

## SECTION 02115

### LANDSCAPE AND TREE PROTECTION

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#### **PART 1 - GENERAL**

- 1.01 DESCRIPTION OF WORK:** The project includes two areas of scope: A) tree protection within the existing right of way and private property, and B) tree mitigation as part of clearing and grubbing operations for sewer construction.

Tree Protection: Contractor shall make every reasonable effort to protect all landscaping and trees in the area of his operations. Trees and landscaping damaged or destroyed as a result of Contractor's operations shall be replaced with plants of identical species and of similar size, unless directed otherwise by Engineer. Contractor shall make every possible effort to save any tree of four-inch diameter or larger, including minor adjustment to the pipe routing. Changes in pipe routing must be approved by the Engineer. Any tree which is not designated for removal but which will significantly interfere with construction shall be trimmed by a qualified tree surgeon. Contractor shall minimize tree removal and tree trimming operations to as great an extent as possible. All costs associated with tree and landscape protection and/or replacement shall be borne by the Contractor.

Tree Mitigation: The Drawings indicate specific trees to be removed and replacement trees planted to mitigate the loss, per the City of Jacksonville requirements. Those trees shall be selected and planted as specified herein.

#### **1.02 QUALITY ASSURANCE:**

- A. Tree Protection: Engage a qualified tree surgeon to perform the following work:
1. Remove branches from landscaping and trees which are to remain, if required for new construction.
  2. Recommend procedures to compensate for loss of roots and perform initial pruning of branches and stimulation of root growth where removed to accommodate new construction.
  3. Perform repair work for damages incurred by new construction.
- B. Certifications (Florida #1) shall be provided illustrating conformance with planting material requirements.
- C. Installer's Field Supervision: Require installer to maintain an experienced full-time supervisor on project site when work is in progress.

1. Pesticide Applicator: State licensed, commercial.
- D. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1. All plant material shall be Florida #1, or better.
- E. All plants shall be guaranteed by the Landscape Contractor to be healthy plants and in flourishing condition of active growth for ninety (90) days from the final inspection and acceptance. All trees shall be guaranteed an additional one year from final inspection and acceptance.
- F. All plants shall be fully compliant with the City of Jacksonville Code of Ordinances Chapter 656.1206.

**1.03 JOB CONDITIONS:** Provide temporary fencing, barricades, or guards to protect trees and other plants which are to remain, from damage.

**1.04 DEFINITIONS:**

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- C. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- D. Root Flare: Also called “trunk flare”. The area at the base of the plant’s stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

**1.05 PRE-INSTALLATION MEETINGS:** Pre-installation conference shall be conducted at the project site.

**1.06 DELIVERY, STORAGE & HANDLING:**

- A. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering

of plants during shipping and delivery. Do not drop plants during delivery and handling.

- B. Handle planting stock by root ball or container.
- C. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.
- D. Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

#### **1.07 WARRANTY:**

- A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
    - b. Structural failures, including plantings falling or blowing over.
  - 2. Warranty Periods, from date of Owner acceptance:
    - a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
    - b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS:**

- A. Tree Pruning Compound: Waterproof, antiseptic, elastic, and free of kerosene, coal tar, creosote, and other substances harmful to plants. Pruned or damaged trees shall be treated with the following:
  - 1. Pine trees (all species): A mixture of twelve percent (12%) Benzene Hexachloride (BHC) emulsifiable concentrate shall be mixed at the rate of one (1) pint of BHC per gallon of #2 fuel oil. Spray damaged area liberally. Spray the rest of the tree from ground level to a height

of six feet (6'). Spraying of damaged trees shall be completed within five (5) days after injury occurs.

2. Hardwood (all species except pine): An application of asphalt-type tree pruning paint will be applied to the damaged area. The paint shall be applied in sufficient quantity so as to form an airtight seal. Spraying or painting of damaged trees shall be performed within twenty-four (24) hours after the injury occurs. In the case of damage to "specimen" hardwoods, the inspecting Engineer may require the Contractor to retain a skilled and licensed tree surgeon to properly treat the damage. No compensation shall be made to the Contractor for treating damaged trees.

