

FIU-UniversityCity Prosperity Project – Complete Streets

Hardscape and Landscape Design Criteria

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1. INTRODUCTION

1.1. Landscape Architectural Concept Description

The landscape architectural components of the UniversityCity Prosperity Project will complement and support the key Urban Design & Infrastructure Improvements (Pedestrian Bridge and Pedestrian-Oriented Transit Access/Streetscape/Infrastructure, etc.) to create a cohesive, safe, ADA compliant, inviting, and exceptionally attractive setting for the daily lives of students, area residents and visitors. The project will deliver a unique linear district that links the diverse destinations in or adjacent to the project area, including but not limited to the Green Library, FIU present and future parking and multimodal facilities (e.g., AIMS), and Sweetwater City Hall and adjacent neighborhoods. More than simply a connective corridor, however, this district will invite and support active, dynamic community and campus life, with tree-shaded, pedestrian-friendly ADA accessible streets and paths; ample site furnishings; good lighting; and opportunities for ongoing learning, through such elements as artworks, interpretive and historical information, and resting and gathering spaces conducive to study, informal discussion and outdoor extension of the classroom experience.

In keeping with the overall project commitment to design excellence, innovation and an award-winning level of design quality, the landscape design concept shall incorporate the latest and best practices in the fields of sustainable and accessible site design, water and resource conservation, and urban arboriculture and public horticulture. Because it includes a number of distinct sub-areas - key spaces both within the FIU Modesto Maidique Campus (MMC), and within the City of Sweetwater - the design must respect the unique aesthetic character of each, providing graceful and natural-feeling transitions between them, while marking thresholds appropriately. Yet it must also provide a sense of continuity throughout the emerging UniversityCity district.

Within the FIU MMC

The overall landscape architectural treatment for the FIU - MMC portion of the project must be consistent with the University's Master Plan (<http://facilities.fiu.edu/planning/masterplans.htm>) and all other reference documents and standards identified in the RFP. Among others, key goals include:

- Providing comfortable, shaded, direct circulation routes to improve walkability;
- Incorporating teaching and research opportunities into the campus environment (e.g., stormwater management; botanical resources; sustainable site design);
- Maximizing the positive impact that Art has on the campus environment;
- Incorporating sustainable strategies with measurable performance-based results; and
- Increasing the amount and quality of outdoor spaces as fundamental components of student life and the academic experience.

Within the City of Sweetwater

The project area within the City of Sweetwater, comprising the SW 109th Avenue corridor between SW 8th Street and SW 6th Street, will be transformed into a highly pedestrian-friendly, attractive and welcoming urban neighborhood that accommodates diverse transit and transportation modes and provides inviting outdoor urban spaces for residents and visitors, students and community members. Liveable outdoor spaces complement existing and anticipated, adjacent residential and commercial development, helping to create a vibrant "university district" that is activated night and day. The district also



incorporates and embraces the unique community culture, history and heritage represented in the historic Sweetwater Bridge, Tamiami Canal, and Brothers to the Rescue Memorial Plaza.

2. DESCRIPTION OF INTENDED SPATIAL AND DESIGN CHARACTER OF EACH PROJECT AREA

See also Conceptual Plans. GENERAL NOTE: The Landscape Architecture plans are conceptual and present the vision and minimum requirement of spaces, materials, and minimum quantities. In cases where either the landscape plans or the written requirements are not exact or may conflict, always follow the most stringent requirement and the higher quality in the development of the concepts and in the use of materials.

2.1 FIU Pedestrian Bridge Plaza

Created as a pedestrian gateway into FIU, the Bridge Plaza becomes the welcoming space to students, the community of Sweetwater, and visitors coming to the University Campus via the new Tiger Grant Pedestrian Bridge. Pedestrians, who for the first time cross the bridge (coming from Sweetwater) will have the unique experience of passing over 10 lanes of busy traffic, arriving into this welcoming feature of the University, viewing from the observation deck, and stepping down upon the generous Grand Stair that descends and opens into the plaza space below.

The Plaza is seen as a transitional, circulation space, in and out of the University Campus, which also offers seating for social activity and relaxation. Sun shade is provided by the presence of a Crape Myrtle Bosque, and is a key element to the experience of the Plaza. A central Art Piece, or a series of Art Pieces, is also envisioned as a principal element in the space.

