

Arboricultural Specifications Manual

Aurora, Illinois

1 Authority: Pursuant to authority granted under "An Ordinance Regulating the Planting, Maintenance and Removal of Trees, Shrubs, and Other Plants; Creating a Tree Board; and an Office of the official City designee of Aurora, Illinois, No. 092-96, Chapter 47 of the Code of Ordinances for the City of Aurora, adopted by the City Council of Aurora, Illinois on the 17th day of November, 1992, the City of Aurora hereby promulgates the following as the Arboricultural Specifications and Standards of Practice for Aurora, Illinois, herein called the Arboricultural Specifications Manual. Revisions approved on August 12, 2008

2 Policy

All work on public trees shall comply with "An Ordinance Regulating the Planting, Maintenance and Removal of Trees, Shrubs, and Other Plants" of the city of Aurora, Illinois, and this Arboricultural Specifications Manual.

The Arboricultural Specifications Manual shall be open to revision at any time that experience, new research, or laws indicate that improved methods or circumstances make it advisable, and only then by the official City designee with advice and assistance of the Aurora Tree Board and approval of the City Council, all as provided by in the above said Ordinance.

It shall be policy of the official City designee of Aurora and the Aurora Tree Board to cooperate at all times with the public, property owners, other municipal departments, and utility companies and non-profit organizations.

General Specifications

3.1 The Arboricultural Specifications contained in this document are to serve as a standard for all work performed on or with all public trees. These standards will apply whether the work is performed "in-house", contractually by private businesses, or by private individuals.

3.2. A free permit must be obtained from the official City designee before any person, either for himself or another, plants, prunes, removes, or destroys any tree, shrub or other plant in or upon the public right-of-way of any street, alley, sidewalk or any other public place as required by the City Tree Ordinance (section 47-2).

3.3 It shall be unlawful for any person to engage the business of planting, cutting, trimming, pruning, removing, spraying or otherwise treating any tree, shrub or other plant within the City of Aurora without first procuring a license as required by the City Tree Ordinance (section 47-45). All motor vehicles and other major equipment of any licensed business shall be clearly identified with the name of the licensee.

3.4 Authorized work on or with public trees, shrubs or other plants neither expresses nor implies a right to violate any law of the land while in process of performing such work.

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- 3.5 All such work shall be conducted in a manner as to cause the least possible interference with or annoyance to others.
- 3.6 All personnel utilized for work on or with trees, shrubs or other plants shall be trained to perform the work properly and safely in accordance with these Arboricultural Specifications.
- 3.7 A qualified supervisor shall be present at all times when work is being performed except that he may be absent for short periods when necessary because of emergencies or other urgent matters.
- 3.8 Any injury to persons or damages to any improvement, vehicle, tree, shrub, plant, or structure while working with trees, shrubs, or other plants shall be promptly reported to the official City designee.
- 3.9 Any use of tools and equipment for pruning, trimming, repairing, maintaining, and removing trees, and cutting brush must be in accordance with the current American National Standards Institute Standards (ANSI Z133.1).
- 3.10 Pedestrian and vehicular traffic shall be allowed to pass through the work areas only under conditions of safety and with as little inconvenience and delay as possible. Whenever vehicular traffic will be delayed, the official City designee shall be notified.
- 3.11 Qualified street and sidewalk warning devices shall be in position as required at all times while work on public trees, shrubs, and other plants is being performed. In addition, adequate barricades and other warning devices shall be placed and flagmen shall be stationed as necessary for the safety of persons and vehicles.
- 3.12 Whenever electric lines, telephone lines, gas lines, water lines, sewer lines, or other improvements, public or private, upon a public area will be implicated or jeopardized by any authorized tree, shrub or other plant activity, the proper authorities of the utilities involved and property owner involved shall be consulted prior to performing any work activity and all requested precautions by any such authority shall be followed.
- 3.13 The Arboricultural Specifications Manual, the standard for work performed on or with trees, shrubs and other plants on a daily basis, shall be updated by the official City designee with the advice and assistance of the Aurora Tree Board at least every five years.

