

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Requirements for protection of existing landscape plant materials, including trees, shrubs and ground covers. Contractor shall preserve, protect, and prune as necessary existing trees and shrubs, and other vegetation indicated to remain.

1.3 RELATED SECTIONS

- A. Section 01 56 00 – Temporary Barriers and Enclosures: Barricades and barriers used to protect landscaping.
- B. Section 01 57 00 – Temporary Controls: Runoff.
- C. Division 2 - Site Construction: Landscaping specifications related to trees, shrubs and ground covers, as applicable.

1.4 WORK DESCRIPTION

- A. Protection: All trees and plant materials to remain on site shall be protected from construction activities. Preserve, protect, and prune as necessary existing trees and shrubs and other vegetation indicated to remain.
- B. Maintenance: Until Contract closeout, Contractor shall irrigate, fertilize, prune and clean as necessary to maintain all existing trees, shrubs and ground covers in healthy condition, within and adjacent to Project area.

1.5 DEFINITIONS

- A. "Injury" is defined, without limitation, as any bruising, scarring, tearing, or breaking of roots, branches, or trunk.
- B. "Dripline" is defined as the outermost limits of the tree or shrub canopy.
- C. "Certified Arborist" is a consulting arborist certified by the International Society of Arboriculture, current certification in effect.

1.6 QUALITY ASSURANCE

- A. General Responsibility: The Contractor shall be directly responsible for protection and welfare of existing trees within the Contract Limits which are noted to remain. This responsibility shall

continue throughout the full construction period until the entire project is completed and accepted by the University's Representative and through completion of the guarantee period.

- B. Qualifications of workmen: Trimming shall be performed only by a licensed arborist. Provide at least one person approved by the University's Representative who shall be present at all times during tree protection and trimming operations, who shall be thoroughly familiar with the type of work involved, and who shall direct all protection and trimming work.
- C. Reference Standards: Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to work of this section.
 - 1. International Society of Arboriculture (ISA) "Guide for Plant Appraisal" prepared by the Council of Tree and Landscape Appraisers (CTLA).
 - 2. "Cabling, Bracing and Guying Standards for Shade Trees", as published by the National Arborist Association (NAA), 174 TR 101, Bedford, New Hampshire.
 - 3. ANSI A-300, Standards for Tree care Operations – Tree, Shrub, and Other Woody Plant Maintenance:
 - Part 1 – Pruning, 2008.
 - Part 2 – Fertilization, 2004.
 - Part 3 – Supplemental Support Systems, 2006.
- D. Sequencing Schedule: Coordinate and cooperate with other trades to enable the work to proceed as rapidly and efficiently as possible.

1.6 PRE: CONSTRUCTION MEETING:

- A. Prior to construction of any nature on the site, Contractor shall arrange a site meeting with the University's Representative. The purpose of the meeting shall be to establish the conditions of all existing plant material to be preserved upon receipt of the site by the Contractor. Failure to call for said meeting implies acceptance by the Contractor of plant material to be preserved in its existing condition.
 - 1. Contractor shall document condition of all existing plant material to be preserved by means of individual color photos for each tree or plant to be preserved.
 - a. Photos shall be labeled with plant botanical and common names, location on site, and date of photograph.
 - b. Photos shall clearly indicate condition of tree or plant to be retained.
 - 2. Submit photographs to University for approval.

1.7 SUBMITTALS

- A. Submittal procedures are specified in Division 1. Provide a minimum of four copies unless otherwise directed.
- B. Provide the following submittals for review and approval:
 - 1. Pruning materials.
 - 2. Fencing materials.
 - 3. Maintenance plan.
 - 4. Photo documentation of existing plant material.

1.8 GUARANTEE

- A. Contractor shall guarantee that all plants covered by the provisions of this Section will be healthy and in flourishing condition of active growth 1 year from the date of Final Completion.
- B. During the warranty period the Contractor shall be liable for damages to all trees covered by the provisions of this Section, and shall pay compensation to the University as specified herein.
- C. Contractor will not be held responsible for damages due to vandalism or acts of nature during the guarantee period. Immediately report such conditions to the University's Representative.

PART 2 - PRODUCTS

2.1 TREE PROTECTION FENCING

- A. Tree Protection Fence:
 - 1. Fencing Materials - 11 gauge galvanized 6' high chain-link fence with galvanized steel posts at 10' on center maximum.
 - 2. Provide padlocked gate access to inside for care of tree.
 - 3. Fence shall be sturdy and capable of acting as a barrier against objects, vehicles, etc., and designed so as to allow for relocations as required. It shall be continuously maintained and repaired as necessary.

2.2 PRUNING MATERIALS

- A. Pruning materials shall be in accordance with current horticultural practices.

