

California JPIA Resource

Policy Name: **Tree Inspection and Maintenance Policy**

Purpose:
These guidelines are to be used to reduce public agency exposure to liability associated with trees. Additionally, this policy establishes guidelines and procedures for the orderly protection of trees in order to maximize their benefits which include improved air quality, reduced storm water flow, habitat for wildlife, and a reduced heat island effect.

Replacing Document:
Tree Inspection and Maintenance Policy

To Whom Does it Apply:
This policy applies to all agencies that wish to have a policy that assists in the maintenance and inspection of public trees, and can be used to help guide tree preservation efforts in construction and development areas.

Note:
The Authority has additional resources that may be helpful in the development and training of policies, programs, procedures, and contract specifications.

California JPIA Resource:
Sidewalk Inspection and Maintenance Program

- Other Resources:**
1. Western Chapter of the International Society of Arboriculture (WCISA)
 2. International Society of Arboriculture (ISA)
 3. California Urban Forests Council (CAUFC)
 4. Street Tree Seminar (STS)



*Providing innovative risk management solutions
for our public agency partners*

Important:

This reference material is compiled for use by Authority members in the preparation, development and implementation of risk management policies, programs, and procedures. Since this document is designed to meet the needs of the general pool membership, please be aware that the present form is best considered a template for use by your agency in drafting specific documents. This template should not be construed as legal advice. Accordingly, any resulting policy, program or procedure that results from this template should always be reviewed and approved as is customary by your agency, including the purview of any necessary legal and/or governing body authorities to ensure the policy being developed meets the unique needs of your jurisdiction. Policies should be implemented after proper training has been provided.

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I. PURPOSE

This policy establishes guidelines and procedures needed to provide for the care and protection of trees in order to promote the health, safety, welfare, and quality of life for all agency residents, business owners and visitors.

II. DEFINITIONS

For the purposes of this policy, the following definitions shall apply:

- A. **Arborist:** the person designated as such by the agency who has demonstrated knowledge and competency through obtainment of the current International Society of Arboriculture (ISA) arborist certification. This can be either an agency employee or a contractor. ISA Municipal Specialist is a desirable credential requiring qualified individuals have a minimum of three years full time municipal related experience. These credential holders assist agencies in the operations of managing trees in a municipal sector. ISA Utility Specialist is another highly desirable certification requiring individuals to have a minimum of three years full time experience managing trees adjacent to utilities. This credential is important in the managing of municipal trees near powerlines or other utilities. The ISA Board Certified Master Arborists is the highest level of certification offered by the International Society of Arboriculture and could additionally be considered useful in assisting municipalities with all operational facets of managing trees.
- B. **Compaction:** compression of the soil structure or texture by any means that creates an upper layer that is impermeable.
- C. **Director:** the director of public works or other department head as assigned by the public agency or the director's designee, unless otherwise specified in the policy.
- D. **Disturbance:** all of the various activities from construction or development that may damage trees.
- E. **Dripline area:** the suggested minimum area within "X" distance from the trunk of a tree in a typical location, measured from the perimeter of the trunk of the tree at 54 inches above natural grade, where "X" equals a distance ten times the diameter of the trunk at 54 inches above natural grade, or the distance to the outermost edge of the tree canopy, whichever is the lesser distance.
- F. **Excessive pruning:** removing in excess of 25 percent or greater of the functioning leaves and stems in a single pruning. Excessive pruning may include the cutting of any root two inches or greater in diameter. Exceptions are when clearance from overhead utilities or public

improvements is required, or to abate a hazardous condition or a public nuisance.

