City of San Marino
Parks and Public Works Department

STREET TREE POLICY AND PROCEDURES

September 1, 2016
Revised and Adopted by the City Council October 26, 2018
1.0 GENERAL PRESERVATION AND MANAGEMENT GUIDELINES

One of the most important aspects of preserving San Marino’s street trees is the ability to retain a managed population in terms of species, diversity, density and appropriateness. The City will achieve this through proper planning and gradual reforestation efforts rather than through drastic deforestation and replacement measures. No healthy, living tree will be removed for the sole purpose of altering an area’s existing tree species composition. Removal will conform to Section 7.0 of these guidelines.

1.1 Species Diversification and Density

A diversified population of tree species helps to guard against the negative impact of monocultures. Monocultures (large populations of a single tree species) may be ravaged during insect or disease epidemics. On the other hand, too diversified a population may create an unmanageable inventory of trees. Thus, as a means of controlling species variety, it is the goal of the City to retain a population of trees in which the optimum quantity of a single tree species should range between 0.5 and 10.0 percent of the total tree population.

1.2 Street Tree Management Plan (STMP)

The STMP will be based on an assessment of each street and the designated species chosen for that street to ensure that the right tree is planted in the right place based upon the following criteria:

a) **Species hardiness.** Based upon the tree’s adaptability to the region in terms of its resistance to diseases, pests, temperature extremes.

b) **Drought Tolerance.** Species that are more tolerant of long, dry periods are preferred.

c) **Durability and wind resistance.** Species that are not brittle by nature.

d) **Grow Space.** Available parkway space relative to the expected tree trunk circumference and root flare at maturity.

e) **Overhead clearance.** The potential for conflicts between the tree’s canopy and overhead obstructions, such as utility lines, at the tree’s mature height.

f) **Character and basic design plan for the neighborhood.** The general compatibility between the tree and its location.

g) **Canopy and subsurface growth habits.** Species that do not have invasive surface roots, extensive sucker production, or abundant fruit litter are preferred.

h) **Irrigation, drainage and soil qualities.** Trees that do well under various irrigation and soil conditions are preferred.

i) **General aesthetics and shading potential.** Trees that provide some aesthetic benefits, such as flowers or attractive fall color, or trees that provide a good amount of shade are preferred.

j) **Existing, traditional or native plant palettes.** Species that already exist in a particular area, have traditionally or historically existed in that area, or are native to this region are preferred.
k) **Availability.** Trees that are generally available in local nurseries are preferred. Longer streets may have several alternate designated species in an effort to incorporate diversity into the street tree population to avoid the negative effect of species monoculture. Segments of some streets may be designed with a utility alternate that will be a species planted in locations where there exists overhead clearance conflicts or grow space limitations.

The STMP will be retained by the Department. This list identifies every public street in the City with the designated species and alternates for each street being denoted in both botanical and common names.

**1.3 Inventory Administration**

The Department will keep current an inventory of all City trees including detailed site characteristics and work histories for each tree. The inventory of City trees identifies species, DBH (diameter at breast height), height, canopy and adjacent hardscape. When creating an inventory of trees, standard procedures will be used to ensure that they are done in a consistent and regular manner. The inventory includes street trees and trees in other public spaces such as parks and medians. Public access to view the inventory will be provided through the City’s website.

**1.4 Street Tree Planting within Entitlement Process**

Development projects will be required to plant street trees as a condition of approval where existing street trees are missing or in poor health. The spacing of trees and species are defined in the Department’s conditions of approval and the approved site plan for the project. The Department refers to the STMP for approved street trees and to coordinate the species planted with the street tree palette for the area.

Planting of Street trees will comply the latest edition of the Standard Plans for Public Works Construction (SPPWC) (“The Greenbook”) standards for tree planting and as amended by this policy (see Sections 4 and 10).

**2.0 GUIDELINES FOR PLANTING NEW AND REPLACEMENT TREES**

**2.1 Basis for Planting Guidelines**

The Department is responsible for the planting of all street trees and may delegate the actual planting of trees to contractors or property owners. The following guidelines have been developed to promote the health and safety of City trees from the time that they are planted through their maturity. These guidelines apply to all City trees that are to be planted.
2.2 Season to Plant

Unless otherwise approved by the Director, all planting of trees will take place between November and April to take advantage of the dormant period for most trees and the cooler, wetter seasons of the year unless the work is proposed to occur during the bird nesting period (January through September). Consequently the Department will consult with an appropriate expert and if necessary prepare in accordance with California Environmental Quality Act guidelines an environmental document. Work that occurs during the bird nesting period may require the presence of an on-site biologist and may have to be suspended until nesting birds have abandoned their nest.

