

LANDSCAPE DESIGN STANDARDS

1. INTRODUCTION

A. Statement of Intent

The purpose for these landscape design guidelines is to establish minimum criteria for the landscape development of the roadways, building sites, parking areas and other features within the University to ensure continuity in aesthetic values throughout the campus. All areas requiring landscaping shall conform to and meet or exceed the general landscape requirements contained herein.

The landscape design guidelines have been developed to provide landscaping for the campus that is relatively low cost and low maintenance. The overall campus landscaping theme emphasizes simplicity, balance and ecological sensitivity. The landscape design should be based upon long-term cost effectiveness of the landscape materials selected for the campus. Landscape designs proposed for the campus shall also address maintenance, safety, durability of the plant material and aesthetic value. Natural landscaping is an important component of the landscape and the designer must make every effort to incorporate existing, natural landscape into the design.

These landscape design guidelines are intended to supplement but not supersede any requirements, rules or regulations of any

regulatory agency (e.g., Board of Regents, Florida Department of Environmental Protection, St. John's River Water Management District) having jurisdiction over the Campus property. These guidelines shall in no way limit the legal liability of the landscape designer/contractor from full compliance with all government rules or regulations.

The information presented in these guidelines is considered reliable at the time of initial issue. However, because government agency requirements are subject to periodic change, each landscape designer/contractor is encouraged to verify all agency requirements at the time of development planning. Note also that these development guidelines may be more or less restrictive than public agency requirements; the more restrictive requirements shall govern any variance between these guidelines and applicable public agency requirements.

B. Campus Master Plan

With regard to the identification of applicable areas for landscape treatment, the University shall rely upon this document as it relates to the continued implementation of the Campus Master Plan and the interpretation thereof.

C. Identification/Definition of Typical Areas

The provisions of this section shall apply to all construction related projects, including structures, roadways, pedestrian ways and parking lots for any construction site located within the campus property. At a minimum, this section shall apply to the following campus facilities and areas:

- Major Collector Roadways
- Secondary Roadways/Service Roads
- Roadway Intersections
- Campus Entryways
- Parking Areas
- Pedestrian Walkways
- Building Landscape Areas
- Service Areas
- Buffers and Organized Open Space Areas
- Retention/Detention Pond Areas
- Recreational Areas
- Special Use Areas

An example of each of these areas is highlighted on the graphic detail, "Campus Master Plan and Landscape Areas" at the end of this division. Areas of the campus that may not be identified in the above list shall be brought to the attention of the Facilities Planning and/or Landscape and Natural Resources staff for input prior to commencement of design.

2. REVIEW PROCESS

A. General

Landscape plans shall be subject to the review and approval of the campus administration prior to construction.

B. Submission, Review and Approval Procedure

The requirements for submission, review and approval are as follows:

For Major Projects (total project costs exceeding \$500,000), the applicant will submit the landscape and irrigation plans and specifications to the Facilities Planning office. The number of sets of plans/specifications to be submitted is the same number that is called for in the Architect/Engineer's design contract with the University for the particular project. The five-step review process defined in the State University System (SUS) Professional Services Guide will determine the review process. Facilities Planning staff will coordinate their review with the Landscape and Natural Resources Office. All comments shall be issued by the Facilities Planning office.

For Minor Projects (total project costs below \$500,000), the applicant will submit the landscape and irrigation plans and specifications to the Landscape and Natural Resources Office. A minimum of two (2) sets of each of the plans/specifications shall be submitted. The Landscape and Natural Resources Office staff will coordinate their review with the Facilities Planning office. All comments will be issued by Facilities Planning office.

All landscape and irrigation plans submitted for review shall be prepared under the direction of a landscape architect registered in the State of Florida. Plans submitted to the University shall be signed and sealed by the same licensed professional landscape architect.

C. Formal Approval and Comments

Final action of the Facilities Planning or Landscape and Natural Resources Office constitutes formal approval of the plan submittal. Approval may be with or without certain conditions and/or requests for plan modifications as deemed necessary by the Facilities Planning and Landscape and Natural Resources Office.

D. Construction

The general contractor shall be responsible for construction/installation of the landscape material pursuant to the approved plans and specifications. The Landscape and Natural Resources Office staff will observe and direct the general contractors' adherence to the plans and specifications and conditions of approval.

E. Warranty

While the Owner (UCF) shall be responsible for maintenance of plant material, the contractor shall be required to warranty the plant and landscape material for a period of one (1) year from

the date of final acceptance. Maintenance guidelines are listed in Part 3.C of these guidelines.

3. GENERAL LANDSCAPE DEVELOPMENT

As noted in the introduction, the landscape guidelines have been developed to provide landscaping for the campus that is relatively low cost, safe, cost efficient, and requires low maintenance. The overall campus landscaping theme should emphasize unity, simplicity, balance and ecological sensitivity.

A. Quality

All landscaping shall be installed according to professionally accepted planting procedures by qualified persons using the quality and type of materials approved by Landscape and Natural Resources in consultation with Facilities Planning. The intent of the qualitative standards is to achieve a certain level of unity and continuity between individual building sites.

The quality of all utilized plant material shall meet or exceed the "Florida Number One (#1)" rating as defined in Grades and Standards for Nursery Plants - Part I and II (or later editions) by the Florida Department of Agriculture and Consumer Services.

B. Safety, Security and Landscape Lighting

Landscape design shall be cognizant of the need for a safe and secure environment for campus users. The use of inappropriate

plant materials (e.g., poisonous, nuisance, exotic or sharp-edged) shall be discouraged.

Site lighting guidelines provide for a safe, functional, visually attractive and coordinated site lighting system. Refer to Division 16 of the University Standards for minimum standards for street/parking area lighting. Landscape and pedestrian area lighting shall be incorporated into the landscape design and shall supplement the minimum street/parking lot lighting standards. Lights shall not be placed to cause glare or excessive light spillage on neighboring sites. All light fixtures are to be concealed source fixtures except for pedestrian-oriented accent lights.

