

SECTION 02900 - LANDSCAPING

PART 1 - GENERAL

1.1 SCOPE OF SECTION:

This section contains the requirements relating to lawns, trees, shrubs, and ground covers including protection of landscaping during construction, design and establishment of new landscaping and tree removal policies.

1.2 GENERAL:

Any construction project, which disturbs existing landscaping, or exterior hardscape (sidewalks, benches, fountains, retaining walls, streetlights, accent lighting, trees, shrubs, ground covers, grass, flowers, etc.) shall include appropriate new landscaping. In addition, projects that significantly alter the building exterior shall include a budget for landscape improvements to the areas immediately adjacent to the building. This landscaping effort shall include an analysis of the impacts the proposed development will have upon adjacent land uses and provide any required buffering. Buffering will be required whenever there is a potential incompatibility between adjacent land uses due to noise, incompatible visual elements such as loading docks, solid waste storage, utilities, or conflicts in circulation. Under these conditions, landscaping strategies may include the use of dense plant material, walls, berms or other improvements designed to provide a physical separation. **Please refer to the General Design Guidelines, Utility Design, for requirements on incorporating Low Impact Development (LID) into landscape design.**

1.3 PROTECTION OF LANDSCAPING DURING CONSTRUCTION:

A. DESIGN REQUIREMENTS:

- 1. Consultation with the PPD Urban Forester or Landscape Architect:** During the design process, the Architect/Engineer shall consult with the Physical Plant Division (PPD) to identify trees and other vegetation within the general construction area (including construction-parking areas) that will require protection during construction. This consultation shall also seek to identify any listed endangered or threatened flora/fauna on the site. When encountering any listed species follow procedures and seek consultation with the appropriate agencies as identified in the Florida Game and Fresh Water Fish Commission's Wildlife Methodology Guidelines. Contact PPD at: (352) 392-5050.
- 2. Tree and Vegetation Protection Plan:** After consulting with the PPD Urban Forester to identify the trees and vegetation to be protected within the general construction area, the Architect/Engineer shall develop a comprehensive "Tree and Vegetation Protection Plan" for inclusion in the project documents. This plan shall have detailed drawings of each tree barricade and shall be included in the 50%, 100%, and Bid set editions of the project documents. This plan shall be in accordance with the latest edition of the pamphlet titled "Tree Protection During Construction" by Duane Durgee and published by the Florida Department of Agriculture and Consumer Services. (This pamphlet recognizes the damage that can occur to trees through soil compaction and mechanical injury and prescribes measures that can be taken to ensure protection.) A reprint of this pamphlet is included in these Standards as Appendix G. An additional reference is the latest edition of "Trees and Development, A Technical Guide to Preservation of Trees During Land Development" by Nelda Matheny and James R. Clark, published by the International Society of Arboriculture.

3. Trenching and Tunneling: Tunneling is encouraged if path is unavoidably near large trees. All new underground utility lines including irrigation must be clearly shown with existing tree canopies in the 50%, 100%, and Bid-set documents.
4. Inclusion of Constructor Requirements in Project Documents: The Architect/Engineer shall include the below-listed "Constructor Requirements" (Items B.1, B.2, B.3, B.4, B.5, and B.6) as standard verbiage in all University of Florida construction contracts.

B. CONSTRUCTOR REQUIREMENTS:

1. Tree and Vegetation Protection Plan: Trees and other vegetation within the general construction area (including construction parking areas) shall be protected using a University/PPD approved plan. If the Architect/Engineer has not designed a tree protection plan, then the Contractor shall develop and implement a plan to protect the trees and vegetation in accordance with the latest edition of the pamphlet titled "Tree Protection During Construction" by Duane Durgee and published by the Florida Department of Agriculture & Consumer Services (A reprint of this pamphlet is included in these Standards as Appendix G) and using as a reference, the latest edition of "Trees and Development, A Technical Guide to Preservation of Trees During Land Development" by Nelda Matheny and James R. Clark, published by the International Society of Arboriculture. Prior to commencing construction, the University's Project Manager, in consultation with the Architect/Engineer and the PPD Urban Forester or Landscape Architect, shall review and approve the Contractor-developed plan.
2. Tree barricade construction shall be completed before any other site preparation or vehicle entry, other than perimeter fence construction. After completion of tree barricade construction and prior to any additional site preparation the PPD Urban Forester or Landscape Architect shall inspect the tree barricades for compliance with the approved plan.
3. Areas within tree barricades are to be mulched with four inches of hardwood tree chips after barricade construction and kept free of any foreign material including trash, construction debris, building materials or vehicles. Any normal maintenance of shrubs, or groundcovers within the construction area is the responsibility of the contractor. Any tree care work within the construction area is the responsibility of the contractor and shall be performed by an ISA Certified Arborist with prior consultation with the UF Urban Forester. Under no circumstances shall any wires or ropes be attached to trees for electrical service or any other reason.
4. Replacement of Trees and Vegetation: Any vegetation, including trees and shrubs, damaged or destroyed shall be replaced or mitigated by the Constructor with like species or another species approved by the Physical Plant Division. In the case of trees, mitigation shall occur on site whenever possible, elsewhere on campus if necessary due to space considerations. Mitigation trees shall be Florida Nursery Grade Number One or better and shall be a minimum of eight feet in height. The Contractor shall be held liable for the difference in value between the replacement tree and the original tree (value set in accordance with the International Society of Arboriculture's latest edition of "Guide for Plant Appraisal", "Replacement Cost Method," edited by the Council of Tree and Landscape Appraisers, published by the International Society of Arboriculture). That difference shall be subtracted from the contract amount to be paid the Contractor.
5. Warranty Policy: All protected/existing landscaping within the work area and any new landscaping shall be warranted to be alive and in healthy condition one (1) year from