2.3 Planting Sites

It is the objective of the City to plant all viable vacant sites within City rights-of-way and to replace City trees that have been removed. Viability of planting sites is based upon the following criteria:

A. **Spacing.** There is adequate spacing present overhead, underground and radially to allow for the healthy, unimpeded growth of the tree to its mature size. Specific examples of spacing conditions that may make a site unsuitable for planting include inappropriate canopy room between existing trees, too close a proximity of a planting site to existing water, gas or sewer lines, potential for conflict with overhead power lines, or inadequate width of the location’s parkway for accommodating the tree’s girth.

B. **Traffic Clearance.** There is adequate line of sight visibility between normal vehicular or pedestrian traffic and necessary signage, street lights or views.

2.4 Tree and Plant Protection

It is the objective of the City to preserve and protect nearby trees and other plantings from damage that may occur during the planting or removal of other trees. The Department will employ the use of tree protection zones as specified in Section 10 and shall require private developers working in the City’s right-of-way to protect existing trees as specified herein.

3.0 (RESERVED)

4.0 TREE STOCK AND OTHER PLANTING MATERIALS

4.1 Nursery Stock Standards

The City will make every effort to ensure that it plants only vigorous, healthy trees that can be trained into an attractive natural form with strong roots and good crown development. The specifications for acceptable nursery stock are as follows:

a) All trees are to be true to type or botanical name as ordered or shown on planting plans.
b) All trees should be a size equivalent to that of 15-gallon minimum (see Section 4.7 for size upgrades requested by the adjacent private property owner). This size tree has been found due to its age to be more resilient and vigorous growing when compared to larger trees, which are susceptible to shock and take longer to establish new growth.

c) All trees are to have a single and fairly straight trunk with a good taper and good branch distribution vertically, laterally and radially.

d) All trees are to be healthy, have a form typical for the species or cultivar; be well rooted, and are properly trained.

e) The root ball of all trees are to be moist throughout and the crown shall show no sign of moisture stress.

f) All trees shall comply with federal and state laws requiring inspection for plant diseases and pest infestations.

g) No tree shall be accepted that has been severely topped, headed back, pollarded or lion-tailed.

h) No tree shall be accepted that has co-dominant stems or excessive weak branch attachments that cannot be trained out without jeopardizing the natural form of the species.

i) No tree shall be accepted that is root bound, shows evidence of girdling or kinking roots, or having knees (roots) protruding above the soil.

4.2 Planting Material Standards

Unless otherwise approved by the Director, all street trees shall be planted using materials that meet the following criteria:

a) **Tree Stakes.** Provide 2 sturdy, 8-foot-long minimum lodge pole pine stakes. Stakes shall be placed on the outer edge of the root ball on either side of the tree, parallel to the curb or walkway, or perpendicular to prevailing winds (see SPPWC 518).

b) **Staking Ties.** Staking ties shall be 16- to 18-inch-long rubber cinch ties fastened to each stake with galvanized roofing nails. Ties will be pulled loose enough to allow for free movement of the tree in the wind (see SPPWC 518).

c) For other details see attached SPPWC standard plans.

4.3 Tree Planting Specifications

Street trees are to be planted in accordance with the SPPWC standard plan 518 and 520 with the following modifications:

a) **Tree guying is not permitted** (see SPPWC 518).

b) The use of root barriers will be determined on a case by case basis (see SPPWC 520).

c) **Gravel-filled solid-wall pipes shall be substituted for perforated pipes to carry water to the root zone** (see SPPWC 520).
4.4 Site Cleanup after Planting

Work areas should be left in a condition equal to or better than that which existed prior to the commencement of planting operations. All debris should be cleaned up each day before the work crew leaves the site. All lawn areas are to be raked, all streets and sidewalks are to be swept, and all brush, branches, excess soil, rocks or other debris are to be removed from the site.

4.5 Watering Schedule

During the establishment period written notices will be mailed to adjacent private properties where the new tree(s) are located. The Department will water the new trees thoroughly to their root depth as frequently as needed. The minimum standards are as follows:

   a) Tree Age 1 to 3 months in the ground: 4 times per month or as necessary.
   b) Tree Age 4 to 6 months in the ground: 2 times per month or as necessary.
   c) Tree Age 7 to 12 months in the ground: 1 time per month or as necessary.

