

## SECTION 02900

### LANDSCAPE

#### PART 1 GENERAL

##### 1.1 Summary

- A. This section contains requirements relating to lawns, trees, shrubs, flowering plants and ground covers including site preparation, material installation and removal policies.
- B. Contractor to establish boundaries for the site as determined and reviewed with University Project Manager in order to ensure seamless transitions between adjacent sites, coordinate project overlaps and to maximize the potential of open space.

##### 1.2 Work Included in This Section

- A. The Contractor shall furnish all labor, tools, equipment, products, materials and transportation. The work shall include, but is not necessarily limited to, the following:
  - 1. Backfill Soil Mixture
  - 2. Selection and Transporting Plant Material
  - 3. Planting Operations
  - 4. Maintenance and Guarantee of Plantings and Landscape Areas
  - 5. Weed Control
  - 6. Warranty
  - 7. Topsoil

##### 1.3 Related Work Included Elsewhere – Automatic Irrigation, Salvage, Tree and Plant Protection, Inert Groundcovers.

##### 1.4 Quality Assurance

- A. Prior to Design Development, the Landscape Architect of Record, if applicable, shall coordinate through the FSU Project Manager, and in conjunction with the Grounds Department develop an acceptable level of quality for each project. This shall be a written plan to include:
  - 1. Development of a landscape design.
  - 2. Determination of submittal and sample requirements for the specific project.
  - 3. Determination of specific/unusual installation criteria.
  - 4. Criteria for material acceptance.
  - 5. Terms of replacement under warranty.
  - 6. Other terms as deemed necessary by FSU Grounds specific to the project.
- B. Prior to beginning installation, the Contractor shall request a pre-construction meeting with the FSU Project Manager, Grounds Department, and Landscape Architect of Record.
- C. All planting work shall be done in strict accordance with sound nursery practice and shall include maintenance and watering of all plant materials installed until Substantial Completion acceptance by the University.
- D. **Sidewalks** adjacent to work areas shall be kept broom clean daily during planting operation. Plant containers, empty fertilizer bags and containers are to be picked up and disposed of daily. Contractors trash shall be removed from the site at the completion of work each day. Any damage to the sidewalk shall be repaired or if necessary replaced.
- E. **Plant Materials:**
  - 1. **Trees, Shrubs**

- a. Plant materials shall have been grown in nurseries which have been approved by State of Florida Department of Agriculture and shall be tagged with correct names. All plant materials shall be inspected by the FSU Grounds Department Representative and/or the Landscape Architect of Record post or prior to delivery, and all plant material not meeting Specification requirements shall be rejected. Contractor shall, at his own expense, replace rejected plant material with material of species and variety that meet Specification requirements.
- b. Plants shall be quality material having the habit and growth which is normal for the species; sound, vigorous, healthy, free from insects, plant diseases and injury.
- c. Container stock should not show evidence of being root bound.
- d. All Plants shall be in accordance with Florida #1Grade as specified in "Grades and Standards for Nursery Plants", Second Edition; published by Florida Department of Agricultural & Consumer Services.  
Refer: [http://www.doacs.state.fl.us/pi/plantinsp/publications/g&s\\_updates.pdf](http://www.doacs.state.fl.us/pi/plantinsp/publications/g&s_updates.pdf)