- G. **Hazardous condition:** in this policy, a hazardous tree condition is one in which a tree part has an observable structural issue that is imminent likelihood of failure and a high likelihood of striking a foreseeable target. These hazards can be discovered through both routine pruning work or through other forms of inspection. The agency shall correct hazards related to targets that could be impacted by failure in a timely manner. If provisions for hazard mitigation cannot occur immediately, public protection measures should be taken, such as providing warning or notice.
- H. **Injury:** a wound resulting from any activity, including but not limited to excessive pruning, cutting, trenching, excavating, altering the grade, paving or compaction. Injury shall include bruising, scarring, tearing or breaking of roots, bark, trunk, branches or foliage, herbicide or poisoning, or any other action leading to the death or permanent damage to tree health.
- I. **Pest control applicator:** a person licensed by the California Department of Pesticide Regulation who performs the application and treatment of pesticides.
- J. **Pest control advisor:** a person licensed by the California Department of Pesticide Regulation capable of writing legal prescriptions for specific pesticides.
- K. **Public nuisance:** an act, condition, or a thing that is offensive to the community or that violates the rights of persons or the community, as determined by the agency tree protection ordinance and/or other applicable ordinances.
- L. **Public tree:** any tree growing within public property, easements, or the street right-of-way outside of private property.
- M. **Removal:** complete tree removal, such as cutting to the ground or extraction of the tree.
- N. **Unintended object:** includes people, vehicles, structures or anything subject to damage by a tree.
- O. **Topping:** the practice of cutting back large-diameter branches between nodes or truncating the main stem.
- P. **Trenching:** any excavation to provide irrigation, install foundations, utility lines, services, pipe, drainage or other property improvements below grade.

III. TREE INSPECTIONS / TREE INVENTORY

Inspection of agency trees identifies visually obvious problems, their relative risk, and provides risk reduction mitigation recommendations. The inspection interval should be no less than four years as part of a routine trimming program.

Additionally, there should be an intermediate inspection cycle of trees between trim cycles for higher risk species identified by the agency or individual trees that have been identified for shorter inspection intervals. These can include major arterials, or other highly traveled locations and/or parks. Inspection and work history data should be tracked and monitored within a tree inventory management program that allows for documented work history to be recorded and accessible. This should include all publicly maintained trees, as determined by the director. Trees with defects shall be noted in the agency's tree inventory program and assigned a formal inspection date based on the degree of risk associated with each tree's particular defects.

When inspecting trees, using current industry standards, with consistent and uniform procedures shall be implemented to inspect all trees in order to ensure that inspections are done in a consistent and regular manner. These will be dictated by the level of inspection decided prior to commencing with the work.

Inspected items should include, but are not limited to:

Lean/root problems: for example, leaning trees with roots heaving out of the ground.

Codominant or multiple trunks: competing stems that grow bark between a tight crotch union can be weakened areas prone to failure.

Trunk cavities, cankers, mushrooms and decay: these are indicators of potential internal decay of a tree and, if discovered, may require further investigation and mitigation.

Cracks in trunks and branches: these can be indicators of future failures and, if discovered, may require further investigation and mitigation.

Weakly attached scaffold limbs and branches: a branch that developed as a reactionary shoot can be predisposed to failure and, if discovered, may require further investigation and mitigation.

Hanging or broken branches (hangers): branches that are detached from where they were grown and are hanging and could fall, impacting targets below. Broken branch stubs should be pruned off properly unless preserved for wildlife habitat reasons.

Dead branches (deadwood): branches within a canopy of a tree that no longer produce foliage and have begun to lose bark.

Pests and other diseases: identified pests that can cause tree failures like boring, leaf chewing and leaf sucking insects or pathogenic fungus.

While most tree hazard inspections can be conducted from the ground, there are times when an aerial inspection is necessary. These inspections can be completed as part of the routine tree pruning program. The goals of the tree inspection / tree inventory program include:

1. Documenting tree structure and condition and recording dates.
2. Identifying vacant sites suitable for trees to be planted.
3. Maintaining trees proactively, instead of reactively as budget allows.
4. Identifying the dollar value of each tree and total urban forest utilizing the Trunk Formula Method in accordance with the current Guide for Plant Appraisal.
5. Documenting work history records.
6. Scheduling tree maintenance work.
7. Improving tree structure and health through scheduled tree maintenance.
8. Reducing tree loss and liability.
9. Demonstrating due diligence via work history.
10. Identifying trees that can be salvaged or corrected with proper pruning.

IV. TREE MAINTENANCE GUIDELINES

These guidelines establish principles of care and maintenance for the agency's public trees, and are set forth for pruning, planting, watering, soil and nutrient requirements, insect, disease, and fruit control.