The Department will monitor tree health during the establishment period and modify the water schedule listed above as necessary due to factors such as weather patterns and drought conditions to ensure maximum survivability of the new tree.

4.6 Training Young Trees

All newly planted trees will be placed on a written schedule to receive young tree maintenance immediately after planting. Properly trained trees will develop into structurally strong trees well suited for their surrounding environment. These trees should require little corrective pruning as they mature. Young trees that reach a larger mature size should have a sturdy, tapered trunk with well-spaced branches that are smaller in diameter than the trunk.

Every street tree should be scheduled for training at least once within the first 3 years after being planted as part of a young tree maintenance program (YTMP). The YTMP will include evaluating the overall condition of the tree, cleaning out of any dead wood and pruning the tree in such a manner as to develop good structure, checking to insure stakes and ties are removed in a timely manner from the young tree so as not to inhibit its development, and examining the watering basis to verify that the tree is receiving adequate water.

4.7 Tree Size Upgrades Requested by Property Owner

The Department will be open to increasing the size of the stock tree being planted in the parkway strip if requested by the adjacent private property owner. If the larger tree is determined to be feasible based on the STMP, the differential cost of labor and materials to plant a large tree and a 15-gallon tree of the same species shall be reimbursed by the private property owner in accordance with the City’s fiscal policies prior to installation of the larger tree.
5.0 TREE PRUNING GUIDELINES

5.1 Frequency and Manner of Pruning

The Department is responsible for pruning of street trees. Street trees will be pruned on a regular basis using professionally accepted standards as established by the International Society of Arboriculture (ISA). They will be pruned in a manner to encourage good development while preserving their health, structure and natural appearance. Topping, heading back, stubbing, lion tailing or pollarding of public trees is strictly prohibited.

Residents will be notified of any pruning projects affecting a City tree located in front of their home per Section 8.

5.2 Utility Clearance Pruning

Line clearing is performed by tree trimming companies under contract to Southern California Edison (SCE) who is to inform the Department of upcoming trimming work. The Department will inspect the location before trimming occurs to see if an alternative treatment to trimming or pruning can be used and make recommendations to SCE modify the trimming scope to reduce impacts on trees (especially palm trees). The Department will review the site after the work is performed to determine if the work by SCE has damaged or otherwise impacted the long-term health of the tree. Due to state utility regulations the authority for determining the appropriate trimming rests with SCE. However, the City may seek to pursue claims against SCE if it is in the best interests of the City to seek damages or other compensation such as replacement trees.

5.3 Certified Arborist

All City-contracted tree companies are required to have in their employment a full-time, permanent certified arborist as accredited by the International Society of Arboriculture (ISA). This person shall be responsible for ensuring that the contractor's crews are performing work according to City specifications and this policy.

The Department will have on-staff a certified arborist or employ an outside consultant to assist the Department in implementing this policy.

5.4 Pruning by Private Property Owner

San Marino parkway trees are a valuable asset to the City’s neighborhoods and conformance with this policy is paramount to ensure their long and healthy life. Consequently, it is important to use the same standards of care if tree work is to be performed by others.

Private property owners may request to prune a City parkway tree with a private contractor in-between the 4 year pruning cycle used by the City. On a case-by-case basis, the Department may allow this pending a review of the subject tree, adjacent street trees, the proposed trimming plan and the next scheduled tree pruning/trimming operation.
The property owner should submit an encroachment permit application that includes:

a) Name of the property owner.
b) The proposed contractor name and contact information with a copy of a valid C-61/D-49 license and a City of San Marino business license.
c) A pruning plan identifying the certified arborist who will be supervising the pruning and the proposed dates of the work.
d) All insurance documents specified by the encroachment permit.
e) The encroachment permit fee was waived by the City Council on October 26, 2018.

Should an encroachment permit for pruning be approved, the property owner, their contractor and arborist, and Department personal shall meet on-site to review the scope of the pruning and other relevant matters for pruning within the public right-of-way per Sections 5, 9 and 10. Notification of the pruning to the neighborhood will be in accordance with Section 8.