C. Maintenance

The landscape guidelines promote the development of a low-cost, safe, cost efficient, and low maintenance landscape. Maintenance of campus landscaped areas shall occur on a year-round basis consistent with the standards of the university operations staff. For purposes of applicant warranty of plant material, the maintenance guidelines are as follows:

Mowing—All lawn and grassed areas:

- 1) May-November: 3-4 cuttings per month
- 2) December-April: 1-2 cuttings per month or as needed

Edging—Pedestrian ways, curbs, building lines, planting beds:

- 1) May-November: 2-3 times per month
- 2) December-April: 1 time per month or as needed

Bedding Plants—All shrub beds, ground cover beds and hedges:

- 1) Trim and/or prune once per month
- 2) Weed once per month

Tree Trimming—All palms, canopy and flowering trees:

- 1) Palms: Once per year
- 2) Canopy and flowering trees: 1- 2 times per year

Mulching/Re-mulch all existing mulch beds three times per year. Shrubbery and groundcover beds should be properly mulched to inhibit/prevent weed growth at all times. Pine bark is the mulch of choice and is to spread at a minimum of 2.5" over the entire planting bed.

Fertilizing—Applies to all planted areas:

- 1) Lawns: 2-3 times per year
- 2) Shrubs/Groundcover: 2-3 times per year
- 3) Trees: 1-2 times per year
- 4) Flowerbeds: 3-4 times per year

Irrigation System—Check the operation of the entire system twice per month and repair/replace damaged or worn parts.

D. Natural Vegetation

Every reasonable effort shall be made to preserve any natural vegetation existing on a site. Landscape design standards may be waived by the Facilities Planning office working in concert with the Landscape and Natural Resources Office, where existing site vegetation is to be preserved. In addition, the use of native plant material and natural plant arrangements, as opposed to exotic plants and/or formal arrangements, is strongly encouraged.

Existing trees with a trunk diameter of six inches (6") or greater, as measured twelve inches (12") above ground, shall be located on an accurate topographic survey and included with submission of landscape plan. Landscape plan submissions should reflect an effort to preserve existing vegetation.

Prior to any site clearing activities, all existing trees required to remain by execution of these standards shall be tagged in the field for inspection and approval by the Landscape and Natural Resources office. Barriers shall be erected at the dripline of trees for protection against construction activities.

Any existing tree(s) indicated to remain (per approved construction plans) that are damaged or removed during construction shall be replaced with new tree(s) of at least four inches (4") diameter breast height (DBH) and having a total tree caliper equivalent or greater to that of the removed or damaged tree(s).

In order to minimize the potential infestation of pine borers, all pine trees within fifty feet (50') of any grading work shall be treated with a commercially acceptable pesticide, prior to the commencement of any construction activities.

E. Soil Requirements

Prior to designing a landscape project for the campus, the site shall be investigated by the project designer and the soils tested to determine the suitability of the existing soils for the proposed planting. The result of the soil test shall be provided to the Landscape and Natural Resources use by it's staff when reviewing the proposed design and selection of plant materials. The designer shall take into account the existing soil conditions in the proposed design.

Prior to planting of materials specified in the design, the designer will again test the soil. The result of the soils test will be provided to Landscape and Natural Resources Office who will determine if the planting can begin on the site. At no time shall the soils composition and chemical profile for the planting areas be different than the soils composition and chemical profiles used for the design.

Appropriate recommendations for soil amendments or modifications shall be made by the designer if necessary prior to the commencement of plant installation. Suitable off-site soil material shall be brought in if necessary to replace poorly

drained or otherwise unsuitable on-site soil material. Soils containing muck, hard-pan or other unsuitable matter shall not be used for any landscape installation.

Soil used for topsoil or planting hole backfilling are designated in Division 02, Site Work, UCF Standards.

F. Site Landscape Grading

Site grading of landscaped areas shall be consistent with natural contours wherever practical. Grading of all open space areas near buildings shall occur so as to gradually channel stormwater flows away from the structure. Grading shall be minimized in areas where indigenous or otherwise established vegetation is to be maintained. Berming for screening or open space definition is encouraged consistent with the berming guidelines of this section. The standard berm slope shall be 6:1. Berms shall not exceed 3:1 slope under any circumstances. Berms sloped between 3:1 and 4:1 shall be planted with groundcover. Berms sloped between 4:1 and 6:1 may be planted with lawn or groundcover.

G. Irrigation

All landscaped and grassed areas shall be watered by means of automatic underground irrigation system. The system shall be Maxicom controlled by a Rainbird SBM-1230-X-SS, ISC-SAT 12 or 24-SS-B+ time clock outside the buildings. It shall utilize a Date

Industrial Flow meter attached by a 3 pair 19 gauge UL pick cable to the SBM or ISC timer. A 3 pair 19 gauge UL pick cable shall be installed connecting the SBM or ISC clock with the building's telephone system. The system shall be designed following Rainbird Maxicom specifications. All sprinklers and valves shall be Rainbird products and all PVC piping is to be Sch 40. Electric valves shall be designed with manual isolation valves within the valve box as well as Quick coupling valves in key locations. All pop up type sprinklers shall be connected using an 18" piece of Flexible PVC piping.

The irrigation system shall be designed to provide full water coverage from sprinkler head to sprinkler head or spray head to spray head. The design for spray heads shall minimized the appearance of the spray head above the vegetation being watered. The irrigation system shall be designed to provide full water coverage from sprinkler head to sprinkler head or from spray head to spray head. The system shall be designed to connect and to receive water from an effluent water source. Reduced Pressure Backflow preventors and water meters shall be incorporated into the design. Overspray onto parking areas and pedestrian ways shall be minimized. See graphic details, "Rain Bird Electric Valve Detail" and "Typical Sensor Installation," at the end of this Division.