4

Plants

- 4.1 **Street Tree Definition:** All trees on public right-of-way between the curb and the property line along the side of streets or in medians of all streets, avenues or ways within the City.

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4.2 Species, Cultivars and Varieties

4.2.1 **Table I: City of Aurora Approved Street Tree Species List**, lists the approved tree species or their varieties and cultivars acceptable for planting on City right-of-ways or City-owned property. The trees are listed by their, scientific name, common name, and size. The size of tree to be planted will depend on the width of the planting strip and available vertical growing height.

4.2.2 It is recommended that Northern Illinois native tree species be favored in selection due to their inherent characteristics and adaptability to our environmental conditions.

4.2.3 Unacceptable tree species or their varieties contained in Table II shall not be planted on City right-of-ways or other City-owned except in special locations when approved by the official City designee.

TABLE II: UNACCEPTABLE TREES FOR PARKWAY PLANTINGS

Botanical name	Common Name
<i>Acer negundo</i>	Box elder
<i>Acer saccharinum</i>	Silver Maple
<i>Ailanthus altissima</i>	Tree of Heaven
<i>Elaeagnus angustifolia</i>	Russian olive
<i>Fraxinus spp.</i>	Ash
<i>Ginkgo biloba (female)</i>	Female Ginkgo
<i>Morus spp.</i>	Mulberry
<i>Populus spp.</i>	Poplar, Cottonwood, Aspen
<i>Rhamnus spp.</i>	Buckthorn
<i>Salix spp.</i>	Willow
<i>Sorbus spp.</i>	Mountain Ash

4.2.4 It is recognized that there are trees contained in Table II presently growing in the City right-of-way as a result of previous planting. Upon the removal of these trees, if the planting space is to be replanted, it shall be replaced by an approved and accepted species listed in Table I.

4.2.5 Tree genera and species not listed in Table II or I may or may not be acceptable. Those plants, at the time this manual was prepared, did not constitute a substantial enough benefit or problem to the community to be included within the scope of this manual. Plants, which fall under these criteria, should be brought to the attention of the official City designee. The Tree Board, in conjunction with the official City designee, shall review the list of acceptable and unacceptable trees every five years to determine appropriate revisions.

4.2.6 When a specified site has been assigned a particular species and/or variety of plant, only that designated plant shall be used at the site. If that species shall be replaced, it shall be replaced by the same species and/or variety upon removal except upon revision, and approval by the official City designee, of the planting plan, which governs the site.

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4.2.7 All new plantings shall adhere to Santamour (1990) guidelines for tree plantings within a city which specifies that municipalities should plant no more than 30% of a single Family (e.g. *Aceraceae*, Maple), no more than 20% of a single Genus (e.g. *Acer*) and no more than 10% of a single species (e.g. *Acer saccharum*).

4.3 Purchasing

The city is an active member of the Suburban Tree Consortium (S.T.C.). It is through the S.T.C that the City purchases and plants a portion of the trees that are planted annually on parkways.

5 Planting Stock Requirements

5.1 Size

5.1.1 All medium to large trees and their cultivars or varieties to be planted shall conform to American Standards for Nursery Stock ANSI Z60.1, 2004 unless otherwise specified by the official City designee. The trees and their cultivars or varieties shall be single-stemmed, have one dominant trunk, branches should be less than two-thirds trunk diameter, be a minimum of 1-1/2 inches in diameter, measured six (6) inches above the ground, have a root ball no less than twenty (20) inches in diameter and be no less than eight (8) feet in height.

Medium and Large Trees

Caliper diameter (inches)	1.5"	2.0"	2.5"	3.0"
Minimum root ball diameter	20"	24"	28"	32"
Minimum height	8'	10'	10'	12'
Maximum height	12'	14'	14'	16'

5.1.2 All small trees and their cultivars or varieties to be planted shall conform to American Standard for Nursery Stock ANSI Z60.1, 2004 unless otherwise specified by the official City designee. They shall be no less than five (5) feet in height, be single stemmed, have one dominant trunk, branches should be less than two-thirds trunk diameter, and have at least eight (8) branches on the upper half of the tree and have a root ball no less than sixteen (16) inches in diameter.