### 1.5 **Submittals - Samples**

- A. **Submit** duplicate samples and manufacturer's guaranteed analysis of the following items and such other materials as may be required by the Landscape Architect and/or FSU Grounds Department Representative per above Quality Assurance requirements. All materials requiring approval prior to delivery must obtain written approval before beginning fabrication or delivery of material to the project site. Finished work shall match approved samples. Submittals will typically consist of the following, but may required for other items at the discretion of the Landscape Architect or FSU:
  1. Tree ties and stakes
  2. Fertilizers: 1/2 pound of each fertilizer with noted analysis
  3. Topsoil
  4. Seed Mix
  5. Plant Material
  6. Site Soil Analysis
- B. **Plant Guarantee and Replacement:**
  1. As a requirement of Substantial Completion, the Contractor shall submit to the Landscape Architect of Record or FSU Project Manager (2) copies of a written guarantee for all plant material for a period of one year post Substantial. The guarantee shall stipulate the following:
    - a. All trees, shrubs, ground cover, and grass lawns shall be guaranteed to take root, grow, and thrive through the one year guarantee period. **Exception: The guarantee period for deciduous trees and grass lawns shall be in effect for a period of one year OR until all are showing new growth, the spring following the end of the warranty period.**
    - b. Any plant materials that die back and lose the form and size originally specified shall be considered unacceptable and shall be replaced, even though they have taken root and are growing after the die-back.
    - c. Any plant required under this specification which is dead or otherwise not acceptable and not in a satisfactory growing condition in the opinion of the FSU Grounds Department Representative, shall be removed from the site and replaced with a suitable plant as specified within fifteen (15) days. Refer to Quality Assurance above.
    - d. Replacements shall be made to the same specifications required for original materials and shall carry the same guarantee from the time they are replaced.
- C. **Inspection and Analysis Certificates:**
  1. Submit the following to the FSU Project Manager for review by FSU Grounds Department, prior to or upon delivery, of the materials to the site:

- a. **Plant material inspection certificates** required by State and Federal laws with respect to inspection for plant disease and insect infestation shall accompany each shipment of plant materials.
- b. **Other analysis certificates** as required by the construction documents.

#### 1.6 **Product Deliver, Storage, and Handling**

- A. Manufactured materials shall be delivered in original containers with brand and manufacturer's name marked there on. Materials in broken containers or showing evidence of damage will be rejected and must immediately be removed from the site. Odorous materials shall not be brought to the site until they are to be used.
- B. Store fertilizers and all other moisture sensitive materials in a dry place and protect from intrusion of moisture.
- C. **Plant material:**
  - 1. **Protect** plant material at all times during handling, shipping, storage and planting from extreme weather conditions, wind, drying roots and root balls and injury.
  - 2. **Support root systems** of container plant material when lifting and moving to minimize injury to root ball.
  - 3. Plant material showing damage from shipping, while in storage or during planting may be rejected by the FSU Grounds Department Representative. Rejected plant material shall be removed and replaced by the Contractor at his own expense.

#### 1.7 **Site Conditions**

- A. No planting procedures or other site work shall be performed during wet or muddy conditions.
- B. All existing plant material not indicated for removal shall be protected as necessary to ensure survival. In support of University's sustainability initiatives, all trees and landscape materials designated for removal shall be delivered to the FSU Nursery for mulching and later use in University landscape beds.

#### 1.8 **Inspections**

- A. A written notice or phone call requesting an inspection shall be given to the FSU Project Manager who will coordinate with the Grounds Department Representative **a minimum of 48 hours** prior to each anticipated inspection date.
- B. **Progress Inspections:** The following inspections will be required.
  - 1. Tillage and soil preparation of all planting areas.
  - 2. Finish grading.
  - 3. Inspection and approval of all plant materials upon delivery to the site. The plant material shall be assembled for this inspection.
  - 4. Inspection and approval of trees and shrubs at site after being spotted by Contractor.
  - 5. Inspection of irrigation system before backfilling trenches.
  - 6. Inspection for both applications of pre-emergent herbicide before and after placement of inert ground cover.
- C. **Final Planting Inspection for Acceptance:**
  - 1. Final inspection of trees and shrubs shall be made at the conclusion of the project, provided that on such date all other project improvements and corrective work has been completed.
  - 2. Prior to the time of final inspection, the following work shall have been completed:
    - a. All weeds shall be sprayed with systemic herbicide and removed from all planted areas.
    - b. All errant trash and debris shall be removed from all planted areas.

- c. All components of irrigation system shall be operable and in proper working order.
- d. All work put in a neat, orderly condition.