IRRIGATION SPECIFICATIONS

1. SLEEVES: All pipes under pavement or sidewalks shall be sleeved with PVC schedule 40 pipe, which shall be installed prior to the walks or paving. All sleeves must be installed prior to compaction of paved vehicular use areas and concrete sidewalks. All sleeve sizes shall be a minimum of two nominal sizes larger than the diameter of the pipe to be sleeved. Control wire sleeves shall be of sufficient size (allowing for a re-pull) for the required number of wires under paving and walks. All lateral lines that exceed 1.5" in diameter and run under walks of more than 4' in width must be sleeved.
2. TRENCHING: Minimum cover for mainlines shall be 18" to top of pipe. Cover for lateral lines shall be 12" to top of pipe. Maintain trenches free of any materials that may damage piping prior to compaction. Compaction of trenches shall follow guidelines stated in the Earthwork/Underground Utilities section of the Project Manual.
3. PIPE: All main and lateral pipelines shall be schedule 40 PVC pipe. No ½" PVC pipe will be allowed with the exception of shrub riser standpipes. All pipe 4" and smaller shall be solvent welded socket-type. All larger pipe will be of a ring-type/socket configuration. All irrigation heads shall be serviced with flex-type pipe ½", ¾", or 1" to match the size inlet of the irrigation head. No "funny, barbed" fitting type pipe will be allowed.
4. CONTROL WIRE: All valve control wires shall meet a minimum standard of type UF 600 volt AWG #14 or larger to allow for distance of run. Spare wire(s) shall be provided

at a two per ten-valve ratio. A spare common shall loop all valves within the scope of project. A minimum of three spares shall be pulled to the last valve in the system. If a full pull cannot be achieved all wire splices may be made by using prefilled silicone wire connectors. All field splices must be denoted on the as-built plans and be contained in a 12" valve box set to grade. All control wires shall be placed under or next to the main line with a minimum of two inches of distance between the two allowing for main line repair. Provide expansion coils every 200 feet of wire(s) by making 6-8 turns of the wire(s) around a piece of ¾ inch pipe instead of 'slack'. At remote valve locations provide expansion coils by making 15-20 turns of the wire(s) around ¾ pipe to allow the valve bonnet to be removed and repairs made without the need to disconnect the control wiring. Prefilled silicone wire connectors shall be used when making connection of wires to remote valves.

5. CONTROL VALVES: All control valves shall be Rainbird and a minimum size of 1.5" (150-PES-B – 200-PES-B or 300BPES). A gate valve of the same size as the control valve shall be installed 'upstream' and contained within the same valve box. The gate valve will be of domestic manufacture (NIBCO or approved equal).
6. IRRIGATION HEADS: All irrigation heads shall be Rainbird and include PA-8S shrub adapter, 1806 and 1812-SAM-PRS pop-up spray sprinkler, T-Bird SAM, R-50 SAM, FALCON (F4-FC-NP or F4-PC-NP when required) and TALON. Bubbler nozzles may be used only on 1804-PRS-SAM heads. No

poly nipple bubblers will be allowed. All sprinkler heads on risers of 12" or more shall be secured in a plumb position by using a 30" angle iron stake and stainless steel hose clamps. 12" to 18" height risers require 1 clamp. 18" and above height risers require 2 clamps. All risers shall be painted. Please contact UCF Landscape and Natural Resources Grounds staff for color determination.

7. **QUICK-CONNECT:** A Rainbird quick coupling valve (models 44NP or 44) shall be provided every 200' of the main pipe line or at building corners to provide water for landscape upgrades, pressure washing, etc. This will be contained in a separate 12" round valve box and installed using a swing joint constructed to Rainbird specifications. One brass key per valve shall be turned over to UCF Landscape and Natural Resources Grounds staff at final acceptance.
8. **VALVE BOXES:** The color of the valve box shall designate the source of water used to irrigate the site (Potable or Reclaim). The valve boxes shall be of an adequate size to allow for closing of required gate valve to facilitate repair of electric control valve. The valve boxes will be comprised of rigid plastic with fibrous components. All valve boxes shall have a metal tag noting the station on clock.
9. **FLOW SENSOR:** A Data Industrial Company Flow Sensor, Model #IR220-SS, shall be installed as recommended by the manufacturer. All wire for the operation of the Flow Sensor shall be run in PVC pipe schedule 40 electrical conduits.
10. **FLOWMETER:** A Data Industrial Company Flowmeter, Model #600-15 with #A1006 plug-in power supply shall be

installed as recommended by the manufacturer. Attach by a 3 pair 19 gauge UL pick cable to controller. All wire shall be run in PVC schedule 40 electrical conduits.

11. PULSE DECODER: A Rainbird Pulse Decoder, Model #F-69300 shall be installed as recommended by the manufacturer. The contractor shall be responsible for extending and connecting the Belden wire from the point of contact at the pulse decoder to the controller. All wire shall be run in PVC schedule 40 conduits.
12. SURGE ARRESTOR: A duplex outlet Hubbell, Inc. Surge Arrestor, Model #1G-8300-HS shall be installed for the 120-volt service. An MSP-1 surge arrestor shall be a Rainbird P/N-D05100 low resistance, in-line, transient voltage surge protector. It shall have low clamping level and high current handling capabilities for protection of sensitive electronic devices.
13. TELEPHONE COMMUNICATION WIRE: Furnish and install telephone communication wire, conduit and connectors, for direct connection to existing telephone lines and the irrigation system satellite controllers, sensors and pulse decoders. All work should be coordinated with UCF Telecommunications Department, UCF Landscape and Natural Resources Grounds, and any applicable telephone company. Telephone communication wire shall be Rex Direct Burial telephone cable, 6 pair 19 gauge "Icky Pick" or approved equal (by UCF Telecommunications and Grounds). All wire shall be installed with no underground splices, unless approved by UCF Telecommunications and Grounds. Any approved splices must be made in a concrete

box with steel lid clearly marked TELECOMMUNICATIONS or equal. The splice must be made using “Scotch Lok” phone wire connectors for 19-gauge wire. The wire shall be installed to a minimum depth of 12”.

