



TEXAS A&M
UNIVERSITY®

OPERATIONAL OVERVIEW TREE PROTECTION PROCEDURES

(EMERGENCY AND NON-EMERGENCY REQUIREMENTS)

Office of the University Architect

October 2020

CONTENTS

- 1 Purpose 2
- 2 Tree Root Zones 2
- 3 Procedures 3
 - 3.1 Emergency Excavation Project 3
 - 3.1.1 Initial Notification 3
 - 3.1.2 Tree Protection Requirements..... 4
 - 3.1.3 Equipment Locations..... 4
 - 3.1.4 Close Out Notification 5
 - 3.2 Non-Emergency Excavation Project 5
 - 3.2.1 Initial Notification 5
 - 3.2.2 Documentation 5
 - 3.2.3 Tree Protection Requirements..... 5
 - 3.2.4 Equipment..... 6
 - 3.2.5 Close Out Notification 6
 - 3.3 Tree Incident Reporting 6
 - 3.4 Tree Mitigation 7
- 4 Appendix 8

1 PURPOSE

This reference is designed to provide an abbreviated operational overview on tree protection actions pertaining to emergency and non-emergency situations. **It is the responsibility of the organization excavating to be knowledgeable of the full tree protection requirements outlined in the Facility Design Guidelines (FDG) Section 32.** This reference is not intended to be all inclusive, but to outline the required procedural actions. These requirements are based on the recommendations of the 2017 Campus Master Plan for construction operations within 30' of a tree canopy on the Texas A&M University, College Station Campus. This includes the placement and/or storage of materials, supplies, and equipment around trees. These requirements provide specific guidance on mobilization, excavation, and coordination/notification requirements. If, after reviewing this document and the FDG, clarification or guidance is needed please contact the Office of the University Architect, Planner.

2 TREE ROOT ZONES

Tree roots are categorized into three zones (see diagram below):

