

Section 01562

TREE AND PLANT PROTECTION

PART 1 GENERAL

1.01 SUMMARY

This Section includes:

- A. Tree and plant protection and maintenance for project areas where existing trees are to remain in place.
- B. Relocating and replanting existing trees.
- C. Employment of qualified Arborist acceptable to Project Manager to move and relocate trees, or to preserve existing trees needing to be trimmed.

1.02 MEASUREMENT AND PAYMENT

Unless a separate bid item has been established, no separate payment will be made for Work performed under this Section. Include cost of Work performed under this Section in pay item of which this Work is a component.

1.03 REFERENCES (NOT USED)

1.04 SUBMITTALS

- A. Conform to requirements of Section 01330 – “Submittal Procedures”.
- B. Submit name and experience of qualified Arborist to Project Manager when required.

1.05 RELATED REQUIREMENTS

Section 01330 – “Submittal Procedures”

1.06 QUALITY ASSURANCE (NOT USED)

1.07 SYSTEM DESCRIPTION

- A. When Trees and Plants are Identified to be Protected:
 - 1. Preserve and protect existing trees and plants from foliage, branch, trunk, or root damage that could result from construction operations.
 - 2. Do not allow any vehicular traffic, construction equipment, parking of vehicles or stockpiling of excavated material or construction materials within protected

tree root zone areas. Refer to Section 1.10 DEFINITIONS, for Dripline/Root Zone Area definition.

3. Prevent the following types of damage:
 - a. Compaction of root zone area by equipment, vehicles, foot traffic or materials storage.
 - b. Suffocating roots by placing soil in excess of three inches (3") within root zone areas, including placement of any select fill or soil with high clay content.
 - c. Trunk and limb damage resulting from contact with equipment and vehicles.
 - d. Poisoning by pouring solvents, fuel, and other injurious materials on or near root zone areas or in areas where such materials will leak or wash into root zone areas.
 - e. Changing soil pH within root zones by depositing concrete, powdered lime or other materials used to stabilize or dehydrate soils.
 - f. Cutting roots measuring one inch (1") in diameter and larger within protected areas unless required for root pruning.
 - g. Scorching of foliage, twigs and limbs caused by direct contact with expulsion of hot exhaust from equipment or vehicles.
 - h. Branch damage due to improper pruning or trimming.
 - i. Damage from permanently altering drainage patterns near root zones.
 - j. Trunk and branch damage resulting from nailing or bolting.

B. DAMAGE ASSESSMENT

When trees other than those designated for removal are destroyed or badly damaged as result of construction operations, remove and replace with same size, species, and variety. Compensation for any tree larger than 8 inches in diameter shall be negotiated with the tree owner.

1.08 – 1.09 NOT USED

1.10 DEFINITIONS

- A. Dripline/Root Zone Area - The ground area delineated by the branch spread of a single plant or group of plants. This arm is considered the most critical area of roots and should be protected, excluding the area within the street located between curbs.
- B. Zero Curb Cut - The process in which required street work is conducted without cutting or otherwise disturbing soil located immediately behind the existing curb.

1.11 – 1.13 NOT USED

PART 2 PRODUCTS

2.01 MANUFACTURER(S) (NOT USED)

2.02 MATERIALS AND/OR EQUIPMENT

- B. Protection Fencing - Orange, plastic mesh fencing, four feet (4') in height with six feet (6') high steel T-bar posts. Set posts eighteen inches (18") into ground at a maximum spacing of eight-foot (8'). Stretch fencing material taut prior to securing.
- C. Fertilizer - A low salt, slow release fertilizer containing twenty-seven percent (27%) nitrogen, nine percent (9%) phosphorus and nine percent (9%) potassium (potash) or similar.
- D. Plastic Vapor Barrier - Polyethylene sheeting at least 6-mil thickness and three feet width to prevent leaching of stabilized material into native soil.
- E. Tree Replacements - Shall be as approved by Project Manager as necessary.

2.03 – 2.04 NOT USED

PART 3 EXECUTION

3.01 – 3.02 NOT USED

3.03 ERECTION/INSTALLATION APPLICATION AND/OR CONSTRUCTION

- A. Protection and Maintenance of Existing Trees and Shrubs
 - 1. Except for trees shown on Plans or determined by Project Manager to be removed or relocated, trees within Project area are to remain in place, protected from damage and maintained by Contractor.
 - 2. Arborist, if required, must be approved by Project Manager and shall have a minimum of 5 (five) years of experience in the field of tree protection.

