TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. This Section includes:

1. Installing tree protection system in the building construction access area.
2. Protection of existing trees during construction of the Project.
3. Pruning/tying back branches of existing trees that interfere with temporary or permanent construction by certified arborist.
4. Requirements for excavation in tree protection zones.
5. Requirements for grading in tree protection zones.
6. Removal of tree protection system to accommodate construction of landscape improvements.
7. Providing temporary protection during construction of landscape improvements.

C. Related Sections:

1. Division 01 Section "Temporary Facilities and Controls" for temporary site fencing.
2. Division 31 Section "Site Clearing" for removing existing trees and shrubs.

1.3 DEFINITIONS

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

B. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Samples for Verification: For each type of the following:
   1. Organic Mulch 1-quart volume of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.

C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
   1. Species and size of tree.
   2. Location on site plan. Include unique identifier for each.
   3. Reason for pruning.
   4. Description of pruning to be performed.
   5. Description of maintenance following pruning.

D. Qualification Data: For qualified arborist and tree service firm.

E. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

F. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

G. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
   1. Use sufficiently detailed photographs or videotape.
   2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.5 QUALITY ASSURANCE

A. Arborist Qualifications: ISA Certified Arborist or ISA Board Certified Master Arborist, retained by the University and independent of employment by the contracting company

B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

C. Preinstallation Conference: Pre-installation Conference: Conduct conference at Project site before tree protection and trimming operations begin, meet with representatives of authorities having jurisdiction, Owner, Architect, Landscape Architect, consulting arborist, consultants, and other concerned entities to review tree protection and trimming procedures and responsibilities.
1.6 PROJECT CONDITIONS

A. The following practices are prohibited within protection zones:
   1. Storage of construction materials, debris, or excavated material.
   2. Parking 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 protection zones.

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

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil: Natural or cultivated top layer of the soil profile or manufactured topsoil; containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch in diameter; and free of weeds, roots, and toxic and other nonsoil materials.
   1. Obtain topsoil only from well-drained sites where topsoil is 4 inches deep or more; do not obtain from bogs or marshes.

B. Topsoil: Imported or manufactured topsoil complying with ASTM D

C. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
   1. Type: Shredded hardwood
   2. Size Range: 3 inches maximum, 1/2 inch minimum

D. Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements.
   1. Chain-Link Protection-Zone Fencing: See Div 01 Section 015000
      a. See drawings for areas Chain-Link Fence
2. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart.
   a. Height: 4 feet.
   b. Color: High-visibility orange, nonfading.

E. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:

1. Signs prohibiting access to tree protection areas shall be 10" x 12", made of weatherproof materials, with a bright yellow background and black letters reading "TREE PROTECTION AREA - KEEP OUT, CALL: xxx-xxx-xxxx TO REPORT VIOLATIONS", and shall be placed along each visible face of fence.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. For the record, prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

B. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated.

1. Apply 4-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.
3.3 TREE- AND PLANT-PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people and animals from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

1. Chain-Link Fencing: Install to comply with ASTM F 567 and with manufacturer’s written instructions.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect. Install one sign spaced approximately every 35 feet on protection-zone fencing, but no fewer than four signs with each facing a different direction.

C. Maintain protection zones free of weeds and trash.

D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

E. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.

1. Temporary access to protection zone is permitted subject to preapproval by Landscape Architect if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

A. This work shall be performed under the supervision of an Arborist.

B. Do not excavate within tree protection zones without prior notification and approval of the Owner. Notify the Owner a minimum of 48 hours before excavation within tree protection zones. Stake and/or layout with paint marking the extent of excavation for review before excavating.

C. Watering shall occur several days before the excavations and the ground and soil shall be kept moist until soil is replaced over the roots. At the completion of installation of the piling and shoring, the tree and the disturbed area shall be irrigated.

D. Install shoring or other protective support systems to minimize sloping or benching of

E. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Division 31 Section "Earth Moving."
F. Trenching near Trees in protection zone: Where utility trenches are required within protection zones, air spade to expose tree roots. Do not cut main lateral tree roots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning in Section 3.5

G. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.

H. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

A. Prune roots that are affected by temporary and permanent construction. Prune roots and as follows:
   
   1. Airspade in location of proposed disturbance to expose roots. If roots are encountered and redirection is not practical, cut roots approximately 3 inches back from new construction using a sharp pruning clean saw or pruner specifically designed for tree pruning. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
   2. Cut Ends: Do not paint cut root ends.
   3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
   4. The roots shall not be allowed to dry during excavation. Cover exposed roots with burlap and water regularly.
   5. Backfill as soon as possible according to requirements in Division 31 Section "Earth Moving."

3.6 CROWN PRUNING TREE PRUNING

A. This work will be performed under the supervision of a certified arborist.

B. Prune trees to remain to remove deadwood or limbs interfering with minimum clearance distances required for the construction. Provide subsequent maintenance during Contract period as recommended by consulting arborist.

C. Pruning Standards: Prune trees according to ANSI A300 (Part 1) as follows:

   1. Type of Pruning:
      
      a. Clearance
1) **Tying Back**: Whenever practical, limbs that may interfere with the construction of the building but not permanently contacting the finished structure shall be retained. It is preferred that these limbs be tied back rather than removed by pruning. When tying back, the limb shall be protected from damage from the rope or other means. If the duration of the tie-back will include the next growing season, a screw eye shall be installed in the limb to be secured and the anchor portion of the tree and secured by a corrosion protected wire or rope of sufficient strength.

2) **Clearance Pruning**: When tying back is not practical, the limb shall be carefully pruned back to provide minimum clearance for the construction or minimum clearance from the finished building.

   b. **Safety Pruning**: The remainder of the tree shall be pruned targeting dead limbs or other dangerous limbs over 1 inch in diameter.

   c. **Discovery**: Any dangerous condition noted during climbing, pruning, or other tree care operations shall be noted and reported immediately by the tree service firm for approval by the Consulting Arborist.

2. **Specialty Pruning**: Utility.

D. Cut branches with sharp pruning instruments; do not break or chop.

E. Chip removed tree branches and stockpile in areas approved by Owner.

### 3.7 REQUIREMENTS FOR REGRADING IN TREE PROTECTION ZONES

A. Do not grade within tree protection zones without prior notification and approval of the Owner. Notify the Owner a minimum of 48 hours before grading within tree protection zones. Stake and/or layout with paint marking the extent of grading for review before grading.

B. **Grade Lowering**: Where new finish grade is indicated below existing grade, slope grade away from trees, unless otherwise indicated.

   1. To minimize root damage, comb soil with narrow-tine spading fork to expose roots. Lift and wrap roots as noted herein. Lay roots on final subgrade and cover with topsoil.

   2. Prune roots as noted herein.

C. **Minor Fill**: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.
3.8 REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.

B. Remove and replace trees indicated to remain that die or are damaged during construction operations that arborist determines are incapable of restoring to normal growth pattern.

   1. Provide new trees of same species as those being replaced; plant and maintain as specified in Division 2 Section "Exterior Plants."
   2. Provide new trees of same size up to 6-inch caliper size. Plant and maintain new trees as specified in Division 2 Section "Exterior Plants."
   3. When damaged trees requiring replacement are more than 6 inches in caliper size, measured 12 inches above grade; the CTLA Trunk Formula Method shall determine the replacement value.

3.9 REMOVAL OF TREE PROTECTION SYSTEM AND TEMPORARY PROTECTION

A. The method by which the tree protection system is removed shall ensure that vehicular access is strictly limited to those portions of the building construction access area that have the full tree protection system in place. After removal of protection materials, foot traffic only is allowed in the building construction access area, unless temporary protection measures are approved.

B. Remove tree protection system during the completion of the building construction to facilitate construction of the Landscape Improvements portion of the project.

C. Remove root protection materials in a manner to not disturb existing grade beneath the filter fabric.

D. Provide temporary fencing to secure the building and site and to restrict pedestrian and vehicular traffic through the tree protection zone during construction of the Landscape Improvements. Provide temporary measures to minimize compaction of soils within the tree protection zone.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

END OF SECTION