6.0 TREE AND HARDSCAPE CONFLICTS

6.1 General Policy Regarding Tree and Hardscape Conflicts

A sidewalk can be removed and replaced in a single day. A tree may take 20-70 years to reach a size where it damages the sidewalk. The sidewalk or curb will require repair whether the tree remains or not. The vested time and value of the tree prompts modifying the site to allow the tree to remain whenever practical. However, the tree in an improper growing site can cause hazards and recurring damages that cannot be corrected by modifying the growing site, and removal and replacement may be necessary. Because of the complexity of resolving tree-hardscape conflicts, the following guidelines will be employed to govern the decision-making process.

6.2 Inspection

If tree roots are the cause of hardscape damage, a certified arborist will be consulted to consider the size, species, structure/condition and external or environmental factors present that may support removal.

a) **Size.** Trunk size (DBH) and height should be noted in relation to the amount of structural roots that should remain to support the tree.
b) **Species.** The species should be considered for its environmental suitability and its appropriateness to the site.
c) **Structure and Condition.** The tree should be inspected for stability: leaning and crown balance. The trunk should be checked for any cavities, signs of decay or insects that may cause instability (i.e., root rot, bores, termites). The condition of the foliage should be checked noting dieback, size and quantity of foliage, and anything that may indicate stress.
d) **External or Environmental Factors.** The growing space should be considered. Check for adequate growing space. Note proximity to overhead utilities, water meters, and lines of sight for driveways, intersections and traffic signs. Note
damage to private property such as uplifting sidewalks, driveways, retaining walls, structural damage to a house, etc.

6.3 Possible Remedies

The Director in consultation with a certified arborist will determine the how best to proceed with tree removal being the last resort.

7.0 STREET TREE REMOVAL

7.1 Tree Removal Permit

Except in instances requiring immediate action for the protection of life or property, prior to the removal of any street tree with a DBH greater than 4-inches (heritage and Oak trees) or 6-inches (established trees) the Department will obtain a tree removal permit from the Planning and Building Department unless the tree removal is part of a City Council-approved capital improvement project. This is the same process that private property owners are required to use to obtain prior approval to remove privately-owned trees. Preparation of an environmental document may be required for trees proposed to be removed during the bird nesting period.

7.2 Reasons for Tree Removal

Every effort will be made to maintain the health of the City’s trees and avoid tree removal. However, the removal of a street tree street becomes necessary due to the following as determined in consultation with a certified arborist:

- The tree is dead.
- The tree has reached an over-mature condition and is in declining health that will result in its death within the year.
- The tree is infected with a disease that cannot be treated successfully and/or there is a strong potential that the pathogen could spread to other trees in the immediate vicinity.
- The tree has been determined to be a public health and safety hazard because of its high potential for failure due to considerable dead of dying foliage, branches, roots or trunk.
- The tree requires extensive root pruning because of excessive hardscape damage resulting in the severe reduction in its capacity to support itself and thereby creates a potential safety hazard.
- The tree due to its growth habit and location creates a safety hazard.
- Removal of the tree has been approved as part of a City Council-approved capital improvement project.
7.3 Invalid Reasons for Tree Removal:

The following represent invalid reasons for removal of a street tree:

- Leaf litter.
- Messy fruit or flowers.
- View obstruction (other than for safety reasons).
- Roots infiltrating into private sewer laterals.
- Power line obstruction if there is a feasible solution to move the power line, e.g., pole relocation or undergrounding conflicting lines, that has been approved by SCE.
- Hardscape uplift that can be mitigated through root pruning, ramped sidewalks, root planning, etc.

8.0 PUBLIC COMMUNICATIONS

8.1 Tree Pruning

It is important that residents/property owners are notified of regularly scheduled tree pruning within the parkway adjacent to their property. Notification by mail should be made at least 10 business days in advance of scheduled pruning.

8.1 Tree Removal

It is important that residents/property owners are notified of the upcoming removal of a street tree. Notification will be made for trees that do not pose an immediate threat to life or property and a DBH greater than 4-inches (heritage and Oak trees) or 6-inches (established trees).

Notification by mail will be made at least 10 business days in advance of scheduled pruning and mailed to the neighborhood:

a) The resident/property owner of the property site where the street tree is located (the lot).
b) The 2 properties on each side of the lot.
c) All properties adjoining the rear of the lot and each property on either side of the adjoining property(ies).
d) Extending the lot’s property line across the street, all property(ies) across the street within the parameters of the extension and the property on either side of those properties.
e) For lots at the end of a cul-de-sac street, all property(ies) adjoining the rear of the lot, each property on either side of those adjoining property(ies) and the 3 properties extending from each side of the lot.