date of substantial completion. If any landscaping material is replaced within the warranty period then the replacement material shall also be warranted one (1) year from date of replacement ad infinitum. The constructor shall be responsible for notification, in writing, of the owner 30 days prior to the end of the warranty period. The owner has the option to do an end of warranty inspection at that time. Failure of the contractor to notify owner of end of warranty shall cause the warranty period to extend, until such time as the contractor gives the owner 30 days end of warranty notice.

6. PROHIBITED PLACEMENT OF SURVEY MARKERS: The use of or placement of survey marker spikes on University trees is prohibited.
7. Surveying: Surveying activities shall avoid removal of landscaping, trees and other vegetative growth in order to establish site lines. When necessary, any such vegetative removal shall be coordinated with the PPD Urban Forester.
8. Maintenance: Either PPD or the contractor shall fully maintain all landscaping until the substantial completion punchlist is completed and a final completion inspection is performed with no unfinished items.
9. Specimen Plants: There are trees and shrubs on the University of Florida campus which have been designated as having particular significance. These plants are National/State Champion or Heritage Specimen trees, trees that are numbered and tagged as part of the University's "Tree Walk," and rare or unique plants used for teaching purposes. These plants are very difficult to replace and must be given special protection during any construction activity. Since not all of these trees, shrubs, or plants have unique indicators, contractors must coordinate with the University's Urban Forester before any trees, plants, or shrubs are disturbed.

1.4 LAWNS AND GRASSES:

- A. ESTABLISHING NEW GRASSED AREAS: Normal procedure shall be to use sodding for new-grassed areas. Seeding should only be considered in large areas with low public visibility, and shall have approval from PPD Grounds Department. Make special provision for control of soil erosion. Sod shall be sand grown; mud-grown sod is not acceptable.
- B. GRASS TYPES: In irrigated areas use Floratam or St. Augustine Bitter Blue, in un-irrigated areas Argentine Bahia shall be used. Whenever Floratam is used and due to the difficulty of visually identifying Floratam, the Contractor shall provide a certificate from the grower verifying the authenticity of the grass as Floratam.
- C. RESODDING/RESEEDING: Any area of vegetation that is damaged during construction will be restored to its original state **within 72 hours of the completion of the associated construction work**. Grassed areas will be resodded. Under no circumstances is sod to be placed against tree trunks. Mulch rings or beds are to be maintained or built if necessary around trees. Special care will be taken before and after the restoration to ensure the area is not subject to erosion. Reseeding will only be allowed in special cases with each individual case approved by the Owner, in consultation with the PPD Grounds Department. Contractor shall be responsible for watering all replacement vegetation until project area is turned over to PPD Grounds.
- D. TOPSOIL AND GRADING: Topsoil shall be suitable for ornamental plant growth and free from hard clods, stiff clay, hardpan, gravel, subsoil, brush, large roots, refuse or other deleterious material and of reasonably uniform quality.

Finish Grading of all lawn and planting area shall be to a smooth, even, and uniform plane with no abrupt change of surface. The soil surface for resodding shall be loosened to a minimum depth of two inches except near trees where roots are at the surface.