14. **AUTOMATIC CONTROLLER:** Shall be Rainbird Automatic Controller PAR or PAR PLUS 16 or 24 SS/60Hz. The controller must be installed on a concrete base. The contractor will provide the electrical service to the controller. All stations should run in sequence from the closest to the clock and in order around the site.
15. **INSPECTION:** UCF representatives will conduct inspections during the installation period. A final inspection will take place with the landscape architect, contractor, and UCF Grounds representative at the time of substantial completion.
16. **ACCEPTANCE:** All mainlines shall be hydrostatically tested at a pressure of 100 psi for not less than 3 hours. If any pressure loss is indicated it will be repaired and the system retested. The architect and UCF Grounds representatives should be contacted prior to testing to allow sufficient time to respond and oversee the operation. All water keys, as-builts, and operational instructions will be turned over prior to acceptance.
17. **GUARANTEES:** The Contractor shall furnish warranties in writing certifying that the quality and workmanship of all materials and installation furnished is in accordance with these specifications and in accordance with the original manufacturers’ warranties. The contractor shall warrant all

materials and labor for a period of one (1) year from date of final acceptance.

18. **QUALITY ASSURANCE:** All materials, equipment, and methods of installation shall comply with the following codes and standards: The American Society of Testing and Materials, The Irrigation Association, The Florida Irrigation Society and all applicable local codes or regulations.
19. **CLEANING/DISPOSAL:** The contractor will perform daily cleaning of the site. The contractor will remove from site all excess materials, debris, and equipment. The contractor will haul from site and legally dispose of waste materials, including unsuitable excavated materials, trash, etc.

H. Sidewalk Development

Consistent with the Campus Master Plan and overall development guidelines, a hierarchical system of pedestrian walkways shall be implemented in conjunction with the development of the campus built environment.

Primary walkways are those facilities which carry relatively large volumes of pedestrians over several hours of the day and cover relatively long distances. They are not necessarily destination oriented. Secondary walkways are destination oriented and carry relatively smaller volumes of pedestrians at select intervals of the day.

Generally, primary walkways shall be sixteen feet (16') in width. Secondary walkways are to be a minimum of six feet (6') in width. Sidewalk specifications shall include a 6-inch thick, 3,000

psi concrete with 6x6 W1.4xW1.4 WWF reinforcement. Finish shall be medium broom finish. Concrete walks must be formed in place. They may not be extruded by machine. Walkways shall be designed with a cross-slope to drain toward the adjacent street or lowest adjacent grade or to nearest drainage structure. All base material shall be compacted to 95% Modified Proctor Density.

Handicap ramps shall be placed at all intersections. Reference is made to the American Disabilities Act for compliance herewith for any pedestrian use facility on the campus. Individual site or project designers shall be responsible to coordinate with the Facilities Planning or Landscape and Natural Resources staff to determine the volume and character of anticipated pedestrian use and thus the preferred design width.

I. SOD

Sod shall be Argentine Bahia. The sod is to be of high quality, free of weeds and uniform in texture. Other varieties (Bermuda #419 and St. Augustine) may be used in specialized areas subject to approval by Facilities Planning and Landscape and Natural Resources.

4. ROADWAY AREA LANDSCAPE DEVELOPMENT

A. Roadway Buffers and Medians

Landscape buffer areas shall be established along all major collector and secondary/service roadways within the UCF Campus. Buffer areas may be considered as part of the yard areas of adjacent buildings or designated activity areas. Buffer areas shall be maintained in their existing natural vegetative condition or landscaped according to the guidelines contained herein.

Roadway buffer widths shall be established as follows:

- Major Collectors (ie., Gemini Boulevard)—forty feet (40') measured from the edge of the pavement (curb, street or walkway) to nearest building edge or parallel vehicular use area.
- Secondary Roadways/Service Roads—twenty feet (20') measured from edge of pavement (curb, street or walkway) to nearest building edge or parallel vehicular use area.

At a minimum, lawn areas within and/or adjacent to roadways shall be sodded with Argentine Bahia grass for the first twenty feet (20') adjacent thereto. Disturbed areas beyond the 20' shall be seeded with the same species of grass. Trees, shrubbery and other groundcover shall also be installed consistent with the guidelines below for major collector and secondary roadways/service roads:

1. Major Collector (Four-Lane Roadway)

Along all major collector roadways, at least one (1) canopy tree and three (3) understory trees shall occur for every fifty (50) linear feet, or fraction thereof, of frontage (refer to graphic detail, "Major Collector Roadway Landscaping," at the end of this Division). Canopy trees shall have a minimum overall height of fifteen feet (15') and caliper measurement of 3-1/2" Diameter at Breast Height (DBH). Recommended canopy trees shall be Southern Magnolia; understory trees shall be selected from the recommended plant list found in Part 7 of this guideline.

Where parking or other vehicular use areas are located adjacent to Gemini Boulevard, or other designated collector roadways, a landscape screen shall be provided within the roadway buffer area, in a manner that does not create a safety hazard, as follows:

An undulating grass and landscaped berm with a minimum height of three feet (3') and a maximum height of four feet (4') above the finish elevation of the adjacent vehicular use area. Berm shall be designed to not create a safety hazard. Berm slopes shall vary in order to provide visual interest, however, the recommended slope shall be 6:1. The berm shall be composed of natural landscape materials. A berm shall not be constructed around existing vegetation where the grade will be raised more than six inches (6").

