

## SECTION 329313

### TREES, SHRUBS, AND GROUNDCOVER

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

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Trees.
  - 2. Shrubs.
  - 3. Ground cover.

##### **1.2 REFERENCES**

- A. "Grades and Standards", latest edition, Texas Association of Nurserymen Specifications, Austin, Texas 78704.
- B. "American Standard for Nursery Stock", American National Standards Institute, Incorporated, (ANSI Z 60).
- C. "Standardized Plant Names", 1942 Edition, American Joint Committee on Horticultural Nomenclature

##### **1.3 DEFINITIONS**

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- E. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.
- F. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

#### **1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated provide requested copies of manufacturers literature, samples, certifications, and laboratory analytical data:
  - 1. Trees, shrubs, and groundcovers – Samples and/or photographs.
  - 2. Mulch – manufacturer’s literature and sample.
  - 3. Tree and shrub planting fertilizer – certification or laboratory analytical data.
  - 4. Tree paint – manufacturer’s literature.
- B. Product certificates.
- C. Planting Schedule: Indicating anticipated planting dates for exterior plants.
- D. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year.

#### **1.5 QUALITY ASSURANCE**

- A. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- B. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory.
  - 1. Report suitability of topsoil for plant growth. State-recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.
- C. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
- D. Source - Quality Control:
  - 1. Plants shall be subject to inspection and approval by Landscape Architect at place of growth and upon delivery for conformity to specifications. Such approval shall not impair the right of inspection and rejection during progress of the Work. Submit written request for inspection of plant material at place of growth to Landscape Architect. Written request shall state the place of growth and quantity of plants to be inspected. Landscape Architect reserves right to refuse inspection at this time if a sufficient quantity of plants is not available for inspection. All plant material shall be tagged by the Landscape Architect at the nursery.
  - 2. All plants inspected at the nursery by the Landscape Architect shall be tagged with serialized self-locking tags. Trees delivered to the site without these tags or with broken tags shall be sufficient reason for rejection.
  - 3. Substitutions of plant materials will not be permitted unless authorized in writing by Landscape Architect. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of the nearest equivalent size or variety with corresponding adjustment of Contract Price. Such proof shall be substantiated and submitted in writing to Landscape Architect at least thirty (30) days prior to start of

Work under this Section. These provisions shall not relieve Contractor of the responsibility of obtaining specified materials in advance if special growing conditions or other arrangements must be made in order to supply specified materials.

- E. Inspections: Make written request for inspection after planting operations have been completed. Such inspection is for the purpose of establishing the Maintenance Period.
- F. Submit written requests for inspections to the Landscape Architect at least seven (7) days prior to anticipated inspection date.
- G. Preinstallation Conference: Generally on site

### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Submit plan for transporting plant material to site to Landscape Architect for approval. Plan should include:
  - 1. Date of pick-up at nursery or place of storage.
  - 2. Type of vehicle used for shipping.
  - 3. Method of protecting trees during transit.
  - 4. Dates in transit.
  - 5. Date of delivery to site.
  - 6. Projected date of installation.
  - 7. Means of storage, watering and shading used between delivery and planting.
- B. Landscape Architect suggests the following considerations for the Contractor to evaluate in product handling:
  - 1. During hot weather and when practical, the Contractor may be required to transport plant materials between sunset and sunrise if transported in an open trailer or unrefrigerated box.
  - 2. Dug material should be maintained and watered as required at the nursery to guarantee their vitality and health until shipping.
  - 3. Protect all trunks, stems, branches and root balls during tree tying, wrapping and loading operations from damage.
  - 4. Load balls or containers onto transport vehicle and secure in a manner that protects the structural integrity of the root balls.
  - 5. The Contractor shall be solely responsible for the safe transportation of plants to the site and their condition upon arrival. Trees damaged, dehydrated or abused during transit and storage will be rejected.
  - 6. Plant materials should not be stored on concrete or left exposed to the sun.
  - 7. Protect the balls and water regularly until planting. If trees are left in storage over the weekend or holiday, provide a means of periodical watering and inspecting root ball protection.
- C. Landscape Architect may inspect any phase of this operation and may reject any plant material improperly handled during any phase of this operation.

- D. Nothing in this Section shall be interpreted as relieving the Contractor of the responsibility of providing healthy, viable plants, nor shall it have any affect upon the terms of the warranty specified herein.
- E. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, 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 exterior plants during delivery. Do not drop exterior plants during delivery and handling.
- F. Handle planting stock by root ball.
- G. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants and trees in shade, protect from weather and mechanical damage, and keep roots moist.

#### **1.7 FINAL ACCEPTANCE**

- A. Work under this Section will be accepted by Landscape Architect upon satisfactory completion of all work including maintenance, but exclusive of replacement of plant materials under the warranty period. Upon Final Acceptance, Owner will assume responsibility for maintenance of Work.