Trees to be removed will be marked by signage visible from the street 10 days in advance and the marking will be referenced in the notification letters to provide clarity on the exact tree or trees scheduled for removal.
8.3 Tree Planting

It is important that residents/property owners are notified of the planned planting of a City tree within the parkway adjacent to their property. Notification will be by mail at least 10 business in advance of the tree planting. Proposed location for the street tree will be marked on the curb prior to the mailing of the letter and will be referenced in the letter to provide the resident/property owner with the opportunity to bring concerns about the location to the City’s attention.

9.0 SUPERVISION

Except in cases requiring immediate action from the protection of persons or property, the daily work of planting, pruning or removal of streets trees will not begin until the personnel performing the work is met on site by a certified arborist and the Public Works Manager or Director who will inspect the site and verify the correct tree is marked for pruning or removal.

10.0 STANDARD DETAILS

The following documents will be used to implement this policy.

a) Sample notice to residents/property owners of work to be performed by Department personnel.
b) Sample notice to residents/property owners of work to be performed by city contractor.
c) Sample notice to post on tree to be removed.
d) Model specifications for tree and plant protection.
e) San Marino standard plan SM 102 Residential Sidewalk Details.
f) SPPWC standard plan 518 Tree Staking.
g) SPPWC standard plan 520 Tree Planting.
Date ______________

Notice of Parkway Tree Removal by Public Works Personnel

Dear Neighbor:

No sooner than 14 days from the date of this letter, Parks and Public Works personnel will be removing tree(s) located in parkway near your home. This letter provides details about the City’s removal and restoration process.

**Overview** - The work will consist of tree removal, stump removal, disposal of all generated debris and restoration of parkway. Construction activity will occur between 7 am and 5 pm, Monday through Friday.

**Tree Removal** - Trees targeted for removal are noted with an orange-colored ‘X’. The trees will be generally cut to 4-inches to 6-inches above the ground. We will remove all limbs, leaves and logs at the end of each work day and dispose of them at a legal and proper disposal site. We are unable to give logs to residents.

**Stump Removal and Restoration** – We will ground the remaining tree stumps to a minimum depth of 12-inches. All areas disturbed by stump removal will be restored no later than 2 weeks after stump has been removed.

<table>
<thead>
<tr>
<th>Type of Tree</th>
<th>Size</th>
<th>Reason for Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you have questions or would like more information please contact Mr. John Santillan, Parks and Grounds Foreman, (626) 300-0790 or JSantillan@CityOfSanMarino.org.

On behalf of the City of San Marino Parks and Public Works Department, thank you for supporting our efforts to maintain the City’s wonderful urban forest.

Regards,

Michael Throne, PE
Parks and Public Works Director/City Engineer
Notice of Parkway Tree Removal

Dear Neighbor:

The City of San Marino has contracted with Mariposa Landscapes Inc., to remove dead parkway trees within the City. No sooner than 14 days from the date of this letter, the contractor will be removing tree(s) located in parkway near your home. This letter provides details about the City’s removal and restoration process.

Overview - The work will consist of tree removal, stump removal, disposal of all generated debris and restoration of parkway. Construction activity will occur between 7 am and 5 pm, Monday through Friday.

Tree Removal - Trees targeted for removal are noted with an orange-colored ‘X’. The trees will be generally cut to 4-inches to 6-inches above the ground. The contractor is required to remove all limbs, leaves and logs at the end of each work day and dispose of them at a legal and proper disposal site. The contractor is unable to give logs to residents.

Stump Removal and Restoration - The contractor is required to ground the remaining tree stumps to a minimum depth of 12-inches. All areas disturbed by stump removal will be restored by Public Works personnel no later than 2 weeks after stump has been removed.

<table>
<thead>
<tr>
<th>Type of Tree</th>
<th>Size</th>
<th>Reason for Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you have questions or would like more information please contact Mr. John Santillan, Parks and Grounds Foreman, (626) 300-0790 or JSantillan@SanMarinoCA.org.

On behalf of the City of San Marino Parks and Public Works Department, thank you for supporting our efforts to maintain the City’s wonderful urban forest.

Regards,

Michael Throne, PE
Parks and Public Works Director/City Engineer
NOTICE OF
TREE REMOVAL

Estimated Removal Date _____________

The City of San Marino Parks and Public Works Department has a policy to preserve healthy trees on public property whenever possible and practicable. However, if the tree is dead, diseased, causing severe hardscape damage or is a public safety hazard, sometimes the tree has to be removed.