A. Restricted Acts to be Avoided without Arborist Approval

Restricted maintenance practices for public trees include:

1. Excessive pruning, except for clearance pruning of utility lines, traffic or abating a public nuisance.
2. Topping.
3. Other action that could lead to the death of a tree or could permanently damage its health, including but not limited to

cutting, poisoning, over-watering, unauthorized relocation or transportation of a tree, or trenching, excavating, altering the grade, or paving within the dripline area of a tree.

B. **Standards for Pruning Public Trees**

All work on public trees shall be in accordance with the most current edition of the following industry standards: ANSI A300 and ANSI Z133.

C. **Pruning Methods for Trees**

There are seven types of pruning that may be appropriate for trees. They are:

1. **Structural pruning:** a type of tree pruning for young trees that establishes a strong central leader and develops subordinate branches. Structural pruning helps to alleviate future failures.
2. **Crown cleaning:** the selective removal of dead, diseased, detached, and broken branches. No live foliage is to be pruned during crown cleaning, and this is the preferred pruning type for mature trees.
3. **Crown thinning:** the selective removal of small live branches to reduce crown density. No more than 25% of live foliage should be removed in a growing season.
4. **Crown raising:** the selective removal of branches in order to provide vertical clearance.
5. **Crown restoration:** the selective removal of branches, sprouts and stubs from trees that have been topped.
6. **Crown reduction:** the selective removal of branches and stems to decrease the height and/or spread of a tree.
7. **Utility pruning:** the selective removal of branches and stems to reduce growth away from utility lines.

Climbing and pruning practices shall not injure the tree except for the pruning cuts.

It is best to clearly identify a pruning objective and then select the pruning type most suitable to achieve that objective. For example, if the objective is roadway clearance, crown raising would be the selected type of pruning.

D. Wildlife Avoidance / Migratory Bird Treaty Act Compliance

There are many federal and state laws and regulations pertinent to wildlife and the tree care and landscape industry in California. Of particular note is the Migratory Bird Treaty Act. The agency should make sure that tree care workers are qualified with proper training on inspecting for birds and other wildlife during tree care operations.

E. Plant Health Care Plan and Integrated Pest Management

Agencies should develop a comprehensive plant health care program with goals of how to manage the health structure and appearance of plants and trees in the landscape. As part of that plan, there should be an Integrated Pest Management strategy. This strategy is a method of controlling plant pests by combining biological, culture, mechanical, physical and/or chemical management strategies.

F. Fertilizing

All fertilizers shall only be applied if specified by the arborist as part of a plant healthcare program. Fertilizing may be specified for trees that will be impacted by an upcoming disturbance, grade change, or a modified environment. Fertilizing in these instances may aid the tree to overcome the stress caused by disturbance. The arborist shall determine specifications for fertilizing trees on a case-by-case basis.

G. Watering Schedule

1. Newly installed trees, including drought tolerant species, are dependent upon supplemental irrigation until established, typically for two years. If a tree is native to areas of higher rainfall, then the tree will require supplemental water throughout its life cycle, unless the tree finds a subterranean water source. Periods of extreme heat, wind or drought may require more or less water than recommended in these specifications.
2. During the establishment period, new trees shall be watered thoroughly as part of an establishment program prescribed by an arborist. Local weather and environmental factors should be taken into consideration when considering a watering plan. If reclaimed water is to be used, please verify that the species of trees to be irrigated has an elevated tolerance of salts.
3. Most mature public trees in the agency are established in areas without formal watering systems. These trees shall

only receive manual irrigation when it is determined necessary by the arborist in order to restore the health of the tree. In this case, the arborist shall also determine the watering specifications.

4. Trees planted in association with the construction of public improvements (medians, parkways, sidewalk tree wells, etc.) shall be irrigated by automated watering systems. The director, in consultation with the arborist, shall determine the type of automatic irrigation system used. Trees planted in public areas where no irrigation system exists shall be hand watered until established. After that, a watering schedule determined by the arborist shall be in effect until deemed no longer necessary.