- B. Root Protection Compound: Where the roots of trees 4 inches or more in diameter are cut due to Contractor's operations, exposed roots shall receive an application of Subdue 2E Fungicide as manufactured by Novartis. Application of fungicide shall be in strict accordance with manufacturer's recommendations.

- C. Plant Material:

1. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ASNI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement. All plant material shall be Florida #1, or better.
2. Root Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.
3. Each tree shall meet the minimum dbh caliper size per the City of Jacksonville Code of Ordinances Chapter 656.1206.

- D. Fertilizers:

1. Planting Tablets: Tightly compressed chip-type, long lasting, slow release, commercial grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.

- a. Rate and Nutrient Composition shall be as recommended by University of Florida, Institute of Agricultural Sciences (IFAS) after soil analysis.
- E. Mulches: Organic mulch shall be pine needles.
- F. Pesticides: Pesticides registered and approved by the EPA, acceptable to authorities having jurisdiction and of type recommended by manufacturer for each specific problem and as required for project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- G. Tree Staking and Guying Material: As indicated on Drawings.
- H. Soil Mix: A mixture of 75% A-3 Sand, 25% shredded pine bark, with pH adjustments as required by IFAS analysis and recommendations.
- I. The Owner or Owner's representative shall have the right to reject any and all work which, in his opinion, does not meet the requirements of the specifications at any stage of the project operation.

### **PART 3 - EXECUTION**

#### **3.01 EXISTING LANDSCAPING PROTECTION:**

- A. Protection of Landscaping: Contractor may, in lieu of replacing disturbed/damaged landscaping and trees, store landscaping and trees removed by his operations in suitable containers for replanting. Containers shall be adequately sized to contain the plant's root mass. Suitable topsoil shall be packed into container in sufficient quantity to cover the plant's root system. Contractor shall water containerized plants as necessary to keep them healthy. A record of each containerized plant's original location prior to removal shall be kept by the Contractor so that each plant may be replanted in its proper location. Any replaced or replanted landscaping which, in the opinion of the Engineer, appears unhealthy shall be replaced with similar size and species of plant by the Contractor at no cost to the Owner for a period of up to 90 days after the date of contract completion.
- B. Repair and Replacement of Trees: Repair trees damaged by construction operations, in a manner acceptable to the Engineer. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees. Remove and replace dead and damaged trees which are determined by the tree surgeon to be incapable of restoration to normal growth pattern. If trees over six inches in caliper measurement (taken 12 inches above grade) are required to be replaced, provide new trees of six inches caliper size, and of the same species. Any replaced or replanted trees which, in the opinion of

the Engineer, appear unhealthy shall be replaced with similar size and species of tree by the Contractor at no cost to the Owner for a period of 365 days after the date of contract completion.

- C. Cleanup and Disposal: Remove excess excavation, displaced trees, and trimmings, and dispose of off the Owner's property in a manner approved by local agencies.

### **3.02 PLANTING AREA ESTABLISHMENT:**

- A. General: Prepare planting area for soil placement, and mix planting soil according to this Specification and planting details on the Drawings. Plant material locations and bed outlines shall be staked or flagged on site by the Contractor and shall be adjusted if required to fit actual as-built conditions on site, and shall be approved by the Owner or Owner's representative.
- B. Placing Planting Soil: Blend soil amendments in place to adjust soil percolation and pH based on IFAS recommendations for existing on-site soil.
- C. Before planting, obtain Owner's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

### **3.03 EXCAVATION FOR TREES AND SHRUBS:**

- A. Planting Pits and Trenches: Excavate circular planting pits.
  - 1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
  - 2. Excavate to width shown on planting details.
  - 3. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
  - 4. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.

- C. Remove construction debris, including wood, limerock, concrete, metal, large stones, glass, and other objects detrimental to plant growth. Provide soil mix in planting beds and tree wells as required to restore soil level to required finished grade. Thoroughly blend added soil mix with existing native soil.
- D. Landscape Contractor shall bear final responsibility for proper surface drainage of planted areas. Any discrepancy in the drawings, obstruction on the site, or prior to work done by any other party, which the Contractor feels precludes establishing proper drainage, shall be brought to the attention of the Owner for correction or relief of said responsibility.

