

## SECTION 329643

### TREE TRANSPLANTING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes requirements for transplanting trees.

##### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualifications: Statement of qualifications including not less than five years experience in tree transplantation in the State of Texas.
- C. Samples of mineral mulch.
- D. Product certificates.
- E. Planting Schedule: Indicating anticipated planting dates for transplanting trees including:
  - 1. Time of year for transplanting.
  - 2. Transplanting methods.
  - 3. Follow-up care and maintenance.
- F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year.

##### 1.3 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. Pre-installation Conference: Conduct conference at [Project site] <Insert location>.

#### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Do not prune trees 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 in such a manner as to destroy their natural shape. Provide protective covering of trees during delivery. Do not drop during delivery and handling.
- B. Handle planting stock by root ball.
- C. Deliver trees after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior trees in shade, protect from weather and mechanical damage, and keep roots moist.

#### **1.5 SEQUENCING AND SCHEDULING**

- A. Proceed and coordinate work as the site becomes available, consistent with seasonal limitations for transplanting.
- B. Owner's representative will select and tag at the site, those plants to be transplanted to new locations.
- C. Transplant trees during cool weather. Avoid moving plants on very hot, dry, or windy days.

#### **1.6 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 warranty period. Upon Final Acceptance, Owner will assume responsibility of maintenance of the work.

#### **1.7 WARRANTY**

- A. Special Warranty: Installer's standard form in which Installer agrees to repair or replace plantings which 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. Any delay in completion of planting operations which extends planting into more than one planting season shall extend Warranty Period correspondingly.
  - 3. Warranty Periods from Date of Substantial Completion:

- a. Warrant that all trees planted under this Contract will be healthy and in flourishing condition of active growth one year from date of Final Acceptance.
- B. Replace, without cost to Owner, and as soon as weather conditions permit, all dead plants and all plants not in vigorous, thriving condition as determined by Owner during and at the end of Warranty Period. Plants shall be free of dead or dying branches and branch tips, and shall bear foliage of a normal density, size, and color. Replacements shall closely match adjacent specimens of the same species and shall be subject to all specified requirements.

## **1.8 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 planting completion.

## **PART 2 - PRODUCTS**

### **2.1 TREE MATERIAL**

- A. General: Furnish nursery-grown or field collected trees with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- B. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.
- C. Provide balled and burlapped trees.

### **2.2 FERTILIZER**

- A. Tree Planting Fertilizer: Davey Arborgreen Organic Liquid Soil or approved equal injected at 115 psi. Apply at manufacturer's recommended rates.

### **2.3 FERTILIZER INJECTOR**

- A. Power injector capable of delivering 225 to 250 psi at nozzle.
- B. Hydraulic, agitated mixing tank.

- C. Nozzle point with three distribution orifices 120 degrees apart, capable of delivering fluid perpendicular to direction of shaft.
- D. Adjustable or permanent stop plate nozzle shaft to stop shaft at required depth.
- E. Ability to meter amount of material applied per injection.

**2.4 INSECTICIDE**

- A. Ortho "Lindane Borer and Leaf Miner Spray" or approved equal.

**2.5 MULCHES**

- A. Organic Mulch: Shredded hardwood, free of debris, deciduous leaves, and sticks. Bark chips shall not exceed 1-1/2 inch in size.

**2.6 SAND**

- A. The following requirements apply to sand:

**Physical Properties - Grading**

U.S. Sieve	Percent Passing
No. 4	100
No. 10	95-100
No. 18	90-100
No. 35	65-100
No. 140	0-20
No. 270	0-7

**Chemistry**

**Range**

Saturation Extract Conductivity (ECC)	Nil-3.0
Sodium Absorption Ratio (SAR)	Nil-6.0
Boron-ppm in saturation extract solution	Nil-1.0
Reaction (pH)	6.0-7.5
Available calcium-sodium acetate extractable-ppm dry weight	Nil-2000

**2.7 EQUIPMENT**

- A. Pruning Tools: Use only sharp, clean tools, sterilized prior to use.