H. Insect and Disease Control

If action against pests is warranted, always consider treatments as part of an overall plant health care program. The pest source shall be identified and targeted with a specific and timely treatment. All prescriptions for pesticides are to be issued by a pest control advisor (PCA) per the Department of Pesticide Regulations. Additionally, applicators must be licensed or certified to apply. If it appears that insects or disease may lead to the death of a public tree, then it is the responsibility of the agency to evaluate the condition according to the following guidelines and treat the problem in a timely fashion to prevent further decline of the tree.

1. For treatment of insects, the pest control advisor shall be consulted. Nontoxic materials shall be used whenever possible. All chemicals must conform to the California Department of Pesticide Regulations.
2. For disease and decay above that erodes the health or weakens the structure, further analysis by an arborist may be required to evaluate the stability.
3. Diseases below ground are often caused by poor landscape design surrounding old trees, which encourages harmful and often lethal ailments. The following conditions favor disease:
 - a. Compacting of the soil within the tree's dripline
 - b. Removing soil from the tree root area
 - c. Watering on or near the tree trunk area

- d. Planting incompatible plants within the tree's dripline

Combined with poorly drained soil, these factors often activate normally dormant fungi to become opportunistic and infect the tree, which can lead to the decline and eventual death of the tree. This decline can be slow and may not be evident for many years.

When planning landscaping around a public tree, an evaluation of the tree and soil must be performed to determine if there is a disease present. If the tree is diseased and it is reasonable to expect that landscaping will contribute to decline, permanent damage or render it hazardous, it is the obligation of the agency to take reasonable measures to reduce or eliminate the conditions that may cause the decline of the public tree.

I. **Fruit Control**

While many trees produce flowers or fruit, some trees can be considered a nuisance if the use area is not compatible with the debris generated by the tree. Always consider treatments as part of an overall plant health care program. For example, the dropping fruit of the European olive (*Olea europaea*), American sweetgum (*Liquidambar styraciflua*), or acorn drip of a holly oak (*Quercus ilex*) may be a safety hazard if it is in the proximity of an ADA accessible ramp or other pedestrian area.

In such cases, control measures are warranted and must be prescribed by a pest control advisor and administered by the pest control applicator to ensure successful application of treatment materials.

V. **TREE REMOVAL**

- A. Public trees are considered an important asset of the agency. As such, it is the policy of the agency to preserve trees whenever possible. There are certain conditions in which a tree must be removed, such as when it is considered an emergency. This includes: trees identified as an imminent hazard and/or trees that exceed the threshold of risk. Other conditions require the review and approval of the director or arborist.
- B. Trees will be removed only when one or more of the following criteria are met:

1. The tree is in a state of decline due to disease or insect pest for which there is no likelihood of a cure
 2. The tree poses a safety risk that cannot be corrected or where an unreasonable safety risk would be created by the construction process or root pruning
 3. Work improvements required to be made around the tree will likely kill the tree or render it a hazardous tree.
 4. Tree preservation is not cost effective compared to the tree's monetary value
 5. The tree poses a public nuisance because of its species, size, location, fruit and seed drop, limb breakage or other objectionable conditions
 6. The tree interferes with the growth and development of a more desirable tree
- C. If a public tree's root system has been found to be elevating the sidewalk to a degree greater than the agency's policy where the tree's removal is not an option, the sidewalk repair will be made using an approved replacement or modification method which best corrects the sidewalk anomaly while minimizing harm to the tree.
- D. A tree must be evaluated and determined to be hazardous before it can be removed for hazardous reasons. It is the responsibility of the agency to mitigate or abate any known hazardous condition of a tree that may be of questionable structure or deemed as hazardous. The arborist shall be responsible for hazard assessment of public trees, and will use the following criteria:
1. If a tree possesses a structural defect that may cause the tree or part of the tree to fall, and the condition is determined to be imminent, the tree is considered hazardous. Mitigation pruning or removal should be considered to reduce the level of risk.
 2. If the hazardous condition cannot be mitigated or reduced to a less than significant level, then the tree shall be authorized by the agency to be removed to abate the condition.
- E. Evaluation of other factors that contribute to tree failure shall be considered, including the following:

1. Structural defects in the tree, including branches, trunk and roots.
2. Potential unintended objects, including people, structures, or property use and occupancy.