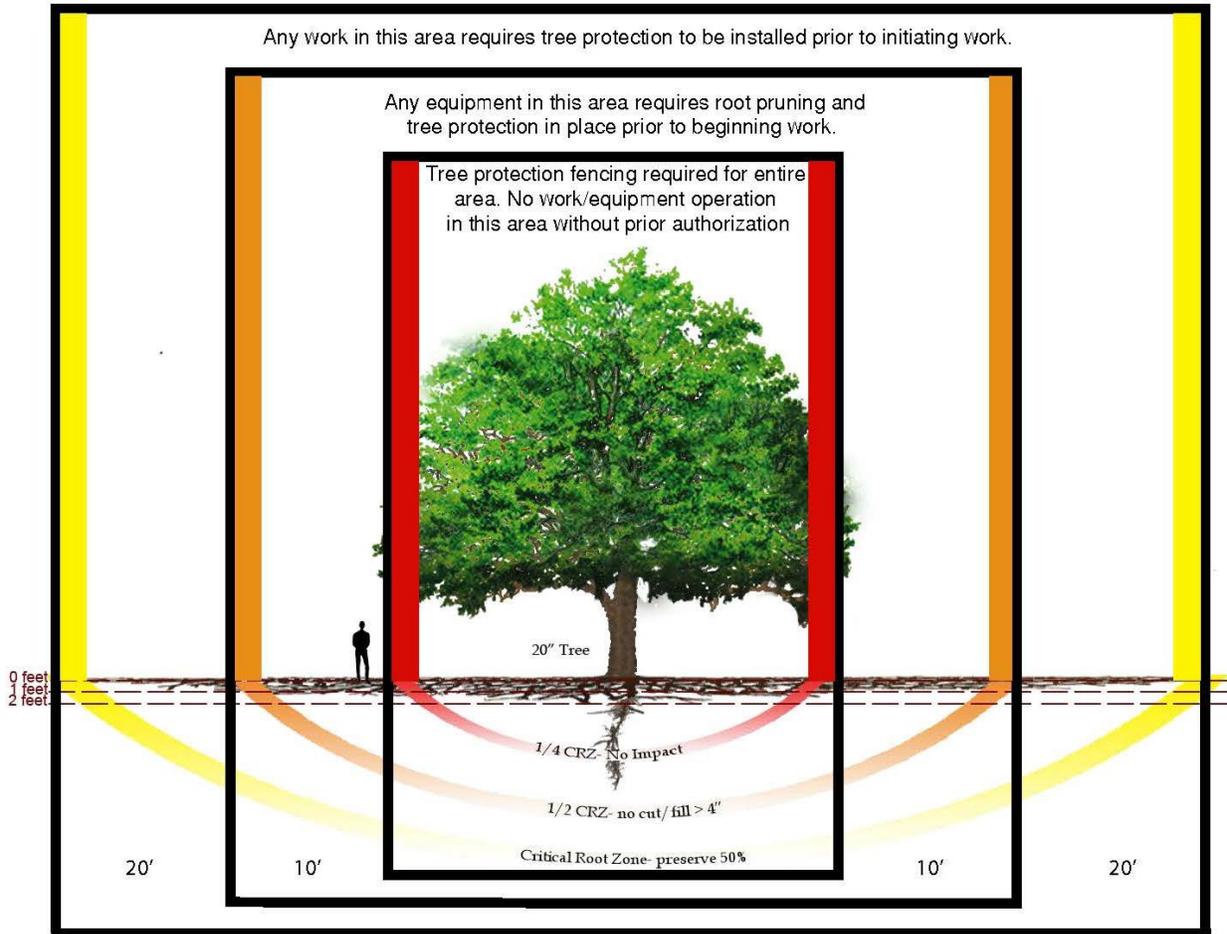
- Yellow – Within 30' of the trunk of the existing tree canopy. Any work in this area requires tree protection fencing must be installed prior to initiating work.
- Orange – Within 10' of the existing tree canopy. Any equipment in this area requires root pruning and tree protection to be in place prior to beginning any work (excluding emergency excavation).
- Red – Within the extent of the tree canopy in ANY direction **no work/equipment operation is to be done without prior authorization.** Tree protection fencing is required for this entire area at all times if equipment will be operated within 30' of the canopy. Entering this zone without authorization AND without properly installed mulch and matting in place is strictly prohibited.

KEY REQUIREMENTS:

If you look up and there are leaves/branches overhead, you are in the Red Zone. Stop work immediately, put tree protection in place and notify a supervisor.

Do not store ANYTHING under a tree canopy, this includes equipment, materials, or supplies.

Do not drive under a tree canopy for any reason.



3 PROCEDURES

3.1 Emergency Excavation Projects

For the purposes of these requirements, an emergency excavation refers to the previously unknown requirement to make a repair that requires excavation within 24 hours of notification of the needed repair.

3.1.1 Initial Notification

SSC Arborist must be consulted immediately upon receipt of notification in order to provide guidance on the most appropriate way to excavate without damaging the tree. If excavation occurs after hours, the below tree protection measure must still be followed, and notification must occur immediately the following workday. In other words, the requirements for Yellow zone are a minimum standard and will also apply to the Orange and Red zones, in addition to Orange and Red zone-specific requirements.

3.1.2 Tree Protection Requirements

Tree Protection Requirements in **Orange or Yellow** Zone / Within 30 Feet of Existing Tree Canopy

- *Fencing (See Appendix A)*
T-posts with safety cap and snow fence must be installed at the drip line of any tree within 30' of the maximum extent of equipment operation prior to progressing with excavation. The intent of the fencing is to prevent accidental damage to the root zone caused by equipment, materials, and storage of supplies, as well as operation of equipment and foot traffic within the dripline of the tree. The tree drip line is off limits to pedestrian and vehicle traffic associated with the emergency response.
- *Protection Duration (See Appendix A)*
T-posts with safety caps, and snow fence must remain in place until excavation is backfilled, and equipment removed from the site. If the excavation will remain open for longer than two weeks, the snow fence must be replaced with chain link.
- *Root Pruning (See Appendix A)*
Prior to backfill, consult with the SSC arborist, and prune the exposed roots.