It has been determined that there is no alternative but to remove this City tree.

If you have questions or would like more information please contact:

Mr. John Santillan, Parks and Grounds Foreman
(626) 300-0790
JSantillan@SanMarinoCA.org
MODEL SPECIFICATIONS
FOR
TREE AND PLANT PROTECTION

7-9  PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

The provisions below shall supplement but not replace those provisions in Section 7-9 of the Standard Specifications.

7-9.1 Temporary Tree and Plant Protection

7-9.1.1 References

   1.  Part 1 – Pruning.
   2.  Part 5 – Management of Trees and Shrubs During Site Planning, Site Development, and Construction.


C.  BNi Publications. “Standard Specifications for Public Works Construction (The “Greenbook”).”

D.  BNi Publications. “Standard Plans for Public Works Construction (SPPWC).”

E.  City of San Marino. “Standard Plans.”

7-9.1.2 Definitions

A.  Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs or other vegetation to be protected during construction as indicated.

B.  Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by a circle concentric with each tree with a radius 1.5 times diameter in inches of tree trunk measured 4.5-ft. above ground with a minimum radius of 6-ft. unless otherwise indicated on Drawings.
   1.  Example: 3-in. diameter tree x 1.5 = 4.5-ft. Use 6-ft. radius.
   2.  Example: 12-in. diameter tree x 1.5 = 18-ft. Use 18-ft. radius.

C.  Vegetation: Trees, shrubs, groundcovers, grass, turf and other plants.

7-9.1.3 Informational Submittals

A.  Existing Conditions: Document existing trees and plantings indicated to remain to establish preconstruction conditions.
   1.  Use sufficiently detailed photographs.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or plant designated to remain.

7-9.1.4 Project Conditions

A. Following practices are prohibited within protection zones:
   1. Storage of construction materials, debris or excavated material.
   2. Parking of vehicles or equipment.
   3. Foot traffic.
   4. Erection of sheds or structures.
   5. Impoundment of water.
   6. Excavation or other digging unless otherwise indicated.
   7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protected zones.

C. Prohibit heat sources, flames, ignition sources and smoking within or near protection zones and organic mulch.

D. Maintain protection-zones throughout all construction phases.

7-9.1.5 Materials

A. Topsoil:
   1. Use natural or cultivated top layer of soil surface, reasonably free of subsoil, clay lumps, gravel and other objects 1/2-in. in diameter and free of weeds, roots and topic and other non-soil materials.
   2. Obtain topsoil from Project site.

B. Organic Mulch:
   1. Ground or shredded bark.
   2. 3-in. maximum, 1/2-in. minimum.
   3. Preferably use healthy plant material from Project site.

C. Protection-Zone Fencing:
   1. Fix in position as directed by Engineer.
   2. Plastic Protection-Zone Fencing:
      a. Plastic construction fencing manufactured of high-density extruded and stretched polyethylene fabric with 2-in. maximum opening pattern.
      b. Secure with plastic bands or galvanized steel wire ties.
      c. Support fence with tubular or T-shape galvanized steel posts spaced no more than 8-ft. apart.
         1) Height: 4-ft.
         2) Color: Nonfading, high-visibility orange.

D. Plywood Wood for Protection-Zone Vehicle Crossing: 3/4-in. thick exterior grade plywood veneer sheathing.

E. Signage: Post highly visible signs on fencing demarking “Tree Protection Zone.”
Model Tree and Plant Protection Specification

7-9.1.6 Examination

A. Erosion and Sedimentation Control:
   1. Verify temporary erosion and sedimentation controls are in place.
   2. Verify flows of water redirected from construction areas or generated by construction activity do not enter or cross protected zones.

B. Coordinate with 7-8.6.3.

7-9.1.7 Preparation

A. Locate and clearly identify trees, shrubs and other vegetation to remain or be relocated.
   1. Tie 1-in. blue-vinyl tape around each tree at 54-in. above ground.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing or storing construction materials.

7-9.1.8 Tree and Plant-Protection Zones

A. Protection-Zone:
   1. Mulch areas inside tree protection-zones as indicated.
   2. Apply 4-in. average thickness of organic mulch.
   3. Do not place mulch within 6-in. of tree truck.

B. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on site and construction operations begins. Keep fence tight and neat.

C. Signage: Install in visibly prominent locations at 20-ft. spacing with no fewer than 4 signs facing different directions.