Small Trees

Height	5 feet	6 ft. and above		
Caliper diameter (inches)		1"	1.5"	2.0"
Minimum root ball diameter	16"	18"	20"	24"

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5.2 Grade: All trees and their cultivars or varieties at the time of planting shall be free from disease, harmful insects, mechanical injuries or other objectionable features that will affect the future health and/or the overall appearance. They shall have straight trunks and well-developed, balanced branching patterns. The trees shall have a well-developed root system characteristic of the species and cultivar or variety and exhibit evidence of proper nursery pruning practices. Additional grade requirements shall be in accordance with the standards set forth in American Standard for Nursery Stock, ANSI Z60.1, 2004.

5.3 Type: All trees and their cultivars or varieties to be planted shall be balled and burlapped. No bare rooted plants will be accepted. Trees grown in root-control bags and containers are acceptable with approval by the official City designee.

5.4 Acceptance: All planting stock shall be inspected upon arrival. Any plant that does not meet the standards of this manual will not be accepted.

5.5 Transport

5.5.1 All planting stock shall be handled with care so as to minimize damage to the trunk, crown and root system. Planting stock shall be handled by the root ball and is not to be dragged, thrown or dropped off an elevated platform. Any tree that exhibits poor handling or has sustained damage during transport to planting site or holding site shall be rejected and replaced at the contractor's cost.

5.5.2 Root balls of planting stock shall be monitored to prevent drying out and kept moist by watering if needed. If trees are not to be planted immediately root balls should be covered with mulch and kept moist.

5.5.3 Plants shall be secured during transit. The crowns of planting stock shall be covered when transporting over extended distances or at high speeds to prevent wind desiccation.

6 Planting Specifications

6.1 Site criteria and assessment of the planting site shall be conducted prior to the planting of trees as follows:

Visibility

Above and belowground hazards

Probability of long-term survival

Soil conditions (e.g. slope, drainage, compaction, new construction)

Amount of sunlight

Access to water or irrigation

Obstacles and utility location

Overall benefit to the community

Likelihood of private participation and financing

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6.2 Development

6.2.1 City projects: The development or redevelopment of a site owned by the City shall be subject to the planting standards of this manual. City projects include but are not limited to: parks, streets, medians, substations, treatment plants, plazas, and city buildings. These projects shall allow for the appropriate amount of street tree plantings. The official City designee shall approve all street tree aspects of the plan.

6.2.2 Private projects: Parkway or public thoroughfares within areas that are developed or redeveloped by a privately funded individual, partnership or entity shall be planted with the appropriate amount and composition of street trees. The street tree planting will be the financial responsibility of the individual, partnership or entity responsible for the project. The street trees shall be planted in the City-owned parkways according to the standards of this manual. Special consideration should be given to plant lists, location and spacing standards and planting standards. The official City designee shall approve all street tree aspects of development or redevelopment plans.

6.3 Locations and Spacing

6.3.1 The size limit for tree sizes regarding parkway widths are as follows.

Tree Size	Minimum parkway width
Large Tree	8 feet
Medium tree	6 feet
Small tree	4 feet

6.3.2 Where there is a parkway width less than four (4) feet, the tree shall be planted beyond the sidewalk toward private property if the City has easement rights. If the City does not have easement rights then it is recommended that the City take the necessary steps to obtain easement rights.

6.3.3 Where trees are to be planted in the parkway or median they shall be centered and spaced evenly according to size along the planting strip.

6.3.4 No tree shall be planted on the parkway or in any public thoroughfare at a distance less than that specified by the visibility triangle formula or fifty (50) feet, which ever distance is appropriate by the City Engineer, from the point of intersection of any given street lines within the city.

6.3.5 Trees shall be planted at least fifteen (15) feet from driveways and alleys.

6.3.6 Medium to large trees shall not be planted closer than fifteen (15) feet from all utility poles, to allow for line maintenance, and lamp posts, for proper lighting. Small trees shall not be planted closer than ten (10) feet from any utility poles or lampposts. All trees shall be planted a minimum of ten (10) feet from all fire hydrants, water lines, sewer lines and water sewer mains.