### **3.04 TREE, SHRUB, AND VINE PLANTING:**

- A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- B. Roots: Remove stem girdling roots and kinked roots. Remove roots by cutting cleanly; do not break.
- C. Set each plant plumb and in center of planting pit or trench with root flare 2 inches adjacent finish grades.
  - 1. Backfill: Use amended, excavated soil for backfill.
  - 2. Balled and Burlapped Stock: After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting process.
  - 3. Container-Grown Stock: Carefully remove root ball from container without damaging root ball or plant.
  - 4. Fabric Bag-Grown Stock: Carefully remove root ball from fabric bag without damaging root ball or plant. Do not use planting stock if root ball is cracked or broken before or during planting operation.
  - 5. Bare-Root Stock: Support stem of each plant and spread roots without tangling or turning toward surface. Plumb before backfilling, and maintain plumb while working. Carefully work backfill around roots by hand. Bring roots into close contact with the soil.

6. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
  7. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of hole.
    - a. Bare-Root Stock: Place tablets beside soil-covered roots; do not place tablets touching the roots.
    - b. Quantity: As recommended by IFAS after soil analysis.
  8. Continue backfilling process. Water again after placing and tamping final layer of soil.
- D. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.
- E. Stake and Guy trees as indicated on Drawings.
- F. Landscape Contractor shall bear final responsibility for proper surface drainage of planted areas. Any discrepancy in the drawings, obstruction on the site, or prior to work done by any other party, which the Contractor feels precludes establishing proper drainage, shall be brought to the attention of the Owner for correction or relief of said responsibility.
- G. After all plant material in a plant bed area has been installed and approved, the areas between plants shall be raked to an even grade to conform to pre-mulching finish grades. See Section 3.08 for additional requirements.
- H. Shade trees shall be planted minimum 5' from EOP and 15' from OHE.

### **3.05 TREE, SHRUB, AND VINE PRUNING:**

- A. Remove only dead, dying, or broken branches. Do not prune for shape.
- B. Prune, thin, and shape trees, shrubs, and vines as directed by Landscape Architect.
- C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only

injured, dying, or dead branches from trees and shrubs, and prune to retain natural character.

- D. Do not apply pruning paint to wounds.

### **3.06 GROUND COVER AND PLANT PLANTING:**

- A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings, in even rows with triangular spacing.
- B. Dig holes large enough to allow spreading of roots.
- C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

### **3.07 GRASSED AREA PREPARATION & PLANTING:**

- A. Remove construction debris, including wood, limerock, concrete, metal, large stones, glass, and other objects detrimental to grass growth. Provide soil mix in grassed areas as required to restore soil level to required finished grade. Thoroughly blend added soil mix with existing native soil.
- B. Till all areas to receive sod or seed & mulch to a minimum depth of 4 inches and rake smooth. Make pH and nutrient amendments per IFAS soil analysis and recommendations.
- C. Moisten areas to receive sod immediately prior to planting.
- D. Fit sod pieces tightly together and stagger joints. Roll sod to remove air pockets.
- E. Hydroseed all areas shown as seed & mulch. Apply seed as recommended by seed supplier to achieve a thick stand of grass.
- F. Sod and seed type as shown on the Drawings.

### **3.08 PLANTING AREA MULCHING:**

- A. Mulch backfilled surfaces of planting areas and other areas indicated.

1. Trees in Turf Areas: Apply organic mulch ring of 3 in. average thickness, with 36 in. radius around trunks or stems. Do not place mulch within 6 inches of trunks or stems.
2. Organic Mulch in Planting Areas: Apply 3 in. average thickness of organic mulch beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 6 inches of trunks or stems.

### **3.09 PLANT MAINTENANCE:**

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.
- B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.
- D. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

### **3.10 MAINTENANCE SERVICE:**

- A. Maintenance Service: Provide maintenance by skilled employees of landscape installer. Begin maintenance immediately after plants are installed and continue until plants are acceptably healthy and well established, but for not less than maintenance period below:
  1. Maintenance Period for Trees and Shrubs: 12 months from date of Owner acceptance.
  2. Maintenance Period for Ground Cover and Other Plants: 12 months from date of Owner acceptance.

### **END OF SECTION**