PART 3 – EXECUTION

3.1 PLANT MATERIAL PROTECTION

- A. Protect existing plant material specified on the drawings during course of construction and maintenance period in a healthful state, free from damage or harm as the result of any work performed.
 - 1. Protection shall be given to the roots, trunk, and foliage.
 - 2. Plants shall not be allowed to deteriorate and shall be maintained in a healthy and vigorous condition.
- B. Protect trees and plant materials to remain from trades working on site.
 - 1. Insure that subcontractors are aware of and held responsible for damage to existing trees and plant material.
 - 2. Insure that protective measures are carried out continually throughout the construction period.
- C. Contractor is responsible for replacing damaged plant life with approved equivalent.
- D. Water: Provide ample water supply of potable quality and sufficient quantity for all operations required under this Section.

- E. Trees and plants, subject to the provisions of this Section, which have been injured shall be repaired immediately under the direction of an approved arborist. Repair shall include removal of rough edges and sprung bark and severely injured branches as directed by the University's Representative.
- F. The Contractor shall maintain healthy living conditions for existing plant materials to be preserved.
 - 1. Such measures shall include monthly washing of leaves for the removal of dust, regular irrigation, root feeding, etc.
- G. Install tree protection fencing as specified elsewhere in this section.
- H. Drainage:
 - 1. During construction, the existing site surface drainage patterns shall not be altered within the area of the drip line of existing plant materials.
 - 2. Contractor shall not alter the existing water table within the area of the drip line of existing plant materials.
- I. Do not permit any of the following within drip line of any existing tree or shrub to be preserved:
 - 1. Storage or parking of automobiles or other vehicles.
 - 2. Stockpiling of building materials or refuse of excavated materials.
 - 3. Skinning or bruising of bark.
 - 4. Use of trees as support posts, power poles, or signposts; anchorage for ropes, guy wires, or power lines; or other similar functions.
 - 5. Dumping of poisonous materials on or around trees and roots. Such material includes but is not limited to paint, petroleum products, contaminated water, or other deleterious materials.
 - 6. Cutting of tree roots by utility trenching, foundation digging, placement of curbs and trenches, and other miscellaneous excavation without prior written approval by the University's Representative.
 - 7. Damage to trunk, limbs, or foliage caused by maneuvering vehicles or stacking material or equipment too close to the tree.
 - 8. Compaction of the root area by movement of trucks or grading machines; storage of equipment, gravel, earth fill, or construction supplies; etc.
 - 9. Excessive water or heat from equipment, utility line construction, or burning of trash under or near shrubs or trees.
 - 10. Damage to root system from flooding, erosion, and excessive wetting and drying resulting from dewatering and other operations.

3.2 TREE PROTECTION FENCING

- A. Install tree protection fencing around trees to be preserved with a caliper of 4" or larger, unless otherwise noted on plans.
 - 1. Install fencing at the dripline unless otherwise approved by the University's Representative.
 - 2. Fence can be erected around groups of adjacent trees where possible.
 - 3. Otherwise, fence to be erected around individual trees.

- B. No construction, demolition, or work of any nature will be allowed within the fenced area without prior written approval by the University's Representative.
 - 1. Approval by the University's Representative for work within the fenced area shall not release the Contractor from any of the provisions specified herein for the protection of existing trees and plants to be preserved.
 - 2. During the course of construction of approved work within the fence area, no roots shall be cut without prior written approval by the University's Representative.
- C. During the course of construction, relocation of the fence may be required to facilitate construction. The Contractor shall do so when authorized and as directed by the University's Representative, at no additional expense to the University.
- D. The fence shall be removed only at the end of construction, as approved by the University's Representative.

3.3 TEMPORARY IRRIGATION:

- A. Irrigate existing trees and other plants to remain, as necessary to maintain their health before, during and after Work under the Contract, as directed by the University's Representative.
 - 1. Maintain an irrigation schedule and document. Submit schedule to University's Representative for review and acceptance.
 - 2. Provide temporary piping, valves, hoses, emitters and spray heads as necessary until Contract closeout.
- B. Soil Preparation: If soil within drip line of trees is compacted, then prior to watering or fertilizing trees, area within the drip lines shall be tilled to break up the top two inches of existing soil.

3.4 EXCAVATION AROUND TREES AND PLANTS:

- A. Excavation within the drip lines of trees and plants to be preserved shall be done only where absolutely necessary, under the direction of a Certified Arborist and with prior approval from the University's Representative.
- B. Where trenching for utilities is required within driplines, tunneling under and around roots shall be by hand digging. Main lateral roots and taproots shall not be cut. Smaller roots that interfere with installation of new work may be cut with prior approval from certified Arborist.
- C. Where excavation of new construction is required within drip line of trees, hand excavation shall be employed to minimize damage to root system. Roots shall be relocated in backfill areas wherever possible. If large, main lateral roots are encountered, they shall be exposed beyond excavation limits as required to bend, and relocate without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, roots shall be cut approximately 6 inches back from new construction under the direction of a certified Arborist.
- D. Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be packed with wet peat moss or four layers of

wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill. The cover over the roots shall be wetted to the point of runoff daily.