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6.3.7 Trees planted near any road sign shall be placed in a manner not to obstruct the visibility of any part of the sign at time of planting or in the future. In the event that a sign will be moved to accommodate a tree, the sign shall be moved before the time of planting.

6.3.8 No tree shall be planted within fifteen (15) feet of any building or permanent structure.

6.3.9 When overhead wires are present above planting strips, only small trees listed in TABLE I Approved Species List shall be planted. Exceptions may be made by the official City designee if the wires overhead are either transmission or main distribution lines that are at a height that will allow the planting of a medium sized tree.

Minimum Planting Distance from Objects

Above Ground	Minimum tree planting distance	
<u>Object</u>	<u>Medium and Large Trees</u>	<u>Small Trees</u>
City of Aurora water box	Ten (10) feet	Ten (10) feet
City of Aurora fire hydrant	Ten (10) feet	Ten (10) feet
City of Aurora street light	Fifteen (15) feet	Ten (10) feet
Utility pole	Fifteen (15) feet	Ten (10) feet
Driveway entrance and alleys	Fifteen (15) feet	Fifteen (15) feet
Building or permanent structure	Fifteen (15) feet	Fifteen (15) feet
Existing/proposed parkway tree.	Thirty-five (33) feet	Twenty-five (25) feet
Cross walk	Ten (10) feet	Ten (10) feet
Street Intersection	Fifty (50) feet	Fifty (50) feet

Below Ground	Minimum tree planting distance	
<u>Object</u>	<u>Medium and Large Trees</u>	<u>Small Trees</u>
Water line	Ten (10) feet	Ten (10) feet
Sewer line	Ten (10) feet	Ten (10) feet
Water Sewer mains	Ten (10) feet	Ten (10) feet
Sanitary Line	Ten (10) feet	Ten (10) feet
Storm Sewer	Ten (10) feet	Ten (10) feet

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6.3.10 Spacing of sizes

6.3.10.1 The largest possible tree size shall be used for each planting site.

6.3.10.2 Spacing of trees shall be determined the official City designee according to the local site conditions, the species used and growth characteristics of the tree to be planted. General specifications are as follows:

Tree Size	Center to Center Spacing	Minimum planting distances
Large Tree	35 feet	33 feet
Medium tree	35 feet	33 feet
Small tree	25 feet	25 feet

6.3.10.3 When planting a new tree next to an existing parkway tree of a different size class, the minimum spacing should be calculated by averaging the spacing requirements for the two size classes. For example, a new small tree planted next to an existing large tree, should be planted at a distance of 30 feet.

6.4 Tree Pit Standards

6.4.1 No tree pit will be dug unless the official City designee marks the location.

6.4.2 Pits for the planting of street trees shall be two (2) to three (3) times the width of the root ball. The pit should be saucer-shaped or bowl-shaped. The sides should slope gradually. Maintain undisturbed soil beneath the root ball; do not loosen soil in center of hole. The center of the hole should be firm to help stabilize the tree. Deglaze; scarify sides of hole with a shovel to allow for better root penetration.

6.4.3 Directional orientation of tree in pit. Tree trunk should be marked in nursery. At the time of planting, orient tree so it faces the same direction as it was grown in nursery. For example, mark all trees on north side and transplant trees with mark facing north.

6.4.4 The tree should be planted slightly higher than it was originally grown to allow for settlement. In poorly drained soil, the root ball shall be elevated in relation to the surrounding grade. The depth of the root ball shall be measured from the bottom of the root flare to the bottom of the root ball. Soil above the root flare shall not be considered in the ball depth measurement and should be removed. If there is extra soil over structural roots, leave soil intact until tree is placed in hole. The resulting hole shall place the root flare not more than one-inch (1") above of surrounding soil grade.

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6.4.5 Do not amend soil. In all but exceptional cases, the backfill around root ball shall be the same soil as that which was removed from the hole. In cases where large amount of rocks, stones, other debris are encountered, debris shall be removed and supplement the backfill with top soil. In soils that have high clay content, the soils should be amended with twenty-five (25) percent organic matter.