D. Maintain protection zones free of weeds and trash.

E. Vehicle Crossing of Protection Zone: Lay down plywood over root zone to distribute weight of construction vehicle if access is required through protection zone. 12-in. to 18-in. thick mulch may be substituted for plywood.

F. Repair or replace trees, shrubs and other vegetation indicated to remain damaged by construction operations.

7-9.1.9 Excavation

A. Excavate at edge of protection zones and for trenches indicated within protection zones in accordance with this Article.

B. Review required trenching through protection zones with Engineer prior to starting Work.

C. Trenching Near Trees:
   1. Where utility trenches or other excavations are required within protection zones, hand excavate under or around tree roots or tunnel under roots.
2. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with utility installation.

D. Redirect roots in backfill areas where practicable. If large, main lateral roots are encountered expose roots beyond excavation limits as required to bend and redirect them without breaking.

E. Exposed Roots: Do not allow exposed roots to dry out before placed permanent backfill.
   1. Provide temporary earth cover or pack with peat moss and wrap with burlap.
   2. Water to maintain in moist condition.
   3. Temporarily support and protect roots from damage until roots are permanently relocated and covered with soil.

7-9.1.10 Root Pruning

A. Prune roots up to 1-in. in diameter affected by temporary and permanent construction by hand per ANSI A300 Part 1.
   1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments. Do not break, tear, chop or make slant cuts.
   2. Temporarily support and protect roots from damage until roots are permanently redirected and covered by soil.
   3. Cover exposed roots with burlap and water regularly.

B. Work around and/or under roots greater than 1-in. in diameter. Direct request to remove roots greater than 1-in. in diameter to Engineer for approval.

7-9.1.11 Crown Pruning

A. Prune branches to compensate for root loss per ANSI A300 Part 1.
   1. Do not remove major branches that provide balance and shape. Tie up branches required to remain.
   2. Prune with sharp tools.
   3. Do not apply pruning paint to wounds.

B. Chip removed branches of healthy plants and dispose of on-site at locations identified by Engineer.

7-9.1.12 Regrading

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond protection zone. Maintain existing grades within protection zone.

B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from away from tree.

C. Root Pruning:
   1. Prune tree roots exposed by lowering grade.
   2. Do not cut main lateral roots or taproots.

Issued: 10-26-2018
3. Cut only smaller roots and as required for root pruning.

D. Raising Grade: Where new finish grade is indicated above existing grade around tree, slope grade beyond protection zone.

7-9.1.13 Repair and Replacement

A. General: Repair or replace trees, shrubs and other vegetation damaged by construction operations within 1 working day.

B. Trees: Remove and replace trees indicated to remain that are more than 25-percent dead or in unhealthy condition damaged by construction operations.
1. Provide new trees of same size and species.

C. Soil Aeration: Aerate surface soil compacted during construction 10-ft. beyond dripline and no closer than 3-ft. from tree trunk.

7-9.1.14 Disposal of Surplus and Waste Materials

A. Remove excess excavated material, trash and debris generated by Work in this Article.

B. At Project closeout, neatly roll-up protection-zone fencing and bundle posts and deliver to Owner.

7-9.2 Payment

A. All costs for protecting, removing and restoring existing improvements shall be included in Bid.
NOTES

1. Removal of root 1" or greater in diameter within Tree Protection Zone requires approval of City Arborist.

2. Stamped or textured concrete requires approval of City Engineer.

TYPICAL SECTION

Compact Native Subbase Material Underneath Sidewalk to 90% Relative Compaction.

Tree Protection Zone.

4" thick (Typ.)
6" thick at Driveway Aprons. Concrete Class 520-C-2500 with Sand Finish, Fawn Color.

TYPICAL SCORELINE DETAIL

For Other Cases, Match Adjacent Scoring.

EXIST. CURB AND GUTTER.

EXIST. TREE ROOT.

EXIST. CURB AND GUTTER.
SINGLE STAKING

NOTES:

1. STAKE SHALL BE EITHER 2" (50 mm) DIAMETER LODGE POLE PINE, TREATED WITH COPPER NAPHTHANATE OR PRESSURE TREATED WITH CHROMATED COPPER ARSENATE, OR GALVANIZED STEEL PIPE, PER SSPWC 308-4.6.1 (METHOD A).

