Concord Public Works
Construction and Tree Protection
Standard Operating Procedures[1]

Need:
Just as roads, sidewalks, water, sewer, gas, electric and stormwater infrastructures provide essential transportation and utility functions, roadside trees provide important community benefits. As critical components of our green infrastructure, community trees help reduce stormwater flows, mitigate flooding, filter the air, reduce heating and cooling costs, add to property values, enhance community character, and beautify the landscape.

Unlike manmade infrastructure, trees, once damaged, cannot be repaired or replaced, only re-grown. Unfortunately, construction damage to trees is not always obvious or immediately evident. So to avoid costly losses, trees need carefully planned and appropriate protection during municipal or private construction in the public way.

Public Shade Trees[2]:
- All trees located within the public way or planted with public funds and property owner approval within 20 feet of the public way are defined as public shade trees.
- In Concord the Tree Warden[3] and Engineering Division are primarily responsible for the care, control, and protection of all public shade trees, and are empowered to enforce state and local tree protection laws. Maintenance of public shade trees is the responsibility of property owners (setback plantings) and CPW's Park & Tree staff (ROW plantings).
- No person may plant, trim, cut or remove a public shade tree without the prior permission of the Tree Warden and Engineering Division. <u>This control includes the cutting of roots during construction.</u>
- Non-emergency public shade tree removals require public notice and a public hearing. Tree removals due to emergency or immediately hazardous conditions do not require postings or hearing but do require the prior approval of the Tree Warden.

Protection Coordination:
- All non-emergency construction and excavations in the right of way require a ROW permit administered by the CPW Engineering Division (Division).
- Depending on the type and location of work, the Division will refer potential tree impacting work to the Tree Warden (private projects) or help coordinate the project with the Tree Warden (municipal projects).

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[1] Massachusetts Urban Forestry Program "The Citizen Forester" December 2004. Also see "Public Shade Trees Standard Operating Procedures" Concord Public Works, that emphasizes the importance of planting "the right tree in the right place". The goal is that Concord's trees will develop to their desired shape, fulfill their design intent, and live to their normal life expectancy a safe distance from pipes, wires, roads, walks, drains, curbing, driveways or other manmade infrastructure.

[2] Public Shade Trees in Concord are administered in accordance with MGL Chapter 87 and Town Bylaw.

[3] <u>For the purpose of this SOP the term Tree Warden will mean the Town Tree Warden or the Deputy Tree Warden.</u>

- *Municipal construction contracts impacting public shade trees should incorporate Tree Protection safeguards in the contract specifications and be highlighted in both the pre-bid and pre-construction meetings as well as be enforced throughout the mobilization, construction, and post-construction clean-up process.*
- Based on the scope, location of work, or tree(s) involved, a site visit may take place with the Division, Tree Warden, and project managers to discuss the type of work to be completed and to develop appropriate tree protection strategies.
- The protection plan will become part of the ROW permit conditions.
- For municipal projects the goal to minimize the need for individual Tree Warden site visits and prior approvals as use of these guidelines becomes common practice. This can be done by the issuance of Comprehensive Tree Protection Permits.

Guidelines:[4]

A. Root Protection:

- Steps should be taken to protect the "critical root zones" of public shade trees.
- The radius of the "critical root zone" is determined by multiplying the diameter of a tree in inches, by feet. In other words, a 10-inch diameter tree will have a 10-foot radius "critical root zone." When possible, protection should be provided beyond the dripline of the tree. Be aware that more mature trees need more protection.
- In special cases the "critical root zone" should be delineated before construction by marking the zone's perimeter.
- To prevent soil compaction within this protected zone, there should be no non-essential activity. Construction backfill material, construction stockpiles of material, and utility structures should not be stored (or construction equipment parked) in or around the bases of existing trees or within the protected zones.
- Note that roots do not usually grow under existing paved roads. However care should be taken during excavation/trenching especially in the "critical root zone".
- Roots do grow under sidewalks and can cause safety issues when they push up the sidewalk surface. Whenever necessary sidewalk restoration should ramp the walk over the roots and/or the walk should be routed away from the tree(s) in question. No roots should be cut for sidewalk work without the prior approval and guidance of the Tree Warden or via a comprehensive permit.
- New paved sidewalks must allow breathing space for tree roots in consultation with the Tree Warden.
- Curb cuts should not be closer than 5-feet from the trunk of the tree (minimum standard).
- Construction should avoid any kind of trenching or soil disturbance close to the trunk of the tree.

[4] **The importance of roots and bark**: Roots and bark are two vital organs for trees. Roots take up water, oxygen and nutrients, and provide stability. The bark protects the cambium, directly under the bark, which transports water, food and nutrients to the rest of the tree. If these are damaged, the tree will decline and may die.

- 90% of the tree's roots are in the top 2-feet of soil.
- More than 50% of the active feeding roots are outside the "drip line" of the tree. Roots usually spread out a distance equal to the height of the tree.
- Trenching, compaction and grade changes kill roots.
- The cambium serves as the tree's vascular system.

- If trees are in full leaf during the construction phase, watering and fertilizing within the "zone of protection" may be required in certain circumstances.
- Extraordinary mitigation efforts may be required for designated landmark trees as determined by the Tree Warden in consultation with the Director.

B. Bark Protection:

- By protecting the "critical root zone" the bark will also be protected.
- Wooden *tree guards* shall be placed around the trunks of trees in the work zone *as necessary* to protect the bark from inadvertent damage and to alert the equipment operator of the importance of working cautiously around trees.

C. Protection against changes in grade:

- Changes in grade can be as damaging to tree roots as cutting, trenching or soil compaction, and may eventually lead to tree decline and death. Care should be taken to make sure that the grade is not changed within the identified tree protection zone.
- Care should be taken to inspect and restore any changes in grade that result from road re-grading.
- The Tree Warden should be consulted as necessary.

D. Protection of Tree Canopy:

- If the project requires the use of equipment that is of such a height or size that the overhead tree canopy may be damaged in any way, the project manager should consult with the Tree Warden prior to commencing work. The Tree Warden will assist the project manager in determining what preventative pruning is necessary and whether the work can be done by CPW crew or privately.

E. SOP Review

- This SOP shall be reviewed and modified as necessary within 12-months of its adoption and from time-to-time as needed after that.

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