#### **1.8 WARRANTY**

- A. Special Warranty: Installer's standard form in which Installer agrees to repair or replace plantings 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 lack of adequate maintenance, neglect, abuse by Owner, or incidents that are beyond Contractor's control.
    - b. Structural failures including plantings falling or blowing over.
  - 2. Warranty Periods from Date of Substantial Completion:
    - a. Trees and Shrubs: One year.
    - b. Ground Cover and Plants: Three months.

#### **1.9 MAINTENANCE SERVICE**

- A. Initial Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is

planted and continue until plantings 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 Substantial Completion.
2. Maintenance Period for Ground Covers and Plants: Three months from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 TREES, SHRUBS, VINES, AND GROUNDCOVER**

- A. Plants shall be nursery grown in accordance with good horticultural practices under climatic conditions similar to those of project for at least two years unless specifically otherwise authorized by Landscape Architect in writing. Unless specifically noted otherwise, all plants shall be exceptionally heavy, symmetrical, tightly knit, so trained or favored in development and appearance as to be superior in form, number of branches, compactness and symmetry.
- B. Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs, or larvae, and shall have healthy, well developed root systems. They shall be free from physical damage or adverse conditions that would prevent thriving growth.
- C. Plants shall be true to species and variety and shall conform to measurements specified except that plants larger than specified may be used if approved by Landscape Architect. Use of such plants shall not increase Contract price. If larger plants are approved, the ball of earth or container size shall be increased as specified under "Applicable Standards" and subject to the approval of the Landscape Architect.
- D. Plants shall be measured when branches are in their normal position. Height and spread dimensions specified refer to main body of plant and not branch tip to tip.
- E. Container stock, when specified, shall have grown in the containers in which delivered for at least six (6) months, but not over two (2) years. Samples must prove no root-bound conditions exist. No container plants that have cracked or broken balls of earth, when taken from container, shall be planted except upon special approval by Landscape Architect. Container stock shall not be pruned before delivery. Field grown plants recently transplanted into containers will not be accepted.
- F. Nursery grown B&B material (when allowable) shall be pruned and thinned at the place of growth immediately prior to digging as required for packaging and safe moving. Method of pruning shall be as approved in the field by the Landscape Architect. Do not remove self-locking tags during this pruning prior to delivery to site.

## **2.2 COMMERCIAL FERTILIZERS**

- A. Shrub/Groundcover Fertilizers: Agri-Form 20-10-5, 21 gram tablets.
- B. Tree planting fertilizer: Davey Arbor Green Organic Liquid Soil injected at 115 PSI. Apply at mfg. recommended rates.
- C. Top-dress Fertilizer: Complete fertilizer, 50 percent of the nitrogen to be derived from organic sources or urea-form. Available phosphoric acid shall be from superphosphate, bone or tankage. Potash shall be derived from potassium sulfate containing 60 percent potash.

## **2.3 PRE-EMERGENCE WEED CONTROL**

- A. In areas of Woody Ornamental Plants, Eptam or Eptam -5-G as manufactured by Greenlight Products Company, or approved equal.

## **2.4 STAKING MATERIALS**

- A. Use staking materials necessary to meet requirements of specifications, subject to approval. Suggested materials:
  - 1. Tree Stakes: Green, Eight (8') feet long steel T-Post weighing 1.33 pounds per foot.
  - 2. Ties: Black rubber 3/4-inch hose with 3/16-inch wall thickness
  - 3. Tree Guying Material: #10 gage galvanized multi-strand cable.
  - 4. Cable Clamps: Size needed to hold two strands together.

## **2.5 MULCH**

- A. Shredded Hardwood bark.

## **2.6 INSECTICIDE**

- A. Ortho "Lindane Borer and Leaf Miner Spray" by Ortho, Consumer Products Division, Chevron Chemical Company, San Francisco, California 94119, or "Borer Killer" by Greenlight Company, San Antonio, Texas 78217.

## **2.7 WATERING TUBES**

- A. Gray, perforated SDR PVC drainage pipe, 4 inches in diameter.

### **PART 3 - EXECUTION**

#### **3.1 LAYOUT AND EXCAVATION OF PLANTING AREAS:**

- A. Layout plants in locations shown on Drawings. Use wire stakes color-coded for each specie of plant material. Stake location of each tree and major shrub and outline of shrub and groundcover beds.
- B. Landscape Architect will check location of plants in the field and shall adjust to exact position before planting begins.
- C. Subsoil shall not be worked when moisture content is so great that excessive compaction should occur, nor when it is so dry that clods will not break readily. Water shall be applied, if necessary, to bring soil to an optimum moisture content for tilling and planting.
- D. Excavate entire planting beds to a depth of 8 inches.

