

SECTION 32 93 00
PLANTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Trees, plants, and ground cover.
 - 2. Mulch.
 - 3. Fertilizer.
 - 4. Pruning.
 - 5. Maintenance.
- B. Related Sections:
 - 1. Section 32 91 19 - Landscape Grading: Preparation and placement of topsoil in preparation for the Work of this Section.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI A300 - Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices.
 - 2. ANSI Z60.1 - Nursery Stock.
- B. National Arborist Association:
 - 1. NAA - Certification documentation for tree pruning Qualifications.
- C. SCDOT Standard Specifications:
 - 1. Standard Specifications for Highway Construction, 2007, published by the South Carolina Department of Transportation.

1.3 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.
- B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit list of plant material sources, data for fertilizer and other accessories.
- C. Submit minimum 10 ounce sample of mulch.
- D. Planting Schedule: Indicate dates for each type of landscape work during normal seasons for such work in area of site. Correlate with specified maintenance periods to provide maintenance from Date of Substantial Completion.

- E. Operation and Maintenance Data: Include maintenance instructions recommending procedures to be established by Owner for maintenance of landscape work during one full year.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Operation and Maintenance Data: Include pruning objectives, types and methods; types, application frequency, and recommended coverage of fertilizer.

1.6 QUALITY ASSURANCE

- A. Tree Pruning: ANSI A300 Pruning Standards for Woody Plants.
- B. Perform Work in accordance with Section 811 of SCDOT Standard Specifications.
- C. Maintain one copy of document on site.

1.7 QUALIFICATIONS

- A. Nursery: Company specializing in growing and cultivating plants with 3 years documented experience.
- B. Installer: Company specializing in installing and planting plants 5 years documented experience.
- C. Tree Pruner: Company specializing in performing work of this Section with person certified by National Arborist Association.
- D. Maintenance Services: Performed by installer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- C. Protect and maintain plant life until planted.
- D. Deliver plant life materials immediately prior to placement. Keep plants moist.
- E. Plant material damaged as a result of delivery, storage or handling will be rejected.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.
- C. Do not install plant life when wind velocity exceeds 30 mph.

1.10 COORDINATION

- A. Administrative Requirements: Requirements for coordination.

1.11 WARRANTY

- A. Furnish one year warranty for trees, plants and ground cover.
- B. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

1.12 MAINTENANCE SERVICE

- A. Maintain plant life immediately after placement until plants are well established and exhibit vigorous growing condition.

PART 2 PRODUCTS

2.1 TREES, PLANTS, AND GROUND COVER

- A. Planting Stock:
 - 1. Species: In accordance with Standardized Plant Names, official code of American Joint Committee on Horticulture Nomenclature.
 - 2. Identification: Label individual plants or each bundle of plants when tied in bundles.
 - 3. Plants: No. 1 Grade conforming to "American Standard for Nursery Stock" of American Association of Nurserymen (AAN); well-branched, vigorous and balanced root and top growth; free from disease, injurious insects, mechanical wounds, broken branches, decay and other defects.
 - 4. Trees: Furnish with reasonably straight trunks, well balanced tops, and single leader.
 - 5. Deciduous Plants: Furnish in dormant state, except those specified as container grown.
- B. Trees, Plants, and Ground Cover: Species and size identifiable in plant schedule, grown in climatic conditions similar to those in locality of the Work.

2.2 SOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; minimum pH value of 5.4 and maximum 7.0; organic matter to exceed 1.5%, magnesium to exceed 100 units; phosphorus to exceed 150 units; potassium to exceed 120 units; soluble salts/conductivity not to exceed 900 ppm/0.9 mmhos/cm in soil.
- B. Plant Soil Mix: Uniform mixture of 1 part peat and 3 parts topsoil by volume.

2.3 SOIL AMENDMENT MATERIALS

- A. When soil tests indicate soil amendment, apply soil conditioners or fertilizers to amend soil to specified conditions.
 - 1. Tree Fertilizer: Containing 50 percent of elements derived from organic sources; of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis or as shown on Drawings.

- B. Peat Moss: Shredded, loose, sphagnum moss; free of lumps, roots, inorganic material or acidic materials; minimum of 85 percent organic material measured by oven dry weight, pH range of 4 to 5; moisture content of 30 percent.
- C. Bone Meal: Raw, finely ground, commercial grade, minimum of 3 percent nitrogen and 20 percent phosphorous.
- D. Lime: Ground limestone, dolomite type, minimum 95 percent carbonates.
- E. Water: Clean, fresh, and free of substances or matter capable of inhibiting vigorous growth of plants.

2.4 MULCH MATERIALS

- A. Mulching Material: Composted, shredded hardwood bark, dark brown in color.

2.5 ACCESSORIES

- A. Wrapping Materials: Burlap.
- B. Stakes: Softwood lumber, pointed end. Mild steel angle, galvanized, pointed end.
- C. Cable, Wire, Eye Bolts and Turnbuckles: Non-corrosive, of sufficient strength to withstand wind pressure and resulting movement of plant life.
- D. Plant Protectors: Rubber sleeves over cable to protect plant stems, trunks, and branches.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared subsoil and planters are ready to receive work.
- C. Saturate soil with water to test drainage.

3.2 PREPARATION OF SUBSOIL AND TOPSOIL

- A. Conform to Section 32 19 91.

3.3 PLANTING

- A. Place plants for best appearance.
- B. Set plants vertical.
- C. Remove non-biodegradable root containers.
- D. Set plants in pits or beds, partly filled with prepared plant mix, at minimum depth as indicated on Drawings under each plant. Loosen and remove burlap, ropes, and wires, from top half of root ball.

- E. Place bare root plant materials so roots lay in natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.
- F. Saturate soil with water when pit or bed is half full of topsoil and again when full.

3.4 PLANT RELOCATION AND RE-PLANTING

- A. Relocate plants as indicated on Drawings or directed by Engineer.
- B. Ball or pot removed plants when temporary relocation is required.
- C. Replant plants in pits or beds, as described for new plants above.

3.5 PLANT SUPPORT

- A. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:

Tree Caliper	Tree Support Method
1 inch	1 stake with one tie
1 – 2 inches	2 stakes with two ties
2 – 4 inches	3 guy wires with eye bolts and turn buckles
Over 4 inches	4 guy wires with eye bolts and turn buckles

3.6 TREE PRUNING

- A. When pruning trees is required, lightly prune trees in accordance with ANSI A300 Maintenance Pruning Type: Crown Cleaning.

3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Plants will be rejected when ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

3.8 SCHEDULE

- A. Plant Schedule:

Key	Botanical Name	Common Name	Size	Remarks
T-1	Betula Papyrifera	Paper Birch	Height: 4 - 5 feet	Balled and Burlapped
T-2	Citrus Aurantium	Sour Orange	Caliper: 3/8 - 1/2 inch	
S-1	Juniperus Chinesis "Pfitzeriana"	Pfitzer's Juniper	Spread: 24 - 30 inches	Balled and Burlapped
S-2	Juniperus Sabina Tamariscifolia	Tamarix Juniper	Spread: 18 - 24 inches	Balled and Burlapped
G-1	Euonymus Fortunei Cultivars	Winter Creeper	Pot: 2-1/4 inch minimum	Minimum Runner Length - 8 inches
G-2	Pachysandra Terminalis	Japanese Spurge	3 stems	

END OF SECTION