1.5 **TREES, SHRUBS AND GROUND COVERS:**

A. LANDSCAPE DESIGN:

1. Plant Selection: Selection of plant materials shall be subject to the approval of the University's Lakes, Vegetation, and Landscape Committee and take into consideration the following criteria:
 - a. Soil type – sandy, loamy, heavy clay, etc...
 - b. Hydrology – high and dry, wet retention ponds, available irrigation, etc...
 - c. Climate range – local natives are well adapted to our weather but protected courtyards provide an opportunity to plant more tropical species.
 - d. Mature height and width of trees and shrubs
 - e. Size of rooting zone
 - f. Disease resistance
2. Prohibited Plants: Any non-native invasive plants that is identified on any of the following lists shall not be planted: The IFAS *Assessment of Non-Native Plants in Florida's Natural Areas*, the Department of Agriculture's Noxious Weed List (<http://doavs.state.fl.us/~pi/5b-57.htm>), the Department of Environmental Protection's *Prohibited Plant List* (<http://www.dep.state.fl.us/stland/bapm/perrules.htm#62C-5>) and the Exotic Pest Plants Council's *Invasive Species List Category 1 and 11* (<http://www.fleppc.org/>).
3. Tree Size on Drawings: Design drawings for landscaping shall show actual size of existing tree canopies in relation to hardscape features such as buildings, parking areas, and pedestrian areas and shall indicate in-situ mature growth canopy for all specimen trees.
4. Minimum Size Requirements for Planter Boxes or Tree Islands: Any landscaped area containing a tree shall have a minimum area of one hundred forty (140) square feet for large trees and ninety (90) square feet for medium size trees. The length of any side shall be at least nine (9) feet for a large tree and six (6) feet for a medium tree.
5. General Landscape Design: A diversity of plant species should be incorporated using native trees, shrubs, and groundcovers whenever possible. An appropriate mix of native and non-invasive non-native species may be included, particularly when unique plants may be used as instructional specimens. However, only native species shall be planted in or near campus conservation areas or undeveloped sites. Plantings should be designed with similar watering needs grouped together, and drought-resistant, low-maintenance plants are strongly encouraged. Subject to security considerations, a practice of replacing and adding trees and other foliage to the campus whenever economically feasible and humanly possible to the extent that the campus will be "well treed" is encouraged. The addition of shade trees to parking areas, both existing and new, is particularly encouraged. The IFAS circular 858 *Selecting and Planting Trees and Shrubs* on EDIS at <http://edis.ifas.ufl.edu/MG077> should be used as preliminary guide in selecting plant materials.
6. Review and Approval: On major construction projects, which require site approval by the University Land Use and Facilities Planning Committee (ULUFPC), the

organization responsible for submitting the site request shall include a survey and analysis of the impact on trees and other vegetation by the project and recommend mitigating procedures. The Lakes, Vegetation and Landscaping Committee (LVLC) shall review this request prior to site approval and make recommendations to the VP Finance and Administration.

7. Ensure safe working conditions during planting: A Dig Permit and line location ticket shall be required for all tree planting. Dig Permit procedures are listed on the Physical Plant Division (PPD) Operations Engineering Department website (<http://www.ppd.ufl.edu/operations.html>).
8. Maintain ability to operate and service all physical infrastructure systems: PPD maintenance operations are critical to the functioning of the University. Utility infrastructure and buildings are susceptible to damage from trees that are planted inappropriately or sprout on their own in the wrong place. Using the guidance listed in Table 1. should ensure that trees, buildings and utilities will coexist peacefully.

Table 1. Utility Clearance Distances (in feet) between Utilities and Vegetation. Distances are measured from the overhead line, from the outside edge of the underground lines, from the edge of the structure, from the panel door etc.

Clearance required (in feet)	Trees	Shrubs
Overhead Power lines	15	5
Underground Power lines	10	0
Manholes/Underground Vaults	10	5
Transformer/Switch door side	10	10
Transformer/Switch other sides	5	5
Meters, Panels, Controllers	5	5
Chilled Water/Condensate, Steam, Gas, Sewer, Storm, Domestic Water, and Reclaimed (>3") Underground lines	10	0
Street Lights	10	0

Additional notes:

Substations - Plant trees and shrubs so that during their lifetime, limb breakage will not damage anything inside the fence or wall of a sub-station.

Buildings and Roofs – Large canopy trees shall be planted a minimum of 20' (twenty feet) horizontal separation from a building or roof. Small understory trees shall be planted a minimum of 10' (ten feet) horizontal separation from a building or roof. Shrubs shall be planted so that there is a minimum of 3' (three feet) horizontal separation from vegetation, to the building or roof.

Please contact the UF Urban Forester at (352) 392-5050 for guidance.