The Grand Stair is not only a functional architectural element in the Plaza, but also takes a sculptural shape through the use of two wall components, distinct in shape, color and material. These wall components are visible from the campus as well as from passing motorists on the street.

Required Design Elements:

- 1) Observation Deck at the arrival from Bridge;
- 2) Grand Stair – Minimum Width of 15 feet clear at Bridge Level; with 22 feet clear opening at the Plaza Level;
- 3) Stair Walls (both sides of Stair) made of Specialty Stone (Keystone or approved equal);
- 4) Concrete Pavers (in Plaza); Square in Shape (12"x12") or approved equal); Color to be selected by Owner; Minimum concrete paver area required: 7,000 Sq. Ft.
- 5) Perimeter Pavement Bands of 18" Wide Typical Grey Concrete with Tooled Scoring;
- 6) Concrete Pavement Walkways with minimum width of 16'; 18" wide Perimeter Bands Edges of Typical Grey Concrete with Tooled Scoring (saw cut will not be acceptable; refer to plans);
- 7) Design Plaza with 20 foot wide Clearance Area for potential future Vehicular Access (crossing the plaza, as illustrated in plan);
- 8) Site Furniture (by Landscape Form or approved equal - refer to Landscape plans and legend): minimum of twelve (12) Benches for Seating; minimum of seven (7) Trash Receptacles with liners;
- 9) Way-Finding Signs (as per FIU standards or approved equal): minimum of four (4) medium size Way-Finding Signs (2 by elevator and stairs at Plaza Level, 1 at Bridge Level, and 1 on south end of Plaza) and one (1) large Way-Finding Sign in center of Plaza;
- 10) Art Features: either one (1) large, central Art Piece, or three to four (3 to 4) medium-size Art Pieces;
- 11) Lighting: 15 foot high Pedestrian Lighting (by Louis Poulsen Lighting or approved equal), quantity and location to meet or exceed FIU standards - refer to specifications and



- engineering drawings; minimum of ten (10) Up-Lights for Stone Walls; Stair Treads to have Well-Lights (by Kim Lighting or approved equal); and a minimum of twenty (20) Landscape Up-Lights (LED by Kim Lighting or approved equal) for Trees and large Palms; minimum of two (2) Up-Lights per Way-Finding Signs (as installed);
- 12) Security Cameras and Emergency Call Station(s) to meet FIU requirements;
 - 13) Wi-Fi connections are to be provided, as per FIU standards and directives;
 - 14) Plaza Landscaping (refer to Landscape plans and legend).

2.2 Campus Pedestrian Access - SW 109th Avenue / PG-4

The 16-foot wide main pedestrian circulation is lined with Live Oak trees. The existing vehicular entrances and exits are to be reconstructed with 16-foot wide “speed tables” to continue the pedestrian walk, and to calm traffic.

A heavily landscaped area, developed to prevent pedestrians from crossing Southwest 109th Avenue, but still allowing visibility, is a key component.

At the corner of Southwest 9th Street is proposed the use of groups of Solitaire palms that allow open views and dialogue with the new landscape across the street at the Academic Health Center #4.

Required Design Elements:

- 1) Way-Finding Signs (as per FIU standards or approved equal): minimum of two (2) Signs, one at Intersection of Southwest 109th Avenue and Southwest 9th Street, and one between the two exits of the Garage;
- 2) Lighting: 15 foot high Pedestrian Lighting (by Louis Poulsen Lighting or approved equal), quantity and location to meet or exceed FIU standards - refer to specifications and engineering drawings; minimum of two (2) Up-Lights per Way-Finding Sign (as installed);
- 3) Speed Tables to be of Typical Grey Concrete Paving with Perimeter Pavement Bands of 18” Wide Typical Grey Concrete with Tooled Scoring.

2.3 Campus Pedestrian Access - SW 10th Street (north side) / PG-4

The existing 10-foot wide main pedestrian circulation will be kept as-is; only damaged areas (of the existing circulation) will be modified / repaired to match existing. A new one thousand seven hundred (1,700) Sq. Ft. Plaza will be created in the Southeast corner of PG-4.

