

## 32 90 01 Tree Preservation Guidelines

Revision 01/04/2019

The Rice University Campus consists of an Urban Forest of over 4,000 trees in a 300-acre area. Stewardship of this priceless investment falls under the Grounds Division of the Facilities Engineering and Planning Department. The following guidelines are necessary for the preservation of the majestic beauty of this campus.

Only through the combined effort and cooperation of all involved parties can we ensure a beautiful campus for future generations.

- **Note to Rice Project Manager and/or Supervisor:**
  - For any project that may disturb existing campus trees, create a work order for the Grounds Division. This will help the Grounds Division provide assistance on procedures and provide a history on the care of the trees.
- **Note to Architect/Engineer:**
  - For any project that may disturb existing campus trees, arrange to meet with the Rice Project Manager and the Grounds Manager to discuss these impacts during Schematic Design.
  - The remainder of this standards section is to be incorporated as-is into the project specification and also to be placed directly onto a civil drawing.

### 1. Definitions

- a. Root zone area/Dripline – The area of soil, extending from the tree trunk to the branch dripline, which contains the majority of a tree’s feeder-root system. This is considered the most important area of a tree’s root zone and shall be protected from disturbance. When possible, 10’ beyond the dripline should also be protected.

### 2. Damaging Conditions to Avoid:

- a. Compaction of root zone areas by foot and vehicular traffic, and material storage. Soil compaction is one of the leading contributors to tree decline and death associated with construction.
- b. Poisoning by pouring or spilling chemicals including gasoline, oil, paint, concrete, and other injurious materials on or near root zone areas.
- c. Damage by improper pruning techniques.
- d. Damage from lack of moisture during periods without adequate natural rainfall, or from changing the natural drainage patterns.
- e. Change in soil pH caused by addition of lime in root zones by direct application, runoff, or concrete waste.
- f. Damage caused by severing roots  $\frac{3}{4}$ ” in diameter and larger.
- g. Change in grade. Grade change should be limited in root zone areas to a maximum of three inches (3”) cut or fill.

- h. Burning of foliage and twigs resulting from expulsion of exhaust.
- i. Trunk and limb damage resulting from contact with equipment or vehicles.

**3. Protection Procedures**

- a. Limit construction access by placing temporary tree protection fencing around trees to be preserved. Fencing should be placed as far out from the tree's trunk as possible, preferably a minimum distance to include the branch dripline. In areas where construction access is required, the natural grade shall be protected from compaction by placing a 4"-6" thick blanket of mulch or plywood over natural grade. A combination of mulch and plywood or timber matting may be necessary when frequent travel or extremely heavy traffic is required within root zone areas.
- b. Any work, excavation or grading required within the protected root zone areas should be limited to three inches (3") cut or fill, with no roots over ¾" in diameter being cut. Work in root zone areas should be done by hand. This includes excavation, grading, landscaping, and irrigation installation.
- c. Route underground utility lines around root zone areas or bore at a minimum depth of four feet (4') to eliminate open cuts through root zones. When it is not possible to reroute or to bore under the root systems, hand dig to preserve roots measuring ¾" in diameter and larger.
- d. When excavating with a backhoe in tree root zone areas is unavoidable, first cut roots along the edge of the required excavation limits using a conventional trenching machine (depth of trench should be limited to the depth of the required excavation for installation of the utility or 3', whichever is less). This helps reduce the number of roots damaged by the ripping and tearing caused by excavators. After trenching, make a clean, smooth cut on roots ¾" in diameter and larger using a sharpened saw or pruning shears. Provide trench excavation protection at excavations to minimize trench width. Use only vertical trench walls. Do not bench-cut or step-cut edge where such techniques will further encroach on root zones.
- e. Place drives, walks, etc., on or above grade to eliminate altering the root system. Feeder roots of most trees are within 12"-18" of the soil surface.
- f. Prior to pouring concrete, create a non-leaching barrier by placing a 6mil thickness layer of plastic sheeting over grade. Turn plastic upward on edges to contain concrete. Remove exposed, visible plastic at end of project.
- g. Cover exposed roots within 48 hours of exposure during hot, dry periods to protect the roots from drying out.
- h. Service trees to improve growing conditions:
  - i. Trim trees according to ANSI A300 – 1995 Tree, Shrub and Other Woody Plant Maintenance – Standard Practices. Trees should be pruned in a manner to maintain their natural shape and form. Do not remove interior sucker growth. All sucker growth should remain for several years after the damage is received and the tree has become re-established.
  - ii. Deep root fertilizer. Fertilizer will be recommended and/or approved by consulting Arborist or Rice Certified Arborist. Mix and apply per label

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instructions in a tank with mechanical agitation. Inject fertilizer on a 3' square grid extending ten feet (10') beyond the dripline at an injection pressure of 150 psi. Regular rate – Mix at 40 pounds of fertilizer per 100 gallons of water.

- iii. Depth of injection – ten inches (10") below grade. Injection rate per specifications on product label.
- iv. Trees affected by construction should be fertilized annually until the trees have become re-established.
- v. During periods of minimal rainfall, supply additional moisture to damaged trees to help eliminate additional stress associated with drought.
- i. Due to the threat of Oak Wilt disease, DO NOT prune any oak trees from February through May, and October through December. Beetles and fungal mats are active during this period and could transmit the disease. Paint all wounds on living tissue immediately after wounding occurs. Use black paint labeled for arboricultural use.

#### 4. **NOTES:**

- a. Contractors shall seek consultation with the Grounds Division before any disruption to the campus landscape occurs.
- b. The information provided herein is intended to be used as guidelines for tree preservation. Depending on the project, additional preservation procedures, techniques, and tree services may be required for adequate protection and optimum results.