



KNOWING IS ½ THE BATTLE: Trees and Construction

Overview:

There are two major concerns when dealing with trees within construction sites. The first is preventing physical injury to the tree(s) in the form of damage to branches, the trunk or roots.

The second being soil disturbance in the form of compaction and changes to the grade or elevation of the soil. Preventing physical injury to trees during construction can best be accomplished through installation of a physical barrier between the worksite and the tree.

This area is designated as the **Tree and Soil Protection Zone (TSPZ)** and serves not only to protect the tree from physical injury, but also minimize the disturbance to the surrounding soil.

Physical injury to a tree can lead to a wide variety of issues depending on the location and extent of damage. Wounds created through improper pruning, careless equipment use or root severance can open the door to pest, disease, or decay issues in many trees. Soils are where trees live so protecting them is vital for any tree. Soils can be easily damaged through compaction created by mechanical equipment or the storage of heavy materials (bricks, stone, etc.). Compaction creates an environment below ground that will be less conducive to root growth and health. The addition or removal of soil near a tree can have a negative effect.

Removing soil can damage roots and adding soil can suffocate them. In addition, grade changes a good distance away from the tree can change how water flows through a site and how much will be available to the tree in the future.

Tree and Soil Protection Zone

Ideally the **Tree and Soil Protection Zone** would extend outward from the trunk of the tree in a circle to the outer limits of its canopy (drip zone). Usually cordoning off this large of an area within a construction site isn't feasible. In this case, protecting as large an area as possible within the tree's drip zone is recommended. The minimum acceptable distance for the **Tree and Soil Protection Zone** (and root severance/cutting) from the tree would be a circle extending out from the trunk a distance of 3Xs the diameter of the tree, measured at 4.5 feet above ground. Excavations leading to root severance within this zone can create structural issues that may warrant the removal of the tree. By severing large roots very close to the trunk, not only is the tree's ability to extract water, nutrients, etc. from the soil compromised, but also its ability to anchor itself to the ground. The larger an area that can be protected around the tree the better chance that tree will have of weathering the construction process.



In addition to creating a tree protection zone around the tree, several other steps can be taken to help the tree weather construction process:

1. Fertilization of the soil around the tree before construction begins based on results of a soil analysis.
2. Using an “Air Knife” to expose roots and cleanly cut them before any excavation begins on the border of the **Tree and Soil Protection Zone**.
3. Application of Cambistat to reduce primary tree growth and increase fibrous root growth allowing the tree to compensate for roots lost (See below for more information about Cambistat).
4. Installation of 2 to 4 inches of mulch around the base of the tree within the tree protection zone.
5. Watering during the construction process. The tree will have a reduced ability to uptake water from the soil due to the loss of fine roots.
6. Pruning for clearance before mechanical equipment damages the tree
7. Preventative boring insect sprays.
8. Tree banding where appropriate to reduce stress from defoliation by cankerworms.
9. Lightning protection for high value/susceptible trees.
10. Post construction soil decompaction and fertilization.

Cambistat:

Cambistat (paclobutrazol) is a plant growth management tool. Cambistat helps prevent the formation of gibberellic acid, the plant growth hormone involved with tip elongation. Cambistat may reduce tree shoot growth by 40% – 70% (it does not stop tree growth completely). The tree responds to this reduced tip growth by redirecting energy it was utilizing for tree growth into fibrous root production, formation of defense chemicals, and improved drought resistance. The resulting benefit of this reallocation of energy is that trees are more tolerant of heat, disease and insects.

For more information about trees and construction please contact Heartwood Tree Service at (704)525-3066 or www.heartwoodtree.com.