6.4.6 Around the base of all newly planted trees, a small berm of soil slightly larger than the root ball shall be constructed. Organic mulch shall also be added within the soil berm. Initial depth of organic mulch should be between 2 to 4 inches. Keep mulch a minimum of 3" from tree trunk; mulch shall never be in contact with trunk.

6.4.7 All waterproof, water repellant and non-biodegradable wrappings shall be removed from around the root ball. Remove ropes, strings and wrappings from around trunk and the top 50% of the root ball after tree has been set in pit.

6.4.8 Baskets: When full baskets are used in the delivery of balled and bur lapped trees, remove at least the top half of the wire basket before backfilling. When low profile baskets are used, the removal of basket is not required. Root containment grown trees must have the entire bag removed.

6.4.9 Backfilling shall be done in way to minimize air pockets. Do not cover the top of root ball with soil. Back fill soil shall be tamped lightly. Excessive tamping may compact soil and limit water penetration and slow root growth. Planting areas are to be finish graded to conform to surrounding grade.

7 Early Maintenance

7.1 Establishment: Newly planted trees need special attention to ensure that they become established. The first few years after transplanting are a critical time in the life of a tree as mortality rates may be excessively high. All maintenance practices shall follow approved arboricultural practices.

7.2 Watering: Promptly after planting, the soil surrounding the tree should be thoroughly saturated. A second watering to completely saturate the soil should be done ten (10) days to no more than fourteen (14) days after planting. Additional watering every 10 to 14 days during the balance of the current season and next growing season is recommended to help maintain adequate soil moisture. When natural precipitation maintains good soil moisture, watering may be delayed until the next cycle time if needed. Take care not to over water. Excessive heat and drought requires special attention given to newly planted trees and soil moisture levels must be maintained.

7.3.1 When stability is a problem, newly planted trees shall be staked according to the methods recommended by International Society of Arboriculture (See Attachment 1). Stakes and support lines should be removed after the first growing season.

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7.3.2 Newly planted tree species with thin bark should be wrapped to help prevent sunscald and other trunk damage (See Attachment 2). Trees planted in fall should be wrapped at time of planting. Spring planted trees should be wrapped in late fall. Unwrap fall and spring planted trees in early spring of the next growing season.

7.4 Fertilization: Fertilization of newly planted trees is generally not recommended unless it is determined that soil lacks essential nutrients, or soil conditions prevent the uptake of essential nutrients. Only slow-release fertilizer shall be used on newly transplanted trees to prevent fertilizer injury. Tree fertilizing methods shall conform to American National Standards Institute (ANSI) A300 Standard for Tree, Shrub, and Other Woody Plant Fertilization specifications.

7.5 Inspection: Periodic inspections of newly planted trees for pests and diseases should be done to ensure the continued health of the tree.

7.6 Pruning: The pruning of newly planted trees is not recommended, except for the removal of dead or broken branches. Water sprouts growing on lateral branches should be removed when they reach the diameter of a pencil.

8 General Maintenance

8.1 Pruning

8.1.1 All pruning of City trees shall conform to International Society of Arboriculture recommendations, ANSI Pruning and Safety Standards: ANSI A300 Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Pruning), and ANSI Z133.1-2006 Pruning, Repairing, Maintaining and Removing Trees and Cutting Brush – Safety Requirements. Pruning should be done to develop good structure, promote general good health and vigor of the tree. To the extent possible, pruning shall maintain tree crown shape and symmetry typical of species growth habit.

8.1.2 All trees shall be maintained as not to endanger, interfere or conflict with public safety

8.1.3 Under no circumstances shall a City owned tree be "topped". Topping is the practice of severe pruning of a tree, disregarding nodes and crotches, to drastically reduce the height of a tree. Topping adversely affects the natural growth structure of a tree and has the potential to create a hazardous tree.

8.1.4 All established medium to large trees shall be pruned to allow free passage of pedestrians and vehicles at a height no less than ten (10) feet of clearance above sidewalks and sixteen (16) feet of clearance at curbside.