Where it is desirable to preserve existing vegetation and the construction of a berm will create a conflict, a screen of living landscape material a minimum of three feet (3') in height at the time of planting may be utilized. Live screening materials shall be planted in areas not less than six feet (6') in width. The screening shall occur in the first six feet (6') adjacent to the vehicular area.

Where roadways are proposed to be built as median-divided facilities, these areas shall also be considered for standard or upgraded landscape treatment, provided that said landscaping shall not interfere with the functional stormwater management characteristics that may be considered in the roadway design, nor pedestrian and vehicular traffic visual safety.

Median landscaping shall include at least three (3) understory trees for every fifty (50) linear feet. Shrubbery and groundcover may be used to supplement the understory trees.

2. Secondary Roadway/Service Road (Two-Lane Roadway)

At least one (1) canopy tree and one (1) understory tree shall occur for every fifty (50) linear feet, or fraction thereof, of frontage along secondary or service roads. Canopy trees shall have a minimum overall height of fifteen feet (15') and caliper measurement of 3-1/2" DBH. Recommended canopy trees shall be Live Oak; understory trees shall be selected from the recommended plant list found in Part 7 of this guideline.

Where parking or other vehicular use areas are located adjacent to a secondary or service roadway, a landscape screen shall be provided within the roadway buffer area as follows:

An undulating landscaped berm with a minimum height of two feet (2') and a maximum height of three feet (3') above the finish elevation of the adjacent vehicular use area. Berm slopes shall vary in order to provide visual interest, however, the recommended slope shall be 6:1. The berm shall be planted with landscape materials. A berm shall not be constructed around existing vegetation where the grade will be raised more than six inches (6").

Where it is desirable to preserve existing vegetation and the construction of a berm will create a conflict, a screen of living landscape material a minimum of three feet (3') in height at the time of planting may be utilized. Live screening materials shall be planted in areas not less than six feet (6') in width. The screening shall occur in the first six feet (6') adjacent to the vehicular area.

D. Roadway Intersection Landscaping

When a collector roadway intersects another collector roadway, landscaping may be used to define the intersection, provided however, that all landscaping within the triangular area described in the graphic detail, "Roadway Intersection Landscaping," at the end of this Division shall provide

unobstructed cross-visibility at a level between two feet (2') and six feet (6') above finished grade.

When a secondary roadway intersects another secondary roadway, landscaping may be used to define the intersection, provided however, that all landscaping within the triangular area described in the graphic detail, "Roadway Intersection Landscaping," at the end of this Division, shall provide unobstructed cross-visibility at a level between two feet (2') and six feet (6') above finished grade.

No landscaping materials, except grass and ground cover, shall be located closer than three feet (3') from the edge of any roadway pavement. Intersections shall be planted with a combination of understory trees and shrubs and groundcover; canopy trees shall be included only in areas distant from the immediate intersection in order to maximize visibility and safety considerations. A generalized planting scheme is depicted in the graphic detail, "Roadway Intersection Landscaping," at the end of this Division.

E. Campus Entrance Landscaping

Campus entrances shall be landscaped in such a fashion as to create dramatic sense of arrival and identity for the University. Primary entries shall include campus signage (subject to approval by the University Signage Committee) and shall be landscaped with a combination of canopy and understory trees,

shrubbery and groundcover. See the graphic detail, "Campus Entrance Landscaping" at the end of this Division for a recommended planting scheme and definition of corner chords where landscaping is limited to grass and other ground covers.

F. Parking Lot Landscaping

Landscaping shall be provided within and between vehicular use areas and contiguous sites as follows:

A hedgerow or shrubbery bed at least three feet (3') in overall height above grade when planted, shall be used between the site limits and parking areas.

At least one (1) canopy tree and three (3) understory trees shall occur for every fifty (50) linear feet, or fraction thereof, along the perimeter of parking areas. These trees shall be canopy and understory trees selected from the recommended plant list.

Parking lot interior areas shall be landscaped when parking lot islands, medians or dividers strips are included in the design. The Facilities Planning and Landscape and Natural Resources staff shall make the determination as to whether these islands, medians, or divider strips are to be included. When required, these islands, medians or divider strips shall be landscaped as follows:

Parking Lot Islands: Provide one (1) canopy tree for each two hundred (200) square feet of island area.

Parking Lot Medians: Provide one (1) canopy tree for every fifty (50) linear feet of median.

Parking Lot Dividers: Provide one (1) canopy tree for every fifty (50) linear feet each way of divider area.

All open spaces within parking lots shall be sodded or planted with groundcover or shrubbery not to exceed 24" in height at maturity.

G. Bicycle Parking Facilities

Bicycle parking facilities, consisting of lockers, bike racks or delineated pavement/concrete areas, shall be landscaped as follows:

Screen on two or more sides with a minimum three-foot (3') high hedgerow or shrubbery bed and, as appropriate, bordered on one or more sides by a canopy or understory tree(s). Tree selections may be made from the recommended plant list.

Bicycle support facilities shall, in general, be prohibited within the 1,200' radius ring of the Campus. Exceptions to this criteria may be considered on a case-by-case basis by Facilities Planning, in conjunction with Landscape and Natural Resources, Environmental Health and Safety, the University Police, and other appropriate departments.

5. BUILDING AREA LANDSCAPE DEVELOPMENT

A. Project Boundary/Building Setbacks/Open Space

1. Project Boundary

Prior to the commencement of design, the architect/engineer shall consult with the staff of the Facilities Planning or Landscape and Natural Resources Department to confirm the boundary of the proposed building project. The site boundary may extend to the nearest adjacent roadway, pedestrian walkway, building or other existing site area. This determination of the boundary for the particular project shall be the area to be developed (or, in some cases, to be left natural) within the responsibility of the architect/engineer's plans. Much of the land surrounding a building will be for open space, but may be improved with lawns and irrigation. The section below describes the minimum standards for open spaces surrounding buildings.