Required Design Elements:

- 1) Concrete Pavers (in Plaza); Square in Shape (12”x12”) or approved equal); Color to be selected by Owner; Minimum concrete paver area required: one thousand seven hundred (1,700) Sq. Ft.
- 2) Perimeter Pavement Bands of 18” Wide Typical Grey Concrete with Tooled Scoring;
- 3) Site Furniture (by Landscape Forms or approved equal - refer to Landscape plans and legend): minimum of five (5) Benches for Seating; minimum of two (2) Trash Receptacles with liners;
- 4) Lighting: 15 foot high Pedestrian Lighting (by Louis Poulsen Lighting or approved equal), quantity and location to meet or exceed FIU standards - refer to specifications and engineering drawings.

2.4 Campus Pedestrian Access - SW 10th Street (south side) / Academic Health Center

The Pedestrian Walkway will be rebuilt from the pedestrian crossing point to the Conservatory Plaza, in order to provide a wider circulation to facilitate flow and improve capacity.

Required Design Elements:

- 1) Pavement is Typical Grey Concrete with Tooled Scoring (to match existing).



2.5 Conservatory Plaza

The Conservatory Plaza is a soft impression of hardscape into existing conditions of palm groves, and a significant Live Oak specimen tree. This plaza is envisioned to be one of the main gathering spaces on the University Campus, not only because of its location, but also due to its existing architectural and landscape elements. The Conservatory's architectural language and form, and its mature palm grove, and large specimen Live Oak (which offers a large sun shade area in the Plaza), states this presence, and this accent to the campus.

The plaza will take the form of a grid that adapts to the existing palm locations, and opens the space beneath the trees. Opportunities of creating an outdoor educational garden (as an entrance to the functions and use of the Conservatory) are present. A proposed small palm grove exhibit that may extend toward the lake will be on display for educational and aesthetic purposes. The Conservatory Plaza will provide seating benches beneath the palms, and seating walls beneath the Live Oak, with moveable chairs and tables to complement and provide flexibility to the use of these spaces. This plaza becomes an introduction to the Conservatory exhibits and educational content.

The new Plaza extends to the entrance of the Wertheim Conservatory Greenhouse, south towards the Lake area, up to the southeast entrance of the neighboring Engineering and Computer Science Building.

Required Design Elements:

- 1) Specialty Keystone Pavers (in Plaza); varying in Shape and Size; Minimum Keystone paver area required: twelve thousand five hundred (12,500) Sq. Ft.
- 2) Plaza Perimeter Pavement Bands of 18" Wide Specialty Keystone; 18" Wide Keystone Bands surrounding planters;
- 3) Concrete Pavement Walkways with minimum width of 16'; 18" wide Perimeter Bands Edges of Typical Grey Concrete with Tooled Scoring (saw cut will not be acceptable; refer to plans);
- 4) Keystone Veneer and Capped Seating Walls; 20" to 22" high; minimum required length of one hundred and twenty six (126) linear feet;
- 5) Variable height Concrete Retaining Walls; minimum required length of one hundred eighty (180) linear feet;
- 6) Design Plaza with twenty (20) foot wide / two hundred thirty (230) foot long Fire Lane and Vehicular Access (crossing the plaza, as illustrated in plan); Plaza Pavement in Fire Lane to be structured for this purpose;
- 7) Site Furniture (by Landscape Forms or approved equal - refer to Landscape plans and legend): minimum of sixteen (16) Benches with back and armrest for Seating; minimum of twelve (12) Trash Receptacles with liners; minimum of five (5) Circular Tables with twenty (20) Chairs; minimum of two (2) bike racks (refer Legend in Landscape Plans).
- 8) Way-Finding Signs (as per FIU standards or approved equal): minimum of four (4) medium size Way-Finding Signs;
- 9) Art Features: three to four (3 to 4) medium-size Art Pieces;
- 10) Lighting: 15 foot high Pedestrian Lighting (by Louis Poulsen Lighting or approved equal), quantity and location to meet or exceed FIU standards - refer to specifications and engineering drawings; minimum of twenty two (22) Landscape Up-Lights (LED by Kim Lighting or approved equal) for large Palms; three (3) Landscape Up-Lights (LED by Kim Lighting or approved equal) for the Existing Live Oak; minimum of two (2) Up-Lights per Way-Finding Signs (as installed);
- 11) Security Cameras and Emergency Call Station(s) to meet FIU requirements;
- 12) Wi-Fi connections are to be provided, as per FIU standards and directives;
- 13) Plaza Landscaping (refer to Landscape plans and legend).