3. Perform the following services as required by construction activities for trees that remain:
 - a. Trimming
 - 1) Trees shall be pruned in accordance ANSI A300 (Part 1) - 2001 Pruning Revision of ANSI A300-1995 Tree, Shrub and Other Woody Plant Maintenance - Standard Practices. Pruning shall be done by a professional arborist who has received training in proper pruning techniques.
 - 2) Pruning shall not alter the natural shape or character of the tree or leave holes in the canopy. Trees and shrubs should be pruned for balance as well as to maintain proper form and branching habit.
 - 3) Cut limbs at branch collar. No stubs should remain on trees. Branch cuts should not gouge outer layer of tree structure or trunk.
 - 4) Limit pruning to young branches as much as possible. Take care to maintain older branches that provide basic form of tree. The extent of pruning shall be based upon proximity of pavement to trunk, size of tree blockouts, and requirements of construction adjacent to tree.
 - b. Root Pruning
 - 1) When excavating with equipment within the root zone area is unavoidable and roots cannot be preserved, root prune prior to excavation to minimize damage to the portion of the root system that will remain.
 - 2) Prune roots using a conventional trenching machine. Trench along the proposed edge of excavation limits to a depth of three feet (3'). Do not allow ripping of roots with a backhoe or other equipment.
 - 3) Following trenching with the machine, re-cut roots measuring one inch (1") in diameter and larger using appropriate sharpened, pruning shears or pruning saws to make a clean, smooth-cut surface. Cut roots flush with edge of soil to limit root exposure.
 - 4) Backfill trench in a manner that will not allow settling using clean, native soil.

- c. Fertilizing and Watering
 - 1) Trees should be fertilized in accordance with the American National Standard for tree fertilization ANSI A300 (Part 2) - 1998 Tree, Shrub and Other Woody Plant Maintenance - Standard Practices (Fertilization).
 - 2) Deep root fertilize all trees that have received disturbance or damage to their root zone area.
 - 3) Fertilize entire root zone area within the dripline of the tree and continue ten feet (10') beyond the dripline.
 - 4) Mixture shall be injected into the top ten inches (10") of soil, under pressure of one hundred and fifty pounds per square inch (150 psi) to two hundred pounds per square inch (200 psi). Mix and apply per product label instructions.
 - 5) Inject one-half gallon (1/2) of solution at a depth of ten inches (10") on spacing of three feet (3') between injection points.
 - 6) Fertilizer shall be mixed in a tank with mechanical agitation.
 - 7) Fertilizer to be added to tank and mixed on site.
 - 8) During periods of inadequate rainfall, water trees once weekly to saturate soil to a depth of six inches (6") to eight inches (8") within root zones. Allow soils to dry between watering. Do not allow soils to remain wet.
- d. Water areas currently being served by private sprinkler systems to maintain health of existing landscapes if the affected systems are temporarily taken out of service due to construction activities.
- e. Shrubs to remain may be temporarily transplanted and returned to original positions under supervision of professional horticulturist when approved by Project Manager

B. Protection

1. Construction Methods

a. General

- 1) Protect tree limbs, trunks and foliage from direct exposure to hot exhaust from equipment and vehicles by providing adequate exhaust pipe deflectors.

- 2) Cover exposed roots within 24 hours to reduce damage caused by desiccation. Roots may be covered with soil or mulch to help protect them from drying.
 - 3) Protect root zone areas from damage that may result from soil compaction or from noxious materials in solution caused by run-off or spillage during mixing and placement of construction materials, or drainage from stored materials.
 - 4) Minimize cut to two inches (2") below grade when installing silt fence within tree root zones or anchor base of fabric on grade using gravel or staples. Do not cut roots 1" in diameter or larger.
 - 5) Site preparation work and/or construction work shall not begin in any area where tree preservation measures have not been completed and approved by the Project Manager.
- b. Preparation
- 1) Contractor shall not allow any vehicular traffic, parking of vehicles or stockpiling of excavated material or construction material within the root zone area of trees to be preserved.
 - 2) When access within protected root zone areas by equipment traffic or frequent foot traffic cannot be avoided, contact Project Manager for review prior to entrance. Place a three-quarter inch (3/4") thick layer of plywood on natural grade within root zones to minimize soil compaction. Overlap edges of plywood by six inches (6") to twelve inches (12") to ensure adequate coverage. This is not acceptable bridging for driving over exposed tree roots. Exposed roots should not be driven over.
 - 3) Contractor shall notify Project Manager if existing tree locations differ from locations represented on the Plans. The tree location and dripline/root zone area as observed in the field shall supersede that outlined on construction plans.
- c. Tree Protection Fencing
- 1) Each tree located adjacent to proposed soil excavation shall be protected with a tree protection fence or as designated on the plans. Fence locations shall be approved by Project Manager.