## **PART 2 PRODUCTS**

### **2.1 General - Quality**

- A. These Specifications define minimum acceptable quality. Materials installed shall be as listed in this section on the drawings by manufacturer's name and model number or by description of attributes, performance of other standards.
- B. Substitutions:**
  - 1. No material substitutions will be accepted unless request is submitted in writing to the FSU Grounds Department Representative for approval prior to commencing work on this Section. Any substitute material installed without prior approval may be rejected by the FSU Grounds Department Representative, and if rejected shall be removed and replaced to the satisfaction of the FSU Grounds Department Representative at no additional cost.
  - 2. The Contractor shall submit to the FSU Grounds Department Representative proof that a specified plant is not reasonably available in the local region before a request for plant substitution will be considered.

### **2.2 Materials – Plant Material**

- A. The Contractor shall furnish and plant all plants shown on the drawing and as specified.
- B. All plants shall be healthy, shapely, and well-rooted.
- C. Genus, species, and variety; quantity, size and condition as indicated on the drawings and plant material listing. No substitutions without prior written approval of FSU Grounds Department Representative.
- D. Plant material shall be healthy nursery stock, full foliage when in leaf; free from disease, injury, insects, all weeds, and weed roots.
- E. Plants shall be in accordance with the Grades and Standards for Nursery Plants by Florida Department of Agriculture, current edition.
- F. Cold storage plants are not acceptable.
- G. Potted and container stock well rooted, vigorous enough to ensure survival and healthy growth.
- H. Container plants, one gallon size and larger shall have grown therein a minimum of six months and a maximum of two years, with roots filling the container but not showing evidence of being or having been restricted, deformed or root bound.
- I. Trees: Untapped, straight, single leader trees except for multiple stem (clump) trees. Deciduous trees with heavier than normal top and balanced branching.
- J. Plant material shall be free from disfiguring knots, sunscald injuries, bark abrasion, evidence of improper pruning, and other objectionable disfigurements.
- K. Trees shall have well-developed branch systems.
- L. Thin, weak and leggy plants will be rejected by the FSU Grounds Department Representative.

- M. All plant material shall be legibly tagged by species and variety with minimum of one tag per 10 trees.
- N. Plant material not meeting these requirements shall be removed from the site and replaced to the satisfaction of the FSU Grounds Department Representative.
- O. All plants shall conform to the measurements specified in the plant list. Exceptions are as follows: Plants larger than specified in the plant list may be used if approved by the FSU Grounds Department Representative, but use of such plants shall not increase the contract price. If the use of the larger plants is approved, the spread of root or ball of earth shall be increased in proportion to the size of the plant.
- P. **Weed Fabric:** Do not use weed fabric in landscape beds without the approval of the FSU Grounds Department Representative.
- Q. **Lawns and Grasses:** Unless specifically approved otherwise, newly grassed areas will be constructed using sod of a species appropriate to the site location. Seeding will be allowed in large areas with low public visibility only if approved in advance by FSU Grounds Department Representative.
1. Grass type shall be approved by FSU Grounds Department.
  2. Any area of vegetation damaged during construction shall be restored to its original state within 96 hours of the completion of the associated construction work. Grassed areas will be re-sodded. Under no circumstances is sod to be placed against tree trunks. Special care will be taken before and after the restoration to ensure the area is not subject to erosion. Contractor shall be responsible for watering all replacement vegetation until project area is turned over to FSU Grounds.
- R. **Fertilizers:** in conformance with the State Agricultural Code.
1. Dry chemical fertilizer: 16-20-0 (N-P-K).
  2. Controlled slow release: Osmocote with 18-6-12 analysis (N-P-K), surface application.
- S. **Pre-Emergence Control Herbicide:**
1. Surflan
  2. Dacthal - DCPA W-75
- T. **Topsoil:**
1. Topsoil shall be a fertile, friable soil, obtained from well-drained arable land, and shall be free from nut grass, refuse, roots, heavy clay, clods, noxious weeds or any other material toxic to plant growth. At least 10 days prior to delivery of topsoil to the site, the Contractor shall furnish the FSU Grounds Department Representative at no additional cost, with a soil sample from each source along with the analysis and test report for each sample. Written acceptance/rejection of the soil for incorporation into the project will be provided by the University within 7 working days.
  2. To be acceptable the pH factor shall not exceed 7.0 or be lower than 5.5, soluble salts shall not exceed 1500 PPM, the plasticity index shall be in the range of 3 and 15 inclusive, and it shall contain approximately 1 1/2%, by dry weight, of organic matter either natural or added. Gradation shall be in accordance with the table shown below:

Seive Size	Percent Passing
1"	100
1/2"	95-100
#4	90-100
#10	70-100
#200	15-70

## PART 3 - EXECUTION

### 3.1 Inspection of Site Conditions

- A. Examine site for conditions that will adversely effect execution, permanence, quality of work and survival of plant material. Advise FSU Project Manager and Grounds Department Representative of any concerns.
- B. Work contained in this section shall not begin until after a **pre-construction** meeting and the site preparation is found to be satisfactory.
  - 1. Attendees shall include: Construction Manager, Landscape Subcontractor, Landscape Architect, FSU Project Manager, and FSU Grounds Representative.
  - 2. Required inspections/approvals will be determined in the pre-construction meeting.
  - 3. Acceptable conditions for planting activities will be defined specific to project conditions. This shall include clarification of acceptable grades, soils, and weather conditions.
  - 4. Length of plant establishment period shall be reviewed prior to start of construction and documented if determined to exceed 1 year past Substantial Completion.
- C. All existing plant material to remain shall be identified protected and watered manually as necessary to ensure survival until such a time that automatic irrigation can be restored or installed.

### 3.2 Site Preparation – Cleaning, Grubbing, and Soil Loosening

- A. All planting areas shall be cleared of all existing plant material, brush, weeds, debris and rocks over 1 inch in size prior to any soil preparation. Noxious brush weeds and grasses shall be removed by the roots wherever they are found at any stage of the work.

### 3.3 Planting Operations – Backfill Mixture

- A. **Ingredients by soil type:**
  - 1. Clay Loam:
    - a. 1/3 max. organic matter from “Canadian Sphagnum Moss”, “Florida Peat”, “Mushroom Compost” or “Nitrolized Mulch”.
    - b. 2/3 Native soil.
  - 2. Sandy Loam:
    - a. 1/3 max. organic matter from “Canadian Sphagnum Moss”, “Florida Peat” or “Mushroom Compost”.
    - b. 2/3 Native soil.
- B. Mixed thoroughly, leaving no layers of soil amendments or clods of soil. For mass planting, till entire bed with amendment 8”-12” deep.
- C. FSU Grounds Department Representative’s approval shall be required prior to backfilling.
- D. **Finish Grading:**
  - 1. Grades not otherwise indicated shall be uniform levels or slopes between points where elevations are given, or between points established by walks, paving, curbs or catch basins. Finish grades shall be smooth, even and on a uniform plane with no abrupt changes of surface.
  - 2. All grades shall provide for natural runoff of water without low spots or pockets. Flow line grades shall be accurately set and shall not be less than 2 percent gradient where possible.

3. Tops and toes of all slopes shall be rounded to produce a gradual and natural appearing transition between relatively level areas and slopes.
4. Top 6 inches shall be free of rocks or other inert materials over 1/2 inch at greatest dimension.
5. All planting areas shall be free of road base, road materials and gravel. All road materials and gravel shall be removed and replaced with approved topsoil.

**E. Planting Holes:**

1. Locate planting holes per planting plans bringing any conflict with underground utility to the attention of the FSU Project Manager. All plants are to be spotted on the site and locations approved by the FSU Grounds Department Representative before planting.
2. Planting holes shall be excavated with vertical sides and flat bottoms to the size of twice the size of the root ball.

**F. Planting:**

1. Do not install plant material until all construction work that can interfere with planting operations has been completed and irrigation system has been installed and tested. Planting areas shall have been graded and prepared as specified and shall have been approved by the FSU Grounds Department Representative.
2. Do not plant during unfavorable weather. Soil shall be at optimum moisture content for planting. Do not plant in dry soil or muddy soil.
3. **Weed control:** Licensed pest control operator shall apply pre-emergent herbicide to all planting areas except for the native grass seeding areas before and after placement of inert ground cover, in accordance with the manufacturer's recommended rates. Any plant materials showing loss of vigor or health due to improper application of herbicide shall be replaced by the Contractor. **The FSU Grounds Department Representative shall witness both applications of pre-emergent herbicide.**

**G. Container Plant:**

1. Do not lift or handle container plants by tops, stems or trunks at any time.
2. Fill bottom of planting hole with backfill mix and compact.
3. Plants shall be set in center of hole plumb and straight and at such an elevation that after settlement the root crown of the plant will be 1-1/2 inch higher than surrounding finish grade.