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8.1.5 All pruning cuts shall be made with a saw or by-pass style pruning shear and only at nodes or crotches. A pruning cut that removes a branch back to the trunk or parent limb shall be made close to trunk or limb without leaving a stub. Cuts shall be made without cutting into the branch collar. No tipping of branches shall be allowed. Tipping is a practice of cutting lateral branches between nodes to reduce crown width. A pruning method known as drop crotch pruning shall be used to reduce the length of a branch or parent stem. Branches too large to be supported by one hand shall be precut for safety and to avoid the splitting or tearing of the bark. Large limbs shall be lowered safely in a controlled manner with ropes and other equipment.

8.1.6 Unless under emergency situations or during tree removal, spurs or climbing irons shall not be used for pruning live trees.

8.1.7 Oak trees shall be pruned only during the months of November through March. Avoid pruning between April through October to prevent the spread of Oak Wilt.

8.1.8 After working on a diseased tree, all pruning equipment shall be disinfected before working on another tree.

8.1.9 Upon the completion of work performed on City trees all branches, twigs, leaves, chips and larger portions of the tree shall be promptly removed and properly disposed of by those performing the work.

8.2 Spraying

8.2.1 Precautions shall be undertaken to inform, warn and protect the public before spray applications of pesticides and other potentially hazardous chemicals begin. Local conditions such as wind and temperature shall be considered before spraying. Drift potential shall be examined in relation to the proximity to playgrounds, schools and high traffic density areas before any spraying is performed.

8.2.2 Spraying shall only be performed by Certified Commercial Pesticide Applicators and in accordance with accepted arboricultural standards and all State and Federal regulations. The Applicator shall read and understand label information of the chemicals being used.

8.2.3 Spraying shall only be done for specific insects or diseases with the proper materials and equipment, in the necessary strength, and applied at the proper time to ensure control.

8.2.4 All spray equipment should be kept clean and in good working order. Spray machines should give uniform coverage. Tanks and other equipment shall be washed out and drained in approved drainage areas.

8.2.5 Ineffectual control, damage, injury or death to plants, animals or persons resulting from the use of spray materials exceeding the limitations of the manufacturer's guarantee shall be considered the responsibility of the licensed operator.

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8.3 Fertilization: The fertilization of City trees shall be in accordance with accepted arboricultural standards. Methods of applications for fertilizers shall be determined by the official City designee and conform to ANSI A300 Standard for Tree, Shrub, and Other Woody Plant Fertilization specifications.

8.4 Cavities: The treatment of cavities shall be in accordance with accepted arboricultural standards. The official City designee shall determine the method for treatment of cavities.

8.5 Cabling and Bracing

8.5.1 The City does not, as a policy, cable and brace parkway trees. If warranted, cabling /bracing methods and materials shall conform to the ANSI A300 Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Support Systems a. Cabling, Bracing, and Guying) or accepted arboricultural standards.

8.5.2 Bracing is not to be used as a substitute for cabling but rather in conjunction with cables.

9 Tree Protection

9.1 Protection or Removal: In the circumstances where construction and utility operations underground will affect the health of a tree, a determination will be made considering the overall value of the tree. The criteria for determining a value for a tree will be based on species, age, condition, cost of preserving the tree, and urgency of work to be completed. A decision based on this value will be made concerning the protection or removal of the tree in question by the appropriate City designee.

9.2 Cutting Roots. Cuts made to large roots should be avoided if possible. If circumstances require cutting roots, then clean, flush, smooth cuts shall be made using the proper pruning equipment.

9.3 Open Work Pits: Work pits that need to be open for an extended time requires special protection methods for trees. The roots shall be cut closer to the tree in relation to the construction zone. A temporary wall shall be put up between the tree and construction zone. The area between the root zone and the construction zone should then be backfilled and kept moist. Work pits should not stay open any longer than necessary to complete work. Contractor shall secure work site and close off work site to pedestrian and vehicular traffic.

9.4 Construction Zones

9.4.1 Trees to be protected in construction zones and the dimensions of those zones shall be determined by the official City designee and the City Engineer or appropriate City Official.