2.6 Conservatory - Lake Pedestrian Link

This portion of the pedestrian experience and movement towards the Green Library Lake is surrounded and enhanced by an existing grove of mature trees. The design provides a 16 foot wide pedestrian walkway that leads the pedestrian movement directly towards the Lake, with an Oval Terminus element that signifies the end of the sequence from the Conservatory Plaza to the Lake. Along the Lake side, a lake edge landscaping in combination with large keystone boulders is to be used to stabilize and enhance the lake edge.

This path also offers an alternative to make a shortcut through an adjacent grove of trees, avoiding the more indirect way leading to the oval. In this case, Root Bridging will be required in order to protect the existing mature trees.

Required Design Elements:

- 1) Concrete Pavers (in Oval Terminus space); Square in Shape (12"x12") or approved equal); Color to be selected by Owner; Minimum concrete paver area required: eight hundred seventy (870) Sq. Ft.;
- 2) Perimeter Pavement Bands surrounding the Oval Terminus of 18" Wide Typical Grey Concrete with Tooled Scoring (saw cut will not be acceptable; refer to plans);
- 3) Concrete Pavement Walkways with minimum width of 16'; 18" wide Perimeter Bands Edges of Typical Grey Concrete with Tooled Scoring (saw cut will not be acceptable; refer to plans);
- 4) Concrete Pavement Pathway, 8 foot wide, with Required Root Bridging to protect existing mature Black Olive trees that are to remain; minimum area of Root Bridging required: seven hundred (700) Sq. Ft.; Supervision of installation of Root Bridging shall be performed by a Certified Arborist;
- 5) Site Furniture (by Landscape Forms or approved equal - refer to Landscape plans and legend): minimum of seven (7) Benches for Seating; minimum of two (2) Trash Receptacles with liners;
- 6) Way-Finding Signs (as per FIU standards or approved equal): minimum of four (4) medium size Way-Finding Signs.

2.7 Lake Overlook Boardwalk

As an accent point and in a key location along the trajectory into the campus and eventually into the Green Library, this area which is mostly circulation with seating included, is proposed to be a boardwalk and bridge, built out of Galvanized Steel, recycled materials, and a light, visually non-imposing railings.

An extruded observation area is proposed to include seating benches located away from the regular circulation and flow of people.

Required Design Elements:

- 1) Structure of Architectural Grade Finished foundations supporting vertical and horizontal Framing; Galvanized Steel Anchors and Connectors; Integrated use of Recycled Materials; ; Minimum board walk area required: one thousand seven hundred (1,700) Sq. Ft.;
- 2) Site Furniture (by Landscape Forms or approved equal - refer to Landscape plans and legend): minimum of three (3) Benches (backless) for Seating; minimum of one (1) Trash Receptacle with liner;
- 3) Lighting: 15 foot high Pedestrian Lighting (by Louis Poulsen Lighting or approved equal), quantity and location to meet or exceed FIU standards - refer to specifications and engineering drawings;
- 4) Security Cameras and Emergency Call Station(s) to meet FIU requirements;
- 5) Wi-Fi connections are to be provided, as per FIU standards and directives;
- 6) Landscaping (refer to Landscape plans and legend).



2.8 Lake - Library Pedestrian Link

The Walkway by the Lake is the final portion of connection needed to access the Green Library. A straight and direct 16' wide Concrete walkway runs between the Owa Ehan Building to the east, and the Lake to the west. The Walkway begins at the west entrance of the Owa Ehan Building with a small plaza space comprised of seven hundred (700) Sq. Ft. of Concrete Pavers.

A continuous and linear retaining and seating wall with niches for specialty seating (or benches) shall be provided along this circulation area. A minimum 16 foot wide cut will be made through the existing concrete wall by the Outdoor Courtyard at the Green Library, at the end of the Walkway. Detail Architectural Finish work for the new retaining walls, as well as the cut ends of Courtyard Walls is required to match existing concrete finish of Courtyard Walls.

Along the Lake side, a lake edge landscaping in combination with large keystone boulders is to be used to stabilize and enhance the lake edge.

A pedestrian access from the Walkway leading to the existing Maintenance Area within the Owa Ehan Building is to be provided.