**H. Backfilling:**

1. Backfill the planting hole with the backfill mix herein specified.
2. Water settle backfill thoroughly, or compact by other method approved prior to planting, so plants do not settle.

**I. Fertilizing Tablets:** Osmocote slow release

1. Surface application prior to watering in. Apply at recommended rates.

J. Immediately after planting hole is backfilled, a shallow reservoir slightly larger than the planting hole and 4 inches deep shall be formed.

K. **Watering:** Immediately after planting water each tree and shrub by filling reservoir twice.

L. **Planting Areas:** At project acceptance, planting areas shall be free of gravel or road material. All material found shall be removed by contractor and replaced with approved topsoil as incidental to the cost of plant material installation.

**M. Ground Cover:**

1. All ground cover areas shall be treated with a pre-emergent herbicide.
2. All ground cover planting shall be immediately watered to avoid drying out until the entire planted area is completed.

3. All ground cover areas which includes one gallon ground cover areas shall receive the Soil Rototilling and soil backfill mixture.

**N. Inert Ground Cover/Weed Control:** See also Section 329220.

1. Prior to placing Inert Ground Cover, the area shall be totally free of weeds, using chemical control as necessary. Apply a pre-emergent herbicide according to manufacturer's recommendations. The Inert Ground Cover shall be evenly distributed in the designated areas. A second application of pre-emergent herbicide shall be applied at this time.
2. Areas of existing inert ground cover disturbed by new construction are to be replenished with matching color and size, evenly distributed and sprayed with an application of pre-emergent herbicide. Color and size to be approved by FSU Grounds Department Representative.

**3.4 Clean-up**

- A. Keep project site free from accumulation of debris resulting from work specified herein. Broom clean pavement daily. Remove weed fiber, fertilizers, etc., from walls, pavement and curbs. Project site shall be kept neat at all times.
- B. Upon completion of planting operation, all remaining soil, stones and other debris shall be removed from site and disposed of in a manner satisfactory to the FSU Grounds Department Representative.
- C. Upon completion of work, all trees and shrubs shall have been pruned and injuries repaired. Limit amount of pruning to the minimum necessary to remove dead or injured twigs of branches and to compensate for loss of roots as a result of planting and construction operations.

**PART 4 – PROJECT ACCEPTANCE**

- 4.1 Contractor shall maintain all landscaped areas on a continuous basis as they are completed during the course of work until accepted as Substantially Complete.
- 4.2 Maintenance during construction shall include, but is not limited to, the following:
  1. All watering, fertilizing, cultivation and spraying necessary to keep the plant material in a healthy growing condition and to keep the landscaped area weed free.
  2. All errant trash and debris shall be removed from the site on a continuous basis or as necessary.
  3. Mowing of turf shall be done on a schedule as per industry standards based on the time of year and state of turf.
- 4.3 **Plant Establishment and Warranty Period:** Contractor shall provide full warranty for all plant material for a period of one year from the time of Substantial Completion; **OR**, if the plant material can not be expected to demonstrate establishment within that time period, the replacement warranty shall extend until a reasonable time shall have passed to ensure that the material is viable. The establishment period shall be determined at the time of the pre-construction meeting.
- 4.4 **Warranty Inspection:** The FSU Project Manager and the Grounds Representative, in conjunction with the Landscape Architect, shall perform an end of warranty inspection approximately 30 days prior to the end of the warranty period. At that time, all material found to be non-thriving or dead shall be replaced with specification compliant materials at no additional cost. Replacement material shall be installed within 30 calendar days.

**END OF SECTION**