Advanced assessment methods can include an evaluation of structural defects in employing the most current methods of internal decay inspection available; soil/slope and/or creek bank stability; individual species' susceptibility to failure; pruning; history; decay weaknesses and any other compromising or pertinent factors considered. This is an option or may be considered for high value trees.

Evaluation of unintentional objects shall consider structures or activities under or around the tree (e.g., building, parking, pedestrian, recreational, utility lines, hardscape, etc.). Occupancy shall consider frequency of use, and whether the unintended object will be present when failure occurs.

Consideration shall be given to whether the unintended object can reasonable be removed or isolated to mitigate the hazard.

VI. REPLACEMENT AND PLANTING OF TREES

- A. Agency should develop a master street tree management plan that incorporates policy goals, designated street trees, species diversity, planting space criteria, and drought tolerance.

B. Tree Planting Specifications

The following specifications pertain to all trees that are to be planted within the public right-of-way or on publicly owned property:

1. Replacement trees should be selected from the street tree masterplan for recommended species.
2. The location of a replacement tree shall be subject to the approval of the director. A replacement tree shall be planted in a reasonable location as close as possible to the removed tree, unless otherwise noted in an approved streetscape or master planting plan.
3. The minimum size planting area for the tree species will be dictated by the street tree master plan.

C. Planting Stock and Materials

1. Quality

- a. All plants and trees installed within the agency shall conform to most current ANSI Z60.1 standard.
- b. Plants shall be sound, healthy, vigorous, and free of plant disease and insect pests and their eggs.
- c. Container stock shall be grown for at least eight months in containers and shall not be root bound or have girdling roots.
- d. Trees shall not have been topped.
- e. Nursery stakes shall be removed when tree is installed in the ground.

2. Miscellaneous Materials

When deemed necessary by the arborist, the following materials shall be used:

- a. Support stakes shall be treated or untreated two-inch diameter lodge pole pine without the use of cross braces. After installation, stakes shall be trimmed so that the branches clear the top of the stake. Generally, the stakes shall have an installed height of two-thirds the height of the tree.
- b. Tree ties shall be used and installed in a figure eight fashion to support the tree to the stakes at the bending point of the trunk.
- c. Screened untreated wood chips shall be used that are one-half to one inch in size and spread to a two-inch depth out to the edge of the root ball. The mulch shall be kept at least six inches away from the trunk and shall be applied to each tree at two times the diameter of the tree root ball.
- d. Where appropriate for use along public sidewalks, 12-inch linear root barrier shall be used and shall be ten feet in length and placed on center with the tree and on the sidewalk or curbside only. Root barrier boxes or barrier circles that encircle the tree are not approved. Species selection should be suitable to minimize infrastructure conflicts.

- e. Where sidewalk width is less than eight feet and new trees will be installed, tree well designs should consider reduction of trip hazards as approved by the director.
- f. Stem guard devices are recommended for new trees in turf areas to help reduce damage to lower trunks by weed eaters.