#### **3.2 DRAINAGE, DETRIMENTAL SOILS, AND OBSTRUCTIONS:**

- A. Test drainage of plant beds and pits by filling with water twice in succession. Conditions permitting the retention of water in planting beds for more than twenty four (24) hours or percolation of less than one inch per hour shall be brought to the attention of the Owner.
- B. Notify the Landscape Architect in writing of all soil or drainage conditions Contractor considers detrimental to growth of plant material.
- C. If rock, hardpan, underground construction work, tree roots or other obstructions are encountered in the excavation of plant pits and beds, alternate locations may be selected by Landscape Architect. Where locations cannot be changed, submit cost required to remove the obstructions to a depth of not less than 6 inches below the required pit or bed depth. Proceed with work after approval.

#### **3.3 PREPARING PLANT MATERIALS FOR PLANTING:**

- A. Canned stock shall be removed carefully after cans have been cut on two sides with approved cutter. Do not use spade to cut cans. Do not lift or handle container plants by tops, Stems, or trunks at any time.
- B. Do not bind or handle any plant with wire or rope at any time so as to damage bark or break branches. Lift and handle plants only from bottom of ball.

#### **3.4 INSTALLATION OF BED PLANTED MATERIALS:**

- A. Fill all shrub and groundcover beds with plant bed mix to finished grade (compacted).

- B. Excavate in planting mix for individual plant and install as required. Set plant plumb and brace rigidly in position until planting soil mix has been tamped solidly around the ball and roots.
- C. When plant pits have been backfilled approximately two-thirds (2/3) full, place Agriform tablets evenly distributed in plant pits according to the following schedule:
  - 1 gallon equivalent - 1 tablet
  - 5 gallon equivalent - 2 tablets
- D. Water thoroughly, saturating root ball, before installing remainder of the planting soil to top of pit, eliminating all air pockets. Top of root ball shall be 2 inches above finished grade.
- E. Smooth planting areas to conform to specified grades after full settlement has occurred. Contractor shall bear final responsibility for proper surface drainage of planted areas.
- F. Water all plants immediately again after planting.
- G. Apply pre-emergent weed control material over entire area to receive mulch.
- H. Mulch all shrub and groundcover beds as detailed on Drawings.

### **3.5 SURFACE DRAINAGE OF PLANTING AREAS**

- A. Contractor shall bear final responsibility for proper surface drainage of planted areas. Any discrepancy in the Drawings or Specifications, obstructions on the site, or prior work done by another party which Contractor feels precludes establishing proper drainage, shall be brought to the attention of Landscape Architect in writing for correction or relief of said responsibility.

### **3.6 PRUNING**

- A. Prune containerized plants only at time of planting and according to standard horticultural practice to preserve the natural character of the plant. Prune by removing entangled branching and by removing crotches. Avoid removing branch tips wherever possible. Pruning to be done under supervision of the Landscape Architect.
- B. Remove all dead wood, suckers, and broken or badly bruised branches. Use only clean, sharp tools.
- C. Paint cuts over 3/4- inch diameter with tree paint, covering all exposed, living tissue.

### 3.7 STAKING

- A. Contractor shall stake trees and shall be responsible for material remaining plumb and straight for all given conditions through the guarantee period. Tree support shall be done as outlined on the following tables.
- B. Staking shall be completed immediately after planting. Plants shall stand plumb after staking.
- C. Stake all trees in accordance with the following table:

<b>Tree</b>	<b>No. of Stakes</b>	<b>Stake Size</b>
30 Gal. and B&B	2	7 ft. T-Post
65 Gal. to 100 Gal.	3	8 ft. T-Post

- D. Machine moved trees do not require staking or guying.
- E. Locate first stake on prevailing windward side of tree and as close to the main trunk as is practical, avoiding root injury. Stakes shall be driven at least 18 inches into firm ground.
- F. Tie tree to stake using approved tree tie. Tie shall be located midway within tree crown or at a location approximately two-thirds (2/3) of the overall height of the tree. Locate tie just above major side branch in order to deter slippage of tie.
- G. Locate second stake opposite first. Secure with one tie opposite upper tie at first stake.
- H. Where used, stakes shall be equally spaced around the tree and placed equal distances from the trunk.
- I. Auxiliary stem stakes shipped with trees shall be removed after shipping.

### 3.8 CLEANING

- A. Clean all areas as required for complete and acceptable inspection.

### 3.9 INSPECTIONS:

- A. Make written request for inspection after planting operations are completed.
- B. Submit requests for inspections to the Owner at least two (2) days prior to anticipated inspection date.

**3.10 PLANT MAINTENANCE**

- A. Tree and Shrub Maintenance: Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.
- B. Ground Cover and Plant Maintenance: Maintain and establish plantings by watering, weeding, fertilizing, mulching, and other operations as required to establish healthy, viable plantings.
- C. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

**END OF SECTION 329313**