Additional Tree Protection Requirements in **Red Zone** / Within Dripline of Existing Tree

- *Trunk Protection*
2x4's must be banded to the trunk AND any low hanging branches that are at risk of being impacted by equipment.
- *Fencing (See Appendix A)*
Snow fencing must be installed PRIOR to excavation and exclude only the area immediately adjacent to the excavation site. Fencing must also be installed around any other trees within 30 feet of the work area (Area equipment will be operating from).
- *Mulch and Matting (See Appendix A)*
If equipment is required to move under the drip line, install 5 inches of mulch and construction matting to prevent compaction. If mulch cannot be acquired in the necessary timeframe, a single layer of construction matting will suffice in emergency situations only. Mulch must be removed upon completion.
- *Tree Care Requirements*
Contact SSC Grounds to arrange for remedial actions. Air evacuation decompaction, radial trenching, and fertilizing where recommended by the SSC Arborist.

3.1.3 Equipment Locations

Equipment must excavate from pavement or on soil outside of the trees dripline and excavate radially away from the tree. Excavation strokes must start nearer the tree and pull away from the tree to minimize root damage associated with trenching tangentially to the tree.

3.1.4 Close Out Notification

Prior to backfill, notify the SSC Arborist, and document remedial actions required to maintain tree health. This shall include root pruning (prior to backfill), radial trenching, and air-spade de-compaction of the soil within 90 days of emergency excavation.

3.2 Non-Emergency Excavation Project

A non-emergency project is one that is planned for some future date beyond the 24- hour period defined as an emergency excavation above.

3.2.1 Initial Notification

SSC Arborist and the Office of the University Architect must be notified PRIOR to and during design to ensure tree protection requirements for each specific project are incorporated into the design and ultimately the construction portion of the project. If no design process occurs (example: water line replacement), consultations are still required prior to progressing with work. Tree protection direction provided is intended only to supplement the information provided in the Facility Design Guidelines Section 32 AND this document. This meeting must be documented in writing. **Any exemptions/changes to established tree protection requirements must be provided in writing and approved by the Office of the University Architect.**

Every effort must be made to avoid excavation inside the drip line. If it must occur, any trees that will require work within the drip line must be identified prior to beginning work on the project and coordinated with the Office of the University Architect and SSC Arborist to establish an approach to solving the project requirements while minimizing harm to the tree.

3.2.2 Documentation

A tree assessment needs to be conducted before mobilization to the project site by a board-certified arborist to document prior condition of trees in the construction zone.

3.2.3 Abbreviated Tree Protection Requirements

Tree protection fencing and signage above must be installed PRIOR to site mobilization and prior to any excavation around the tree AND any other trees whose canopy is within 30 feet of the work area (area equipment will be operating from).

No equipment, supplies, or materials may be stored under the canopy of any tree, for any time period. This includes construction restrooms and any other vehicles of any size.

Tree protection must be inspected by the SSC Arborist PRIOR to mobilization and consult the Office of the University Architect if there are unresolved conflicts or further guidance is needed.

3.2.3.1 *Fencing (See Appendix A)*

Chain link fence must be installed prior to site mobilization around all trees whose canopy is within 30 feet of the work area (extents of equipment use, not project boundary). Chain link fence must be installed in the ground (not on moveable bases) and be at least 6' tall. See above diagrams for tree protection fencing layout. Fencing MUST be installed outside the drip line, and not under any portion of the canopy of the tree. In addition to fencing, "Tree Protection Zone" signs should be posted clearly visible throughout the site.

3.2.3.2 *Mulch and Matting (See Appendix A)*

Any time equipment must enter the drip line (with prior coordination with the UA Office and SSC Arborist) 5" of mulch and a layer of construction matting must be installed to prevent compaction. Coordinate with SSC Arborist for appropriate matting.