Required Design Elements:

- 1) Lighting: 15 foot high Pedestrian Lighting (by Louis Poulsen Lighting or approved equal), quantity and location to meet or exceed FIU standards - refer to specifications and engineering drawings;
- 2) Concrete Pavers (in Small Plaza Area, Owa Ehan Building); Square in Shape (12"x12") or approved equal); Color to be selected by Owner; Minimum concrete paver area required: seven hundred (700) Sq. Ft.;
- 3) Perimeter Pavement Bands surrounding the Small Plaza Area of 18" Wide Typical Grey Concrete with Tooled Scoring (saw cut will not be acceptable; refer to plans);
- 4) Concrete Pavement Walkways with minimum width of 16'; 18" wide Perimeter Bands Edges of Typical Grey Concrete with Tooled Scoring (saw cut will not be acceptable; refer to plans);
- 5) Concrete Retaining Walls, Architectural Finish to match existing Green Library Courtyard Walls; minimum required length of three hundred twenty (320) linear feet;
- 6) Site Furniture (by Landscape Forms or approved equal - refer to Landscape plans and legend): minimum of six (6) Benches for Seating; minimum of three (3) Trash Receptacles with liners;
- 7) Way-Finding Signs (as per FIU standards or approved equal): minimum of four (2) medium size Way-Finding Signs;
- 8) Security Cameras and Emergency Call Station(s) to meet FIU requirements;
- 9) Wi-Fi connections are to be provided, as per FIU standards and directives;
- 10) Landscaping (refer to Landscape plans and legend);

2.9 Pedestrian Bridge North Landing Plaza (City of Sweetwater)

At the north terminus of the Pedestrian Bridge, although spatially constrained by the Tamiami Canal and by SW 8th Street, the transition from the Bridge back to grade will be a simple and graceful transition space that reflects the material quality and character of the FIU Plaza (see 2.1, above). This plaza utilizes hardscape materials to match the FIU Plaza: paving, stairs and stair walls all will match the FIU Plaza and Grand Stair materials and design. Although space limitations preclude significant landscaping at this plaza, the experience is softened by the presence of water and views - both long and close-up - to the green banks of the canal right-of-way. Bridge users will have opportunities to enjoy especially long views of the canal while approaching the north elevator or descending the stairs, and enhancements to the rights-of-way of both the canal and SW 7th Terrace should be made with this "user experience" in mind.



Required Design Elements:

- 1) Observation Deck/ elevator queuing at the arrival from Bridge;
- 2) Stair – Minimum Width of 10.5 feet clear;
- 3) Stair Walls (both sides of Stair) made of Specialty Stone (Keystone or approved equal);
- 4) Concrete Pavers (in Plaza); Square in Shape (12”x12”) or approved equal); Color to be selected by Owner; Minimum concrete paver area required: 900 Sq. Ft.
- 5) Perimeter Pavement Bands of 18” Wide Typical Grey Concrete with Tooled Scoring;
- 6) Concrete Pavement Walkways with minimum width of 14’, crossing the canal (connecting the plaza to SW 7th Terrace); 18” wide Perimeter Bands Edges of Typical Grey Concrete with Tooled Scoring (saw cut will not be acceptable; refer to plans);
- 7) Site Furniture (by Landscape Forms or approved equal - refer to Landscape plans and legend): minimum of one (1) Bench for Seating; minimum of one (1) Trash Receptacle with liner;
- 8) Way-Finding Signs (as per City of Sweetwater standards or approved equal): minimum of four (4) medium size Way-Finding Signs (2 by elevator and stairs at Plaza Level, 1 at Bridge Level, and 1 at east end of Plaza);
- 9) Lighting: 15 foot high Pedestrian Lighting (by Louis Poulsen Lighting or approved equal), quantity and location to meet or exceed City of Sweetwater standards - refer to specifications and engineering drawings; minimum of ten (10) Up-Lights for Stair Walls; Stair Treads to have Well-Lights (by Kim Lighting or approved equal); minimum of two (2) Up-Lights per Way-Finding Signs (as installed);
- 10) Security Cameras and Emergency Call Station(s) to meet City of Sweetwater requirements;

2.10 Memorial Plaza

Brothers to the Rescue Memorial Plaza is a concurrent project by others (not in contract). Refer to engineering drawings for limits of work. Coordination is required throughout the design and construction of the SW 109th Avenue Right-of-Way improvements to ensure that all junctures of paving, hardscape elements and planting are seamless and graceful, and not obvious except where by design intent. In addition, the thematic and interpretive storylines of the Memorial Plaza and adjacent historic Sweetwater Bridge shall be incorporated into art and/or historical elements in selected locations of the adjacent block of SW 109th Avenue (2.11, below). Final definition of these specialty art / historical elements, in terms of locations, numbers, size, materials, design and content, shall be as approved by the City of Sweetwater.