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9.4.2 All trees in a construction zone shall be protected by a physical barrier which encircles the drip line of the tree. Protective fencing. A highly visible physical barrier such as orange vinyl construction fencing, chain link fencing, snow fencing or other similar fencing shall be used for protection around the critical root zone area. The critical root zone of a tree can be estimated by measuring the radius out from the tree trunk as defined as one foot for each inch of trunk diameter at breast height (54 inches). Protective fencing shall be supported at a maximum of 10-foot intervals by metal T-posts or approved methods substantial enough to maintain fence upright and in place. Wooden stakes and rebar are not considered substantial enough support.

9.4.3 In situations where a protected tree remains in the immediate construction area and the tree trunk and is in danger of being damaged by equipment or other activity, the contractor shall protect the tree by encircling the trunk with 2" x 4" lumber secured with wire or other means that do not cause damage. This trunk protection material shall be removed upon completion of construction project.

9.5 Utility Operations

9.5.1 Any underground utility installations or operations that come in conflict with City street tree roots are subject to the review and approval of the official City designee.

9.5.2 Open trenching is prohibited inside the drip line of a City tree unless approved by the official City designee. In a situation where trenching is necessary within the drip line, the trench shall be dug by hand so roots can be bridged or tunneled to minimize damage.

9.5.3 Tunneling under trees: The appropriate City designee shall determine the tunneling depth and distance for under ground utility installations or operations near City-owned trees. Under no circumstances is the tunnel to be less than two (2) feet in depth.

TABLE IV: Specifications for Trenching and Tunneling for Utility Operations

Tree Diameter	Distance of Tunnel from Center of Tree	Minimum Depth of Tunnel or Trench
5" to 9"	6 ft.	2-1/2 ft.
10" to 14"	10 ft.	3 ft.
15" to 19"	12 ft.	3-1/2 ft.
20" +	15 ft.	4 ft.

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10 Tree Removal

10.1 Determination and Criteria: the official City designee will make Determination for the removal of a tree if any of the following conditions exist:

10.1.1 A tree that is infected with an epidemic disease or insect and chemical or mechanical treatments are not possible methods of control, or removal is the recommended practices to prevent transmission.

10.1.2 A tree that poses a safety hazard that cannot be corrected by pruning, transplanting, or other treatments.

10.1.3 A tree that interferes with the growth of a more desirable tree(s).

10.1.4 A tree that has a negative aesthetic value.

10.1.5 Work improvements or installations will kill or render a tree a public hazard

10.1.6 Preservation of a tree is not cost effective.

10.1.7 A tree which is a recurring problem due to root interference with water mains, sewer mains, water service lines, and sewer service lines.

10.1.8 A tree is dead

10.1.9 A tree is declared a Public Nuisance (see Section 47-8. Public Nuisances of City Code)

10.1.10 A tree is injured by construction, lightning, vandalism, or auto accident and can not be reasonably saved.

10.1.11 More than fifty percent (50%) of the crown is missing, dead or dying.

10.1.12 Unauthorized trees recently planted that do not meet code requirements due to species selection, spacing or location.

10.1.13 Tree trunk is growing into and damaging a fence, utility pole, fire hydrant or other utility fixtures.

10.1.14 Large-growing species growing under power lines that cannot be pruned for adequate clearance without compromising the tree's long-term survival, structure or appearance.

10.2 Standards: All work performed in the removal of a tree shall be in accordance with the International Society of Arboriculture and American National Standards Institute (ANSI).

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10.3 Stumps: All stumps on city property shall be removed to a depth of at least eight (8) inches and all holes remaining shall be filled in with soil and planted with sod or seed.

10.4 Disease Prevention: Certain precautions must be taken when removing a diseased tree to ensure the disease will not continue to be transmitted after the tree is removed. The official City designee shall determine these precautions. After work is completed on a diseased tree, all saws and other cutting equipment must be disinfected before working on another tree.

10.5 Debris Removal: Upon the completion of work performed on City trees all branches, twigs, leaves, chips and larger portions of the tree shall be promptly removed and properly disposed of by those performing the work.

Amendments

The Arboricultural Specifications Manual may be modified, amended, or extended at any time that experience, new research or laws indicate improved methods or whenever circumstances make it advisable. The amendments shall be made with the advice; assistance and approval of the Tree Board. All amendments to this document shall be approved by the City Council.