2. Building Setbacks

Building setback distances are the horizontal, perpendicular, or radial distances measured from the site boundary line or edge of pavement to the vertical face or edge of the structure to which the setback dimension is applied. The setback distances shall be referred to in the design of the site plan.

Facilities Planning shall reserve the right to specify which, if any, side or rear property line of a given site may in the future

become the right-of-way line of a common roadway or pedestrian way. Such specified side or rear site lines may require the setting back of all structures or facilities in accordance with all of the roadway frontage buffer provisions contained herein.

3. Open Space

A landscaped open area shall surround each building (refer to the graphic detail, "Building Area Landscaping," at the end of this division) or otherwise occur between the facade of the building and paved areas (whether a parking area, drive or pedestrian way) as follows:

Along the front and sides of a building, a minimum landscaped area of ten feet (10') for the first floor plus five feet (5') for each additional floor, up to a maximum of twenty-five feet (25'), shall be provided.

Along the rear of a building, a minimum of thirty feet (30') of landscaped area shall be provided. Loading areas may be permitted along the rear facade of a building as approved by Facilities Planning.

Lawn areas around buildings, parking lots, vehicular use areas and pedestrian ways shall be sodded with Argentine Bahia grass. Trees shall be planted adjacent to structures on the site at the equivalent of one tree for each thirty (30) linear feet, or

fraction thereof, of front and side wall length. These may be any tree species selected from the recommended plant list.

Vegetation is not permitted to be installed such that it will grow on the surface of any building or structure.

Refer to graphic details, "Tree Planting and Guying," and "Shrub Planting Detail & Ground Cover Planting Detail," at the end of this Division for typical installation requirements.

B. Foundation Planting

Foundation and accent plantings shall be planted along the perimeter of all structures for the purpose of softening, enhancing and/or otherwise complementing the architectural character of the structure.

C. Service Areas

Loading and service areas, including solid waste facilities, should be located at the rear or side of the building and shall, to the greatest extent possible, be completely screened by vegetation or screen wall (see below) from all adjacent roadways, pedestrian ways and building sites. Where possible, these areas are encouraged to be enclosed within the ground floor of the building.

D. Interior Atriums

Interior building atriums are not allowed.

E. Signage

As required, any building or roadside signage shall be subject to the review and approval of the University Signage Committee. Signage design shall meet the standards and be compatible with the building and/or landscape area where it is to be located. In general, roadway signage shall be designed in accordance with standards by Florida Department of Transportation (FDOT) and/or the Manual of Uniform Traffic Control Devices (MUTCD).

F. Screen Walls

As required, screen walls around service areas and/or solid waste collection facilities shall consist of an opaque enclosure constructed of a material matching the principal building structure (e.g. brick or concrete block w/ stucco). The enclosure should be located close to the building, out-of-sight from adjacent roadways and pedestrian ways and, as appropriate, further buffered with dense landscaping.

G. Seating and/or Retaining Walls

All exterior seating and/or retaining walls must be designed to prevent skateboarding. The anti-skateboarding devices need to be part of the wall design instead of add-on devices.

6. OPEN SPACE DEVELOPMENT

A. Pedestrian Walkways

As noted, a hierarchical system of pedestrian ways shall be implemented in conjunction with the development of the campus built environment.

Pedestrian walks shall be required so as to link individual buildings, developed or recreational areas to the remainder of the pedestrian system. Sidewalk locations within specific buffer areas shall be located in such a fashion so as to promote their logical and convenient use and discourage short cutting. Strategic planting of landscape material should be considered where necessary to further encourage sidewalk use. The construction of the walkways shall be coordinated with adjacent buildings to ensure continuity of design and location. Walkways shall comply with the latest editions of the American National Standards Institute (ANSI) standards and the American Disabilities Act (ADA) requirements for handicap accessibility.

Landscaping requirements for pedestrian walkways shall be dependent upon the area being traversed. Walkways traversing natural stands of the existing vegetation may be subject to sodding, seeding and/or mulching in the immediately adjacent work area. In developed areas of the campus, the following general standards shall apply:

- Primary walkways shall be bordered by one Live Oak tree planted at seventy-five foot (75') intervals.

- Secondary walkways shall be bordered by one canopy tree, from the selected plant pallet, planted at one-hundred foot (100') intervals.
- Trees shall be located a minimum of six feet (6') back from the sidewalk edge. The spacing and/or selection of trees may be influenced by the character of existing or planted vegetation on the site or adjacent thereto. In addition, shrubbery and/or groundcover may be planted at intersections of primary walkways with streets or other primary walks. Root restriction devices shall be placed adjacent to the tree's root zone where roots may damage adjoining buildings or walkways.

B. Buffer/Screen Areas

Miscellaneous buffer and screening requirements may be imposed by Facilities Planning or Landscape and Natural Resources based upon unique and extenuating design circumstances.

C. Transitional Areas

Transitional areas shall, as appropriate, be landscaped with materials which complement existing, adjacent vegetation. Such areas may also be left in their natural state depending upon the extent, character and quality of the existing vegetation (and wildlife). Facilities Planning, in accord with Landscape and Natural Resources, shall be responsible for determining the landscape treatment for transitional zones.

D. Retention/Detention Ponds

The University of Central Florida has an existing drainage master plan. Individual projects, however, are generally required to discharge stormwater into the master system.

On-site retention or detention ponds shall be discouraged. In the event that retention or detention ponds are necessary, they shall be sodded and designed to blend with the overall landscaping and landform of the site. Ponds shall also be designed and constructed in a naturalistic shape, rather than a geometric shape.

Existing trees shall be protected wherever possible. Littoral zone and aquatic plantings are encouraged subject to the approval of Facilities Planning and Landscape and Natural Resources.