2.11 SW 109th Avenue

SW 109th Avenue shall be developed as a vibrant, beautiful urban street - the heart of the Sweetwater portion of the UniversityCity district. Critical elements for success include:

- Generous provision of tree canopy for shade, human comfort, visual appeal and mitigation of the urban environment (pollution, glare, storm runoff, heat island effect, etc.). Sustainable, successful tree canopy establishment will depend in turn on adequate quality and volume of rot zone soil. This is a critical requirement;
- Generous provision of attractive pedestrian and gathering spaces, with adequate room for both circulation and social interaction;
- Generous provision of site furnishings for seating, bicycle management, trash/recycling, etc.;
- Adequate lighting;
- Convenient access to transit stops; and
- Public realm design that engages surrounding properties, creating synergies between indoor and outdoor, and public and private, spaces.



2.12 SW 109th Avenue - south block (SW 7th Terrace to SW 7th Street)

Each block of SW 109th Avenue reflects unique conditions of existing site conditions and constraints, ranging from land uses and associated building footprints to parking requirements, overhead power lines and underground utilities; therefore each block is treated individually.

The south block contains an unusual condition of varying roadway width, resulting in a tapering of the available space for pedestrian zone development on the east side of the street, moving from north to south. A prototypical pattern of a 14' wide concrete walkway buffered from the street by a 4' continuous planting zone, with medium-sized shade trees in planter notches spaced 25' on center, occurs on the north half of this block (east side) and the south half of the block (west side). The walkway width may be reduced at these planter notches to no less than 10' wide. This should occur for no more than 8 feet along the direction of travel, however a minimum length of 6 feet is required to accommodate the long term growth of the trees (ultimate root flare dimension). Site furniture and, as appropriate and approved by the City of Sweetwater, custom art / historical elements should be placed in the wider (14' w) portions of the walkways.

Medium trees are envisioned for the majority of the SW 109th Avenue corridor because of proximity to existing overhead and underground utilities, and based on the ability to provide adequate soil volume (see also 4.0 Landscape Criteria, below).

In order to ensure adequate soil volume for even a medium sized canopy tree without excessively compromising space needed for the pedestrian environment, a structural solution that provides additional high quality, lightly compacted planting soil beneath selected pavement areas must be utilized. (Example: Silva Cells by Deeprout, Inc. San Francisco, CA <http://www.deeprout.com/products/silva-cell/overview>). (See also 4.0 Landscape Criteria, below.)

The typical pattern of 14' walkway / 4' planted buffer is not utilized on the southern half of the block (east side) due to the taper of the roadway. There, medium palms in 5' square planting pits with tree grates provide shade and softening, while maintaining as generous a pedestrian zone as possible. (Refer to Landscape plans.)

The typical pattern is also varied on the northernmost portion of the block (west side) due to the proximity of underground utilities. There, a 15' wide pedestrian plaza is buffered from the street by a 3' wide planted zone; the trees are set 5 in from the edge of the plaza (to center) in 5' square grates.

In small planting zones in close proximity to overhead or underground utilities, tightly clustered groupings or bosques of slender palms (Solitaire Palm) will be utilized, providing a note of material consistency with portions of the FIU-MMC at the southern terminus of 109th Ave.

Certain portions of the pedestrian zone are to be constructed at a raised elevation approximately 9 to 12 inches above existing typical sidewalk grades (refer to Landscape Plans and Sections). This provides for potentially stronger engagement with abutting properties, and helps define certain portions of the streetscape as especially conducive to social gatherings.