- 2) Contractor shall not remove or relocate tree protection fencing and shall not operate within the limits shown without approval of the Project Manager.
 - 3) Fences shall be placed in continuous alignment to protect a tree or group of trees.
 - 4) Posts shall be installed on eight-foot (8') centers at eighteen inches (18") below grade. The fencing shall be continuous between posts, shall be pulled taut prior to securing to posts, and shall be firmly attached to the posts with a minimum of three (3) wire ties.
 - 5) Place fencing in a manner that will not obstruct traffic site lines at curbs, intersections or driveways.
 - 6) Fencing shall be removed only after all work within the immediate area is complete.
 - 7) Contractor shall immediately repair fences if damage occurs at no additional charge to client.
- d. Excavation within Root Zone Areas
- 1) For excavation within root zone areas, where required for personal safety, provide excavation protection by using vertical-wall-shoring techniques at excavations to minimize excavation width. Do not bench cut or step cut edge where such techniques will encroach on root zone areas.
 - 2) If roots are encountered and must be severed, roots measuring one inch (1") in diameter and larger shall be cut using a sharpened pruning instrument to leave a smooth, clean-cut surface.
- e. Zero Curb Cut and Vapor Barrier Installation
- 1) Where existing curb is to be removed within tree root zone areas, do not disturb soil immediately back of curb. Do not allow forms and stakes to disturb roots.
 - 2) A vapor barrier shall be installed to provide a non-leaching barrier between any stabilized material and/or concrete and tree roots and soils.

- 3) Vapor barrier shall be installed vertically to a depth of five inches (5") below limits of stabilized material. Vapor barrier to be extended ten inches (10") above natural grade and ten feet (10') beyond the dripline limits of the tree. Trim vertical vapor barrier to approximately one inch (1") above grade after installation of final grade.
- f. Boring/Tunneling
- 1) In areas indicated, bore under root systems of trees at a minimum depth of four feet (4') from the top of pipe to the soil surface at natural grade.
 - 2) Bore pits and receiving pits shall be located outside of protected root zone areas.
 - 3) Equipment and material shall be positioned outside of protected root zone areas. When access within protected root zone area by equipment traffic or frequent foot traffic cannot be avoided, place a three-quarter inch (3/4") thick layer of plywood on natural grade within root zones to minimize soil compaction, refer to Section 3.03.B.1.b.
- g. Trunk Barricading
- 1) Install trunk barricading to protect trees in close proximity of moving or mechanical equipment and construction work when work is required within the tree protection fencing as shown on the plans.
 - 2) Place trunk barricading around entire tree trunks to protect tree trunks located within five feet (5') of construction activities.
 - 3) Install 2x4's or 2x6's (5-foot to 6-foot lengths) spaced 3 inches (3") apart around the circumference of the tree trunk.
 - 4) Tie in place with 9 to 12 gauge steel wire.
2. Sequence of Tree Protection and Services
- a. Fertilize trees affected by construction between the months of October and May.
 - b. Prune/trim trees for clearance and safety.
 - c. Root Prune trees.

- d. Place tree protection fence and trunk barricades to protect trees. Place fencing prior to any construction activities.
 - e. Remove tree protection upon completion of project.
3. Existing Stressed and Declining Trees

Prior to beginning the construction phase, trees located within the right-of-way should be reviewed and trees that appear to be stressed or declining in health should be documented. Immediately notify the Project Manager of any dead and dying trees.

4. Accidental Spills of Toxic Materials

Concrete, lime or other chemicals placed or accidentally spilled within root zone protection areas shall be completely removed. Contaminated soil shall be completely removed at the time of the spill and removed by hand shovel. Fresh soil shall be added as necessary to bring the soil level to that of natural grade.

C. Maintenance of Newly Planted Trees and Replanted Trees

- 1. Show proof of capacity to water during dry periods.
- 2. Guarantee trees planted for this Project shall remain alive and healthy at least until end of 1-year warranty period.
 - a. Within 4 weeks' notice from Project Manager, replace dead trees or trees that in opinion of Project Manager have become unhealthy, unsightly or have lost their natural shape as result of additional growth, improper pruning or maintenance or weather conditions.
 - b. When tree must be replaced, guarantee period begins on date of tree replacement, subject to Project Manager's inspection, for no less than 1 year.
 - c. Straighten leaning trees and bear entire cost.
 - d. Dispose of trees rejected by Project Manager and bear entire cost.

3.04 – 3.10 NOT USED

END OF SECTION