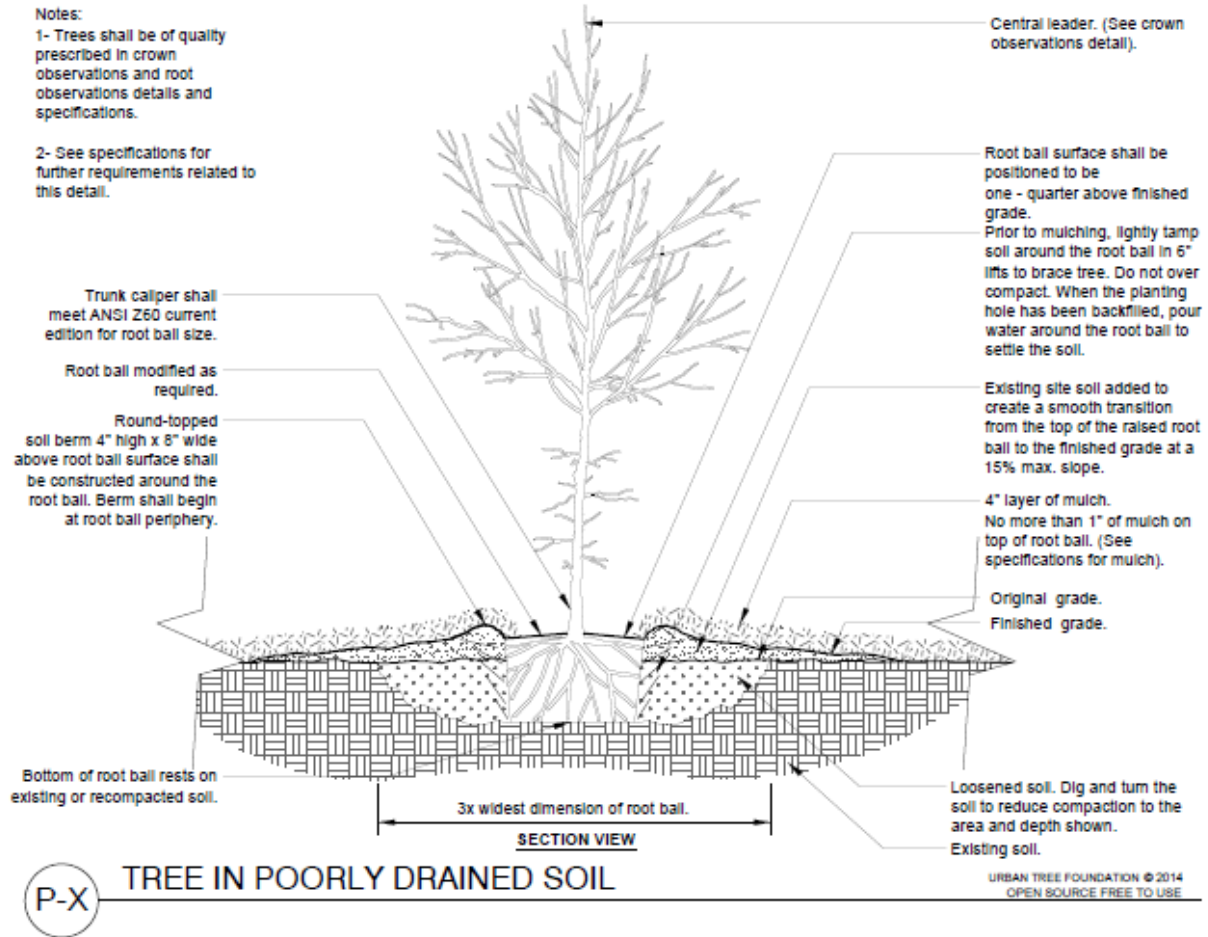
D. Planting Site Preparation

1. Soil Preparation and Conditioning

All debris, wood chips, pavement, concrete and rocks over two inches in diameter shall be removed from the planting pit to a depth dictated by the root ball size of the tree being installed, unless approved otherwise by the director.

E. Planting in Difficult Soil Conditions

- 1. Trees planted in turf areas shall have a ring of mulch. The turf shall be maintained a minimum of one foot from the new tree stem, with mulch placed on top of the root ball. The mulch shall be six inches away from and not touching the tree stem.
- 2. Occasionally, tree planting must occur in poor or difficult soil where standard planting techniques will result in poor-to-average performance or mortality. In this case, alternative or specified soils, such as engineered, amended or structural urban tree soil mix, including written specifications and physical samples, shall be submitted for approval by the director.
- 3. Planting schematic from International Society of Arboriculture.



VII. REFERENCES

- ANSI A300: Standards for Tree Care Operations
- ANSI Z133: Safety Requirements for Arboricultural Operations
- ANSI Z60.1: Nursery Stock Standard
- Guide for Plant Appraisal, Current Edition
- ISA Tree Risk Assessment BMP
- ISA Tree Pruning BMP
- ISA Downloadable Resources
- <http://www.isa-arbor.com/education/onlineresources/cadplanningspecifications.aspx>
- <http://www.ansi.org>