectively headed at a young age, namely codominant stems with a low union. Although the attachment appears structurally sound, coast live oaks can harbor decay in these areas as the tree matures and should be monitored. Some pruning will be required to help mitigate long term issues as the tree matures, however it's advisable to limit pruning as much as feasible within at least one season of relocation. Note that this specimen is located on the northern side of the Teen Center building and should be relocated to an area of similar sun exposure to minimize the risk of sunscald to the main stems.

The range in size observed is 14.5 inches to 39.2 inches DBH. There are several multi-stemmed specimens present - most are coast live oak. The DBH of multi-stemmed trees is reported on Table 2 – Tree Evaluation Summary as a sum of all stems at 54" above finished grade.

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

*See Table 2 for Tree Evaluation Summary for types, sizes, and health status of trees.*

### **Municipal Code Governing Trees**

Refer to Chapter 4, *Article 42 - Oak Tree Preservation and Protection* and *Article 43 - Landmark Tree Preservation and Protection* of the City of Thousand Oaks Municipal Code, adopted September 30, 2019.

### **Recommendations for Trees During Construction**

**Site preparation:** All existing trees to remain shall be fenced off to the drip line extents (foliar spread) of the tree. Where fencing is not possible, the trunk shall be protected straw waddle and orange snow fencing. The fence should be four to six feet high, made of orange plastic snow fencing with steel t-posts or any material superior in quality, such as cyclone fencing. A tree protection zone sign shall be affixed to fencing at appropriate intervals as determined by the arborist on site. 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. See tree preservation detail for additional information, including tree protection zone sign.

**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, 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 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 enough 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 enough 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.

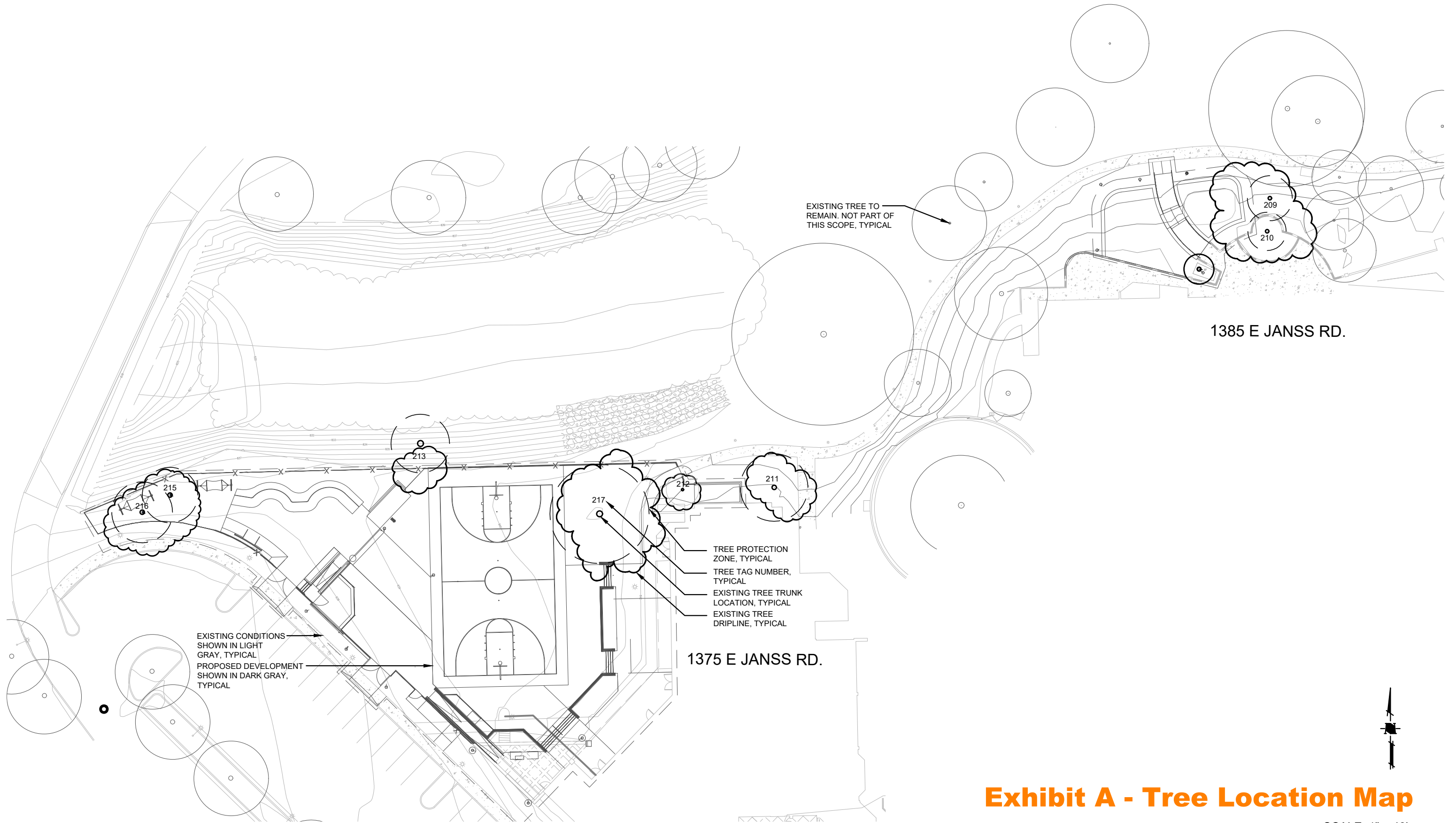
**Pruning:** Pruning is often desirable or necessary to remove dead, diseased, or insect-infested branches and to improve tree structure, enhance vigor, or maintain safety. Because each cut has the potential to change the growth of (or cause damage to) a tree, no branch should be removed without reason. 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:** There are circumstances when removal is necessary. An arborist can help decide whether 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 RRM Design Group.