- B. Transplanting Tools: Size of Vermeer Spade, if used is to be large enough to encompass fibrous feeder roots of each plant, consistent with standard nursery sizes for plant being relocated.
- C. Watering Tubes: Gray, perforated SDR PVC drainage pipe, four inches in diameter.
- D. Vehicles: Do not drive onto or operate a vehicle on jobsite carrying dirt or plant debris from another site. Wash all dirt and mud from tires prior to entering jobsite.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Verify with Owner all plants to be transplanted prior to beginning work.
- B. Stake plant layout for adjustment and approval prior to transplanting.
- C. Transplant all plantings as shown on Drawings. Proceed with transplanting operations based upon Owner accepted schedule and methods.
- D. Rootball Size: Minimum 10-inches in diameter per 1-inch tree caliper.
- E. Crown Pruning: Upon award of contract, prune trees back about 1/4th. Prune side branches only. Do not cut leaders.

**3.2 MECHANICAL TRANSPLANTING OF TREES**

- A. Use machinery in good condition with a minimum tolerance (max 2") between cutting blades. All blades shall be true to their designed shape and free of bends, which could interfere with their operation. Mount tree spade on a suitable stable machine capable of supporting the weight of all removed material and heavy enough to force the blades into the soil.
- B. Machine transplant trees in accordance with the following criteria:

<b>Caliper</b>	<b>Minimum Machine Size</b>	<b>Manufacturer</b>
Under 3"	44"	Vermeer, Davy, or approved equal
3"-5"	60"	Vermeer or approved equal
5"-8"	90"	Big John, Vermeer, or approved equal
8"-16"	12' Box	

- C. Do not excavate tree pits more than 24 hours prior to transplanting.
- D. Cut and remove all vines and underbrush from the trunk and branches of the tree to facilitate access by machine.

- E. Prune and thin the tree by removing interior branches and entangled limbs. Remove not less than 10 percent of all branching before digging but not more than 20 percent. Do not indiscriminately cut branch tips to achieve the above percentages.
- F. Use the same machine to dig receiving hole and to dig tree for transplanting.
- G. Reroute irrigation lines transplanting operation to maintain integrity of receiving hole.
- H. After tree is placed in hole, immediately fill all crevices with sand and water to fill all voids. Apply 4-inches of mulch.
- I. Provide periodic watering and misting of main foliage.
- J. Spray trunks with Lindane or Dursban for control of borers and wrap hardwoods to first branch.

**3.3 DIGGING FOR BOX TRANSPLANTATION**

- A. Trenching: Dig trench outside trench previously dug for root pruning.
- B. Do not damage new roots. Do not permit cracking of rootball or loss of soil.
  - 1. Protect rootball by completely wrapping with burlap per standard nursery practice.

**3.4 POST PLANTING FERTILIZATION**

- A. Apply fertilization 30-45 days after installation.
- B. Inject specified material with high pressure injector into soil at depth and diameter shown below:

<b>Tree Caliper</b>	<b>Application Point</b>	<b>Depth</b>	<b>Radius</b>	<b>App. Rates per tree</b>
Under 2"	3	4"-6"	16"-18"	1-1/2 Gal
2"-4"	3	4"-6"	18"-24"	2 Gal
4"-5"	4	4"-6"	2'-3'	2-1/2 Gal
5"-6"	5	4"-6"	3'-4'	3 Gal
Above 6"	3' o.c.	4"-6"	Dripline	5 Gal/100 sf of root area

**3.5 TREE PRUNING**

- A. Remove only dead, dying, or broken branches. Do not prune for shape.

- B. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character.
- C. Paint cuts over 3/4-inches in diameter with tree paint, covering all exposed, living tissue.

### **3.6 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. 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.

### **3.7 FIELD QUALITY CONTROL**

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

### **3.8 CLEANING**

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

**END OF SECTION 329643**