Required Design Elements:

- 1) Concrete Pavement Walkways with typical width of 14', narrowing only where absolutely necessary to accommodate trees or to coordinate with other site conditions (10' minimum walkway width for limited duration); 18" wide Perimeter Bands Edges of Typical Grey Concrete; all with Tooled Scoring (saw cut will not be acceptable) - Refer to Landscape plans;
- 2) Site Furniture (by Landscape Forms or approved equal - refer to Landscape plans and legend): minimum of ten (10) Benches for Seating; minimum of five (5) Trash Receptacles with liners; minimum of six (6) bicycle racks;
- 3) Way-Finding Signs (as per City of Sweetwater standards or approved equal): minimum of four (4) medium size Way-Finding Signs (2 each side of street);
- 4) Lighting: 15 foot high Pedestrian Lighting (Luminaire or approved equal), quantity and location to meet or exceed City of Sweetwater standards - refer to specifications and engineering drawings; minimum of two (2) Up-Lights per Way-Finding Signs (as installed);



- 5) Art / historical markers or related thematic elements: minimum of six (6), to be coordinated with and approved by the City of Sweetwater;
- 6) Landscaping (refer to Landscape plans and legend);
- 7) Precast concrete tree grates by Dura Art Stone or approved equal, 5' square (refer to Landscape plans and legend);
- 8) Security Cameras and Emergency Call Station(s) to meet City of Sweetwater requirements;
- 9) Silva Cell Structures (or approved equal) in all planting soil areas under pavement (refer to landscape plans and legends); minimum required area and height of structure: eight hundred twenty five (825) square feet x 32" height.

2.13 SW 109th Avenue - north blocks (SW 7th Street to SW 6th Street)

The northern portion of the project primarily includes reconstruction of the 109th Avenue Right-of-Way from SW 7th to SW 6th Streets; limited hardscape enhancements are envisioned north of SW 6th Street (refer to engineering plans).

The typical pattern of 14' wide concrete walkway with 4' planted buffer and trees in planter notches 25' on center is continued for most of the block (east side), however a widened pedestrian-paved zone provides convenient access to a transit stop near the south end of the block (refer to Landscape plans). The north half of the block constitutes a raised "plaza" area.

The west side of this block includes a unique requirement for on-street parking to meet the needs of established existing businesses. Walkway widths vary significantly. Also due to underground utilities, tree placement varies and utilizes an alternative strategy for root space: 5' square planter pits (with tree grates to maximize walkable area) are connected by Silva Cells. Approaching each sidewalk ramp, as well, spaces where utilities and other conditions preclude the planting of trees are enhanced with tight bosques of slender Solitaire palms (refer to Landscape plans).

The west side of this block also includes a generously widened, well-furnished pedestrian space associated with a transit stop.

Required Design Elements:

- 1) Concrete Pavement Walkways with typical width of 14', narrowing only where absolutely necessary to accommodate trees or to coordinate with other site conditions (10' minimum walkway width for limited duration); 18" wide Perimeter Bands Edges of Typical Grey Concrete; all with Tooled Scoring (saw cut will not be acceptable) - Refer to Landscape plans;
- 2) Site Furniture (by Landscape Forms or approved equal - refer to Landscape plans and legend): minimum of six (6) Benches for Seating; minimum of six (6) Trash Receptacles with liners; minimum of six (6) bicycle racks; minimum of six (6) moveable cafe tables and fifteen (15) moveable chairs to match the table selection.
- 3) Way-Finding Signs (as per City of Sweetwater standards or approved equal): minimum of four (4) medium size Way-Finding Signs (2 each side of street);
- 4) Lighting: 15 foot high Pedestrian Lighting (by Luminaire Lighting or approved equal), quantity and location to meet or exceed City of Sweetwater standards - refer to specifications and engineering drawings; minimum of two (2) Up-Lights per Way-Finding Signs (as installed);
- 5) Art / historical markers or related thematic elements: minimum of six (6), to be coordinated with and approved by the City of Sweetwater;
- 6) Landscaping (refer to Landscape plans and legend);
- 7) Precast concrete tree grates by Dura Art Stone or approved equal, 5' square (refer to Landscape plans and legend);
- 8) Security Cameras and Emergency Call Station(s) to meet City of Sweetwater requirements;



- 9) Silva Cell Structures (or approved equal) in all planting soil areas under pavement (refer to landscape plans and legends); minimum required area and height of structure: one thousand four hundred twenty five (1,425) square feet x 32" height.