B. REMOVAL OF TREES:

1. No living tree on University of Florida property may be removed or relocated without the approval of the University's Lakes, Vegetation, and Landscape Committee (LVLC).
2. PPD is responsible for planting, maintenance, and removal of trees throughout campus. The Institute of Food and Agricultural Sciences (IFAS) assumes this responsibility in agricultural and range areas within the area of their academic responsibility.

3. PPD, Housing, UAA, or IFAS with the consultation and approval of the University's Urban Forester, may remove trees in their areas of responsibility without obtaining LVLC approval under the following circumstances:
 - a) The tree is dead.
 - b) The tree is an immediate safety hazard to people, domestic animals, buildings or other structures, or motor, bicycle, or pedestrian traffic, and no responsible correction is available other than removal of the tree.
 - c) The tree is infested with harmful insects or fungi, which cannot be controlled, are not normally present on trees of the species, and may reasonably be expected to spread to other trees not so infested.
 - d) The tree or trees were planted specifically for purposes of research, and were intended to be removed upon completion of such research.
 - e) A record of such removals is kept and forwarded monthly to the LVLC.
 - f) Trees of less than three inches in diameter (nine inches in circumference) may be removed when deemed necessary for maintenance or operations.
 - g) PPD, Housing, UAA or IFAS needs to make emergency repairs to utilities or structures.

C. REPLACEMENT OF TREES:

1. Trees greater than three (3) inch DBH that are removed as a result of construction activities must be relocated or replaced. Relocated trees must be planted in accordance with the latest edition of the "Principles and Practice of Planting Trees and Shrubs" by Gary W. Watson and E.B Himelick, published by the International Society of Arboriculture. The Physical Plant Division Urban Forester must approve new locations.
2. Replacement trees are generally required on a two for one basis (Two new trees for each tree removed). Each replacement tree must Florida Nursery Grade Number one or better and be a minimum of eight feet in height. Replacement trees must be selected with the advice and concurrence of the Physical Plant Division Urban Forester.

1.6 PARKING AREA LANDSCAPE REQUIREMENTS:

- A. Parking areas shall be landscaped to most effectively relieve the monotony of large expanses of paving and contribute to orderly circulation of vehicular and pedestrian traffic. In vehicular use areas within the interior of the parking lot, 500 square feet of planting area shall be required for every 5,000 square feet of vehicular use area. This shall be achieved in one of the following ways:
- 1) With landscape islands with canopy trees at an average of every nine spaces not to exceed a maximum of twelve spaces without a treed island. Landscaped islands shall measure not less than eight feet in width exclusive of curbing and 20 feet in length.
 - 2) With linear medians at least 50 feet long and six feet in width exclusive of curbing and having canopy trees spaced no greater than 30 feet on center.

Included within the ten percent planting requirements, there shall be:

- Landscape terminals islands of not less than ten feet in width exclusive of curbing

and 18 feet in length provided at each end of a parking row.

In addition the following shall be provided:

- Canopy trees shall be spaced a maximum of 45 feet on center along the outer perimeter of the parking area. A continuous shrub hedge or combination shrub hedge and earth berm shall be required to obtain three feet in height to visually screen seventy-five percent of parking area as viewed from the right-of-way. Wall elements or fence integral with the architectural character of the building may be used in combination with the landscape screening.

The University' Lakes, Vegetation and Landscaping Committee at the time of final site plan approval, may reduce the frequency or number of planter islands and may eliminate the requirement for a linear treed island between head-to-head parking rows for the purpose of preservation of existing tree canopy and tree clusters.

1.7 **REFERENCE MATERIALS:**

A. **PUBLICATIONS:** Publications listed in this section are as follows:

1. "Tree Protection During Construction" by Duane Durgee and published by the Florida Department of Agriculture and Consumer Services. (Appendix J.)
2. "Trees and Development, A Technical Guide to Preservation of Trees During Land Development" by Nelda Matheny and James R. Clark, published by the International Society of Arboriculture.
3. "Guide for Plant Appraisal", "Replacement Cost Method," edited by the Council of Tree and Landscape Appraisers, published by the International Society of Arboriculture).
4. "Principles and Practice of Planting Trees and Shrubs" by Gary W. Watson and E.B Himelick, published by the International Society of Arboriculture.

B. **WEBSITES:** Helpful websites include:

1. International Society of Arboriculture; <http://www2.champaign.isa-arbor.com/welcome.html>
2. Florida chapter of the ISA; <http://www.floridaisa.org>
3. UF – Florida Yards & Neighborhoods; <http://hort.ifas.ufl.edu/fyn/>

END OF SECTION