E. Fencing

Fencing materials shall be considered for utilization only in recreational activity areas. Fencing may be required to be screened by landscaping. Plant material proposed for use adjacent to fenced areas shall be reviewed and approved by Landscape and Natural Resources.

F. Land Forms/Grading

Grading of landscaped open space areas shall be consistent with natural contours wherever practical. Slope elevations for

pedestrian ways shall be at maximum 12:1 grades and shall comply with the most recent edition of the ADA. The grading of all open space areas near buildings shall occur so as to channel stormwater flows away from the structure. Grading shall be minimized in areas where indigenous or otherwise established vegetation is to be maintained.

G. Recreational Features

Active recreational areas shall, in general, be landscaped with sod or seed and are subject to irrigation requirements. These areas may, on a case-by-case basis, also be subject to screening requirements per Facilities Planning and Landscape and Natural Resources.

Passive recreation areas may be either left in their natural state or landscaped with a combination of canopy trees, understory trees and shrubbery. Specific landscaping requirements will depend upon the desired function of the specific passive recreation area and are at the discretion of the Facilities Planning and Landscape and Natural Resources staff.

H. Special Use Areas

The landscaping of special use areas (e.g., reflection pond, arboretum, alumni plaza) shall occur so as to accentuate the desired impact on the completed environment. This could involve a spectrum of design decisions ranging from no

landscaping (natural vegetation only) to a very formal and dramatic design scheme for a particular area. The landscaping of special use areas shall require familiarity with the requirements contained herein as well as close, front-end coordination with the Facilities Planning and Landscape and Natural Resources staff.

7. RECOMMENDED PLANT LIST

The plant palette will be drawn from the most current Florida Friendly Landscaping™ plant list.

It may also include:

CANOPY TREES

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED
Southern Magnolia	Magnolia grandiflora	12'*
Live Oak	Quercus virginiana	12'*
Laurel Oak	Quercus laurifolia	12'*

Sycamore	Platanus occidentalis	10'
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Red Maple	Acer rubrum	10'
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*Live oaks, laurel oaks and magnolia trees required as street trees shall be a minimum of 15'-16' and have a 3½"-4" Diameter at Breast Height (DBH).

OTHER LARGE TREES

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED
Bald Cypress	Taxodium	10'
Slash Pines	distichum	8'
River Birch	Pinus elliotti	10'
Weeping Willow	Betula nigra	10'
	Salix babylonica	

MEDIUM TREES

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED
American Holly	<i>Ilex opaca</i>	8'
Dahoon Holly	<i>Ilex cassine</i>	8'
East Palatka Holly	<i>Ilex opaca</i> `East Palatka'	8'
Golden Rain Tree		8'
Drake Elm	<i>Koelreuteria formosana</i>	8'
Cherry Laurel	<i>Ulmus parvifolia</i> `Drake'	8'
	<i>Prunus caroliniana</i>	

WETLAND/LOWLAND TREES

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED
Weeping Willow	Salix babylonica	10'
Red Maple	Acer rubrum	10'
Sweetgum	Liquidambar	10'
Tulip Poplar	styraciflua	10'
Sweet Bay	Liriodendron	8'
Loblolly Bay	tulipifera	8'
	Magnolia virginiana	
	Gordonia	
	lasianthus	

ACCENT/UNDERSTORY TREES

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED
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Wax Myrtle	Myrica cerifera	8'
Tree Ligustrum	Ligustrum	8'
Crape Myrtle	japonicum (also L. lucidum)	8'
Yaupon Holly	Lagerstroemia indica	8'
	Ilex vomitoria	

PALMS/CYCADS

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED
Canary Island	Phoenix canariensis	5'
Date Palm	Phoenix reclinata	8'
Senegal Date Palm	Cycas revoluta	2'
King Sago Palm	Zamia floridana	2'

Coontie	Washingtonia	5'
Washington	robusta	5'
Palm	Butia capitata	6'
Pindo Palm	Sabal palmetto	
Cabbage Palm		

LARGE SHRUBS

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED*
Anise	Illicium anisatum	30"
Sweet Viburnum	Viburnum	30"
Wax Leaf	odoratissimum	30"
Ligustrum	Ligustrum	30"
Photinia	japonicum	48"
Wax Myrtle	Photinia frazeri	36"
Oleander	Myrica cerifera	

Nerium Oleander

*When used between vehicle-use areas, the minimum height at the time of planting shall be 36 inches.

MEDIUM SHRUBS

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED
Pittosporum	Pittosporum tobira	24"
Variegated Pittosporum	Pittosporum tobira 'Variegata'	24"
Sandankwa Viburnum	Viburnum suspensum	24"
Pfitzer Juniper	Juniperus chinensis 'Pfitzerana'	24"
Burford Holly	Ilex burfordii	

*When used between vehicle-use areas, the minimum

height at the time of planting shall be 36 inches.

SMALL SHRUBS

COMMON NAME	BOTANICAL NAME	MINIMUM HEIGHT REQUIRED
Dwarf Yaupon Holly	<i>Ilex vomitoria</i> 'Nana'	12"
Indian Hawthorn	<i>Raphiolepis indica</i> 'Alba'	12"
Dwarf Pittosporum	<i>Pittosporum tobira</i> 'Wheeleri'	12"
Dwarf Chinese Holly	<i>Ilex cornuta</i> 'Rotunda'	

GROUND COVER

COMMON	BOTANICAL NAME	SIZE/SPACING
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NAME

Border Grass	Liriope muscari	10 Pips/Clump 12" o.c.
Mondo Border Grass	Ophiopogon japonicus	10 Pips/Clump 8" o.c.
Dwarf Confederate Jasmine	Tracheolospermum jasminoides 'Nana'	15" Spread 18" o.c.
Parson's Juniper	Juniperus chinensis 'Parsonii'	15" Spread 18" o.c.
Dwarf Shore Juniper	Juniperus conferta 'Compacta'	12'-15" Spread 18" o.c.
Evergreen Giant Border Grass	Liriope muscari 'Evergreen Giant'	10 Pips/Clump 18" o.c.