1. The scope of any report or other correspondence is limited to the trees and conditions specifically mentioned in those reports and correspondence. RRM Design Group assumes no liability for the failure of trees or parts of trees, either inspected or otherwise. RRM Design Group 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. RRM Design Group 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. RRM Design Group does not take responsibility for any root defects, which could only have been discovered by such an inspection.
3. RRM Design Group 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 RRM Design Group or in the schedule of fees or contract.
4. RRM Design Group 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 RRM Design Group, and the fee for services is in no manner contingent upon the reporting of a specified value nor upon any 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 RRM Design Group as to the sufficiency or accuracy of that information.



### Exhibit A - Tree Location Map

SCALE: 1" = 40'



## Exhibit B - Tree Photographs





Codominant leaders of tree 212



Root collar of tree 213 is located 6-7' vertical feet down the slope into the riparian drainage



Typical surface root damage from a lawn mower has exposed the heartwood near the root collar of trees 215-217



Epicormic growth on tree 216 indicating stress



## Table 1 - Tree Quantity Summary

Tree Quantity by Species		
Species	Quantity	% of Site
<i>Pinus nigra</i>	1	13%
<i>Platanus racemosa</i>	3	38%
<i>Quercus agrifolia</i>	4	50%
<b>Total</b>	<b>8</b>	<b>100%</b>

Tree Quantity by Size		
DBH	Quantity	% of Site
<12"	0	0%
12-23.9"	6	75%
>24"	2	25%
<b>Total</b>	<b>8</b>	<b>100%</b>

Tree Quantity by Regional Nativity Status		
DBH	Quantity	% of Site
Native	7	88%
Non-Native	1	13%
<b>Total</b>	<b>8</b>	<b>100%</b>

## Table 2 - Tree Evaluation Summary

Prepared By: Jake Minnick, ISA Certified Arborist #WE-11830A

DBH Measurement Height: 54"

Date of Evaluation: 03/18/2020

<b>Suitability for Preservation is based on the following</b>	
<b>Good</b>	Trees with good health and structural stability that have the potential for longevity at the site.
<b>Mod.</b>	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.
<b>Poor</b>	Trees in poor health or with significant structural defects that cannot be mitigated. Tree is expected to decline, regardless of treatment.
<b>Health Rating</b>	
<b>5</b>	A healthy, vigorous tree, reasonably free of disease, with good structure and form typical of the species.
<b>4</b>	A tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
<b>3</b>	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.
<b>2</b>	A tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
<b>1</b>	A tree in severe decline, dieback of scaffold branches and or trunk, mostly epicormic growth; extensive structural defects that cannot be abated.
<b>0</b>	Tree is dead.
<b>Abbreviations and Definitions</b>	
<b>CD</b>	Codominant leaders
<b>CDB</b>	Dieback in Crown
<b>CR</b>	CR
<b>D</b>	Decline
<b>DBH</b>	Diameter at Breast Height
<b>EG</b>	Epicormic Growth
<b>EH</b>	Exposed Heartwood
<b>H</b>	Hazardous
<b>HD</b>	Headed
<b>IB</b>	Included Bark
<b>LC</b>	Low crotch
<b>LN</b>	Leaning Tree
<b>ML</b>	Multiple Leaders
<b>PT</b>	Phototropism
<b>S</b>	Suckers
<b>SD</b>	Structural Defects
<b>SE</b>	Severe
<b>SL</b>	Slight
<b>SR</b>	Surface Roots
<b>ST</b>	Stress

Tree Tag	Botanical Name	Common Name	Diameter at Breast Height (in.)	Multi Leader Individual DBH (in.)	Tree Protection Zone Radius	Native	Health	Preservation Suitability	Field Notes & Recommendations
<b>209</b>	<i>Pinus nigra</i>	Austrian pine	14.5	-	10'-0"		4	Good	SE LN, SR
<b>210</b>	<i>Quercus agrifolia</i>	coast live oak	17.2	-	8'-6"	X	4	Good	SL CDB
<b>211</b>	<i>Quercus agrifolia</i>	coast live oak	39.2	10.5, 10.2, 18.5	15'-0"	X	3	Moderate	ML, CD, LC, IB, leaf spot
<b>212</b>	<i>Quercus agrifolia</i>	coast live oak	14.7	4, 2.8, 4.7, 3.2	7'-3"	X	4	Moderate	ML, CD, LC, IB, SL leaf spot
<b>213</b>	<i>Quercus agrifolia</i>	coast live oak	23.1	12.2, 10.9	13'-0"	X	4	Moderate	SE LN - uphill, CD, SL leaf spot. Recommend raising the crown to allow room for proposed fencing, so long as less than 25% of the crown is removed.
<b>214</b>	Not used	-	-	-	-		-	-	-
<b>215</b>	<i>Platanus racemosa</i>	Western sycamore	16.4	-	12'-4"	X	3	Moderate	SL ST, SR, S, SL LN, CR - located too close to tree 216
<b>216</b>	<i>Platanus racemosa</i>	Western sycamore	18.0	-	13'-6"	X	3	Moderate	SL ST, S, SE LN, SE EG, SR - damage from lawnmower
<b>217</b>	<i>Platanus racemosa</i>	Western sycamore	30.5	-	22'-0"	X	4	Good	LN, SL SR - damage from lawnmower

## **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.

## **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).