- E. Branching structure shall be thinned in accordance with National Arborists Association "Pruning Standards and Principles" to balance loss of root system caused by damage or cutting of root system. Thinning shall not exceed 30 percent of existing branching structure.

3.5 TREE TRIMMING

- A. If tree trimming is necessary to protect the health of the tree, as determined by the University Representative, or if required to clear for construction, it shall be done only under the direction of a Certified Arborist engaged at the Contractor's expense.
- B. In company with the University's Representative, University and the Arborist, ascertain the limbs and roots which are to be trimmed. Clearly mark them to designate the approved point of cutting.
- C. Dead and damaged trees that are determined by the Certified Arborist to be incapable of restoration to normal growth pattern shall be removed.
- D. Cut evenly, using proper tools and skilled workmen, to achieve neat severance with the least possible damage to the tree.
- E. In the case of root cuts, apply wet burlap or other protection, approved as noted herein, to prevent drying out, and maintain in a wet condition as long as necessary for temporary protection.

3.6 REPAIR COMPENSATION

- A. Damage:
 - 1. Damage to existing tree crowns or roots over 1" in diameter shall be immediately reported to the University's Representative in writing.
 - 2. A Certified Arborist shall direct all repairs to trees damaged by construction operations. Repairs shall be made promptly after damage occurs to prevent progressive deterioration of damaged trees. Repairs shall be at the Contractor's expense.
- B. Irreparable Damage: Any tree to be protected which is irreparably damaged owing to the Contractor's negligence or failure to provide adequate protection shall be compensated for in accordance with the following schedule of values using the "tree caliper" method (greatest trunk diameter, measured 18 inches above the ground):
 - 1. For trees with diameters up to and including 6 inches, compensation shall be the actual cost of replacement with item similar in species, size, and shape, including:
 - a. Actual cost of item boxed out of the ground.
 - b. Transportation or delivery of boxed item to site.
 - c. Planting and staking.
 - d. Maintenance, including watering, fertilizing, pruning, pest control, and other care to bring replacement to same general condition of original item.
 - 2. For trunks up to:
 - 7" \$ 1,200

8"	1,700
9"	2,200
10"	2,600
11"	3,100
12"	3,600
13"	4,100
14"	4,600
15"	5,000
16"	5,500
17"	6,000
18" and over, add for each caliper inch ...	\$600

- C. Damaged tree limbs or trees which have died as a result of injury during construction shall remain the property of the University and shall remain or be removed by the Contractor as directed by the University's Representative.

3.7 MAINTENANCE

- A. Contractor shall be responsible to perform periodic inspections of existing trees and shrubs to be preserved and submit written proposals to the University's Representative for additional maintenance work as may be required to ensure the health and general well-being of the trees.
 - 1. Contractor shall retain, at the direction of the University's Representative additional specialists as may be required to perform this work.
 - 2. The maintenance and quality of the plant materials shall be subject to monthly checks by the University. The dates of these checks shall be outlined in the University's Representative's field notification relating to the establishment of the plant maintenance period. Additional checks shall be scheduled as determined by the University's Representative.
- B. Plant material must be maintained throughout the duration of the construction period in a healthful manner. Plant material identified which requires special pruning, insect control, fertilization or other remedial health action will be treated during this period. Methods and rates of pesticide and fertilizer application will be reviewed by the University's Representative prior to approval.
- C. Tree Basins and Mulching:
 - 1. Construct tree basins at base of existing trees to be preserved so that applied water will remain on top of the root-ball. Size of basin shall be as recommended by the arborist.
 - 2. Tree basins shall be mulched with 1-inch neutralized fir bark.
- D. Watering:
 - 1. Plant materials shall be watered on a regular basis, at a rate consistent with their particular requirements. Verification of the proposed watering schedule shall be reviewed by the University's Representative prior to commencement of the maintenance.
 - 2. The maintenance of the plant materials shall comply with standard horticultural practice for the correct watering, fertilizing, pruning and spraying of the specimen boxed trees.

3. Irrigation: During construction the existing trees to be preserved shall, at the direction of the University's Representative, be given deep watering (be irrigated). Quantities and lengths of time are variable and shall depend upon seasonal rainfall.

E. Washing:

1. Contractor shall perform periodic washing of leaves to remove dust.

F. Contractor shall keep plant material free from weeds and debris at all times.

3.8 CLEANUP

A. Upon completion of the work, restore ground to required elevations and remove excess material debris and equipment from the site to the satisfaction of the University's Representative.

END OF SECTION