Note: Substitutions to this list may be made subject to approval from the Landscape and Natural Resources office.

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- Typical Sensor Installation
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- Major Collector Roadway Landscaping
- Roadway Intersection Landscaping
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- Building Area Landscaping
- Tree Planting and Guying
- Shrub Planting Detail & Ground Cover Planting Detail

Site Design

1. Project Siting

Consideration should be given to the building placement as it relates to traffic and pedestrian patterns. Scale of the structure should be contextually compatible with other buildings adjacent to it. The building should not overwhelm the site. Utilization of open space within the site is critical.

Outdoor Spaces

Careful design of spaces between buildings will integrate these interstitial spaces into the network of campus open spaces. Within these spaces there are opportunities to create gathering spaces or "outdoor rooms." Take care to locate these outdoor rooms where their activity will not disrupt or distract nearby classroom or similar established activities. In

developing outdoor spaces, the designer should look to the existing campus for precedents of form and material as well as lighting, signage, and landscaping.

Ramps and Steps:

Accessibility ramps shall be placed at all roadway intersections in accordance with current ADA requirements. Individual site or project designers shall be responsible to coordinate the width of such ramps with the anticipated usage. The A/E shall provide total access to building entry areas without the use of steps.

The use of steps is to be avoided if at all possible; however, where exterior steps are utilized, they are to comply with the current ADA requirements.

Provide railings and guardrails at stairwells, steps, bridges, loading docks and ramps, as may be necessary in the interest of safety. Provide runways and ramps in all buildings where bulk supplies are handled. Ramps are to have a non-slip surface.

2. Parking

Project Parking (Inside 1200' Radius)

Current university policy regarding general parking facilities requires that they be located beyond the

1200-foot radius walk. Consequently, no general parking areas will be located adjacent to building projects unless they are beyond the 1200-foot radius. Only spaces for service vehicles and vendors will be provided. Usually, the number required will be from four to six (4-6) spaces. This number may vary from project to project. The A/E shall verify with the university Project Manager exact requirements. The service parking spaces are to be located adjacent to the building within an enclosed service yard. The enclosure may consist of a fence, wall, or appropriate landscape material, consistent with the overall design of the facility.

General Parking (Outside 1200' Radius)

General parking areas are to be clearly defined and physically separated from roadways. An effort shall be made to screen the areas with earth berms, landscaping, or screen walls (a height of three feet is recommended). Existing trees are to be preserved to the greatest extent possible. Large parking lots are to be subdivided into smaller elements in order to reduce its scale and expanse by creative use of landscaping. Paved lots are to be striped, delineated with curbs and gutters with appropriate drainage and proper lighting for safety after dark.

3. Roads

Main campus roads should have a right-of-way cross-section width of 100 feet supporting a speed limit of up to 35 mph. Facility access roads should have a right-of-way cross-section width of up to 60 feet supporting a speed limit of 25 mph. Service roads should have a right-of-way cross-section width of 60 feet supporting a speed limit up to 20 mph. All roadways will be constructed in accordance with Florida Department of Transportation standards.

4. Site Drainage

The site is to be graded in such a manner that all areas slope away from buildings at a minimum gradient of $\frac{1}{4}$ " per foot. Grade all terrain surrounding the building, including loading, service and parking areas in such a manner to prevent water flow into the building should storm drains servicing the area become overwhelmed.

The university Conceptual Storm Water Management Plan has been approved by the St. Johns Water Management District and will be the vehicle for this campus to meet its requirements. The A/E must work within the framework of this plan. Site drainage from

new construction is to be tied to the existing storm water drainage system.

Storm Drainage:

All storm water runoff from paved areas shall be collected in inlets and carried by underground pipe to retention areas. No open ditch runoff is allowed.

Roof Drainage:

Provide appropriate drainage design to accommodate roof drainage from the building or facility.

5. Solid Waste Collection

Outdoor solid waste collection sites are to be located in the major building service areas where their need is required. The sites are to be as visually inconspicuous as possible. All sites shall accommodate pick-up by a 40-foot long by 8-foot wide truck, including turn-around space. All sites are to be screened from public view with constructed elements compatible with the architectural character of adjacent buildings.

Landscape planting shall supplement these screens.

If a "roll-off" compactor is used for refuse collection, it shall be the self-contained type, capable of containing all waste, including liquid. An anti-freeze hydrant and drain for wash down purposes is to be provided at all

compactor sites. Adequate power supply for compactor operation must also be provided.

6. Site Appurtenances

Bollards restrict vehicular movement while allowing pedestrian circulation to continue unimpeded, and are used as a means for filtering vehicular circulation from pedestrians. Removable bollards are used where occasional vehicular access is required.

One contemporary style of bollard is used throughout the campus, wherever bollards are required, but two bollard types are available. The first type is for highly visible public areas where the unit needs to emulate surrounding building materials and styles. The second bollard type is a service bollard intended for more general and practical use.

With both types of bollards, the surrounding surfacing material should extend to the base of the bollard. No "new" or different material is to be used as a bollard base.

7. Foundations

The A/E shall employ the services of a geotechnical engineer (usually an additional service to the A/E Agreement). The engineer shall provide a thorough

subsurface exploration program for all new construction projects. The A/E, in consultation with the engineer, shall determine the number, locations, and depth of soil borings, or other tests required to establish a reasonable estimate of the elevation of bearing strata or depth of the foundation system. The geotechnical engineer shall prepare a report indicating an estimate of the properties of underlying soils, location and characteristics of ground water, allowable soil bearing pressure and recommended type of foundation system. Based on the findings of the soil exploration program and the recommendations of the geotechnical engineer, the A/E shall design a suitable foundation system.