2. HEIGHT OF STAKE SHALL BE 10' (3 m); HOWEVER, IT SHALL NOT BE HIGHER THAN THE TOP OF THE TREE.

3. TREE SUPPORTS SHALL BE PER SSPWC 308-4.6.1.
LENGTH OF STAKES

<table>
<thead>
<tr>
<th>TREE SIZE</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 GAL (55 L)</td>
<td>10&quot; (3 m)*</td>
</tr>
<tr>
<td>24&quot; (600 mm)</td>
<td>12&quot; (3.6 m)</td>
</tr>
<tr>
<td>30&quot; (750 mm)</td>
<td>12&quot; (3.6 m)</td>
</tr>
<tr>
<td>36&quot; (900 mm)</td>
<td>48&quot; (1200 mm) BOX SEE NOTE 4</td>
</tr>
</tbody>
</table>

*USE 12" (3.6 m) WITH CASE 2. SEE SPPWC 520.

DOUBLE STAKING

NOTES:

1. STAKE SHALL BE EITHER 2" (50 mm) DIAMETER LODGE POLE PINE, TREATED WITH COPPER NAPHTHANATE OR PRESSURE TREATED WITH CHROMATED COPPER ARSENATE, OR GALVANIZED STEEL PIPE, PER SPPWC 308–4.6.1 (METHOD A).

2. PLACE STAKES 18" (450 mm) APART FOR 15GAL (55 L) TREE. PLACE STAKES AT OUTER EDGE OF ROOT BALL FOR LARGER SIZE (BOX) TREES.

3. HEIGHT OF STAKES SHALL NOT BE HIGHER THAN THE TOP OF THE TREE.

4. FOR 36" (900 mm) OR LARGER BOX TREES–STAKE OR GUY AT THE DIRECTION OF THE ENGINEER.

5. TREE SUPPORTS SHALL BE PER SPPWC 308–4.6.1.
STANDARD IS MODIFIED - SEE STREET TREE POLICY

PAVED SECTION

CURB OR PAVEMENT
ROOT BARRIER 12" (4.0 m) x 18" (450 mm)
(75 mm)

WATER BASIN
BERM
FINISH GRADE

TREE STAKE - NOTE 8
TIE

UNPAVED SECTION

BACKFILL WITH AMENDMENTS
ROOT BALL
PERFORATED PIPE 4" ø (100 mmø) x 24" (600 mm)

PLAN VIEW

UNPAVED PARKWAY
15 GAL (60 LITER) OR 24" (600 mm) BOX

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

TREE PLANTING

STANDARD PLAN 520-4

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE 1985

SHEET 1 OF 4
NOTES:

1. SET TOP OF ROOT BALL 1" (25 mm) ABOVE FINISH GRADE.

2. FOR 24" (600 mm) BOX TREES OR SMALLER, INSTALL ROOT BARRIERS IF TRUNK IS WITHIN 5' (1.5 m) OF CURB OR WALK.
   FOR 30" TO 48" (750 mm TO 1200 mm) BOX TREES, INSTALL ROOT BARRIERS IF TRUNK IS WITHIN 10' (3.0 m) OF CURB OR WALK.

3. AMEND BACKFILL MIX PER SPECIFICATIONS. LEAVE TRUNK AND ROOT FLARE VISIBLE.

4. SET PERFORATED PIPE FLUSH WITH TOP OF BACKFILL. FILL PIPE WITH No. 2 GRAVEL PER SSPWC TABLE 200-1.4.(B) AND COVER WITH FILTER FABRIC. WRAP FABRIC 6" (150 mm) DOWN SIDES OF PIPE.

5. FORM 3 1/2" (90 mm) HIGH BERM AROUND BACKFILL AS A WATER BASIN.

6. TOP WATER BASIN WITH 3 1/2" (90 mm) OF No. 2 GRAVEL OR TYPE 1 MULCH PER THE SPECIAL PROVISIONS. KEEP GRAVEL OR MULCH 3 1/2"(90 mm) CLEAR OF TRUNK. LEAVE TRUNK AND ROOT FLARE VISIBLE.

7. REMOVE ALL NURSERY STAKES.

8. INSTALL NEW TREE STAKES PER SPPWC 518.

9. FASTEN TREE TO STAKES PER 308-4.6, TWO TIES PER STAKE.

10. AFTER PLANTING, PRUNE THE TREE AS APPROVED BY THE ENGINEER.

11. ROOT BARRIER, WHERE SHOWN, SHALL BE 80 MIL (2.0 mm) THICK.