3.2.4 **Equipment**

3.2.4.1 *Location*

Equipment must be located outside of the dripline of any trees. ANY time a piece of equipment is required to operate within, or pass through the dripline of a tree, please refer to section 3.2.3.2 to meet the requirement. Use of mulch and matting outlined in section 3.2.3.2 shall only be utilized when all efforts have been exhausted to operate, equipment from surrounding pavement or soil outside of any dripline.

3.2.4.2 *Equipment Allowed for Excavation Within a Dripline*

Excavation within the dripline in a non-emergency situation will only be allowed by the following means:

- Air Excavation to evacuate soil from around the tree roots and allow piping to be installed under the root system without damaging the existing roots.
- Directional boring at least 24" below the surface
- Pipe bursting to replace the pipe in place.

3.2.5 **Close Out Notification**

Prior to backfill, notify the SSC Arborist and document remedial actions required to maintain tree health. This includes root pruning (prior to backfill), radial trenching, and air spade to de-compact the soil within 90 days of backfill.

3.3 **Tree Incident Reporting**

A tree incident is any time a project violates any aspect of the above requirements. All incidents must be reported, and the following steps must occur:

- **NOTIFICATION:** Notify the SSC Arborist and the Office of the University Architect in writing within 24 hours of the incident occurred, or discovery of the incident.

- DOCUMENT: Document the trees impacted (include photos) as well as the type of work that was done. This includes date, time, equipment used, duration of work, and Diameter at Breast Height (DBH = Diameter at 4.5' above the ground) of the tree.
- MITIGATE: Follow SSC Arborist guidance on remedial actions to improve tree health, to include root pruning, air spade to de-compact, and radial trenching to maximize moisture and nutrients to the root zone.
- MONITOR: Monitor the impacted tree for a period of 24 months.
- REPLACE: Replace any trees lost due to an incident in accordance with TAMU tree mitigation policy.

3.4 Tree Mitigation

TAMU's policy on tree mitigation is as follows:

- Heritage Trees - Heritage Trees, which are trees 24" Diameter at Breast Height (DBH) and greater, shall not be removed without a review process. If removal is necessary, trees shall be replaced on a 3" to 1" ratio (i.e., if you have removed a 24" DBH tree, 72 caliper inches must be replaced).
- 8"- 23" DBH Trees - Trees shall be replaced on a 1" to 1" ratio. For example: a 20" diameter tree will be replaced by 20 caliper inches; this could mean five, 4" trees or ten, 2" caliper trees. Trees less than 8" in diameter require a 1 to 1 replacement.
- Memorial Trees/Historical Significance - Various memorial trees and trees with historical significance exist throughout Texas A&M campus. The project shall preserve in place or transplant any memorial trees or historically significance trees on the site. The university reserves the right to remove or relocate trees in an unforeseen circumstance. If a tree cannot be relocated due to restrictions of tree size and available planting locations, the tree will be removed and replaced with a new one at the discretion of the Texas A&M designated Arborist. The first option shall be to replace on site if space is available; costs to be covered by the project.

Tree mitigation shall be required when the above sizes of trees are removed. Examples shall include one or more of the following mitigation measures:

- Planting replacement trees on the site in accordance with the latest edition of the American Standard for Nursery Stock (ANSI Z60.1).
- Transplanting existing trees on site or nearby. Any transplant tree can count 50% toward total mitigation; for example: a 30" diameter oak would count toward 45 inches of required mitigated inches (due to heritage trees being replaced 3:1).
- All trees (from section 5.04.1) below 8" diameter that are preserved on site will count 50% toward total mitigation; for example: five 6" elm trees are preserved on the perimeter of the site – this would count toward 15 inches of required mitigated inches.

4 APPENDIX

These diagrams demonstrate the tree protection fencing requirements for all trees whose canopy is within 30 feet of the work area defined as the extents of equipment and supply use for an individual project.

Appendix A