3. ADDITIONAL HARDSCAPE DESIGN CRITERIA

3.1. Standards for Design & Construction

All design and construction of site hardscape features including, but not limited to, pavements, walkway structures, vertical site elements (walls, fences, etc.), site furnishings, lighting and signage, shall comply with all applicable standards of the FHWA, FDOT, other state and federal agencies, Miami-Dade County, FIU (for all work on the FIU Campus and as otherwise identified in the RFP), City of Sweetwater (for all work within the City of Sweetwater), as well as other standards and references identified elsewhere in the RFP and Design Criteria.

All pedestrian facilities shall comply with 2006 Standards for Transportation Facilities and 2010 Standards for Accessible Design are minimum standards for pedestrian facilities

In case of conflicting requirements, the more stringent standard shall be followed.

3.2. Construction Impact Mitigation - Tree Preservation

Improvements within "critical root zones" of existing trees to remain and areas of potential impact, as identified by the Arborist, shall be designed and constructed in accordance with the Arborist's recommendations, so as to maximize the chances for successful retention of trees designated to remain. Construction progress shall be monitored by the Arborist and minor adjustments to grading or layouts shall be made if deemed necessary to reduce construction impacts to acceptable levels as determined by the Arborist.

3.3. Minimum Installation Requirements for Site Furnishings

All site furnishings including, but not limited to, benches, trash and recycling receptacles, bicycle racks, lighting, signage and any other manufactured items, shall be installed in strict accordance with the manufacturer's standards and recommendations, including any supplemental engineering calculations or design as called for in manufacturer's standard details, specifications or recommendations.

4. ADDITIONAL LANDSCAPE DESIGN CRITERIA

In keeping with the University's Master Plan (<http://facilities.fiu.edu/planning/masterplans.htm>, Element 16, Obj. 1.7 and elsewhere) and Design Standards, plantings shall be aesthetically excellent compositions of species and varieties well suited to the site and conditions, including primarily native south Florida selections, along with carefully selected well-adapted introduced species. Species considered invasive, short-lived, prone to pests and diseases and requiring excessive additional care to maintain an attractive appearance, or weak-wooded and highly prone to wind damage, shall not be used. Species listed as Category I Invasives on the Florida Exotic Pest Plant Council's (FLEPPC) "Invasive Species List" shall not be used and shall be removed whenever found within project limits.

Planting configurations shall be thoughtfully devised to satisfy functional requirements such as shade, screening, separation of pedestrian and vehicular circulation, and other functions. Planting design shall also strive to address the other underlying goals and objectives of the University Master Plan, including



providing teaching and research opportunities, enhancing the role of art, and incorporating sustainability strategies.

4.1. Standards for Design & Construction

All design and construction of landscape and irrigation improvements shall comply with all applicable standards of the FHWA, FDOT, other state and federal agencies, Miami-Dade County, FIU (for all work on the FIU Campus and as otherwise identified in the RFP), City of Sweetwater (for all work within the City of Sweetwater), as well as other standards and references identified elsewhere in the RFP and Design Criteria. Most importantly, all pedestrian facilities will be designed and constructed in compliance with ADA standards.

In case of conflicting requirements, the more stringent standard shall be followed.

4.2. Existing Trees

All existing trees within or adjacent to the Limits of Work shall be evaluated by the Arborist. Written recommendations as to the retention, relocation or removal of each tree, with justification, shall be provided for Owner approval. Criteria justifying removal shall include:

- Category 1 Invasive species as listed by the FLEPPC
- Trees that are dead, dying, deemed a hazard, in current or anticipated conflict with existing overhead utilities or other structures, and/or badly disfigured by disease, injury or past poor trimming and management practices
- Especially weak-wooded species prone to wind damage and thus likely to present a future hazard

Trees that do not meet the above criteria, that are deemed to conflict with proposed construction, may:

- Be re-located elsewhere on site, if deemed by the Arborist to be likely to survive and thrive after re-location;
- Be replaced in kind on a trunk-inch-for-trunk-inch basis (e.g., six 4"-caliper new trees to replace one 24"-caliper existing tree), if so approved by the Owner; or
- Require adjustment to the layout or grading of proposed improvements so as to reduce construction impacts to acceptable levels as determined by the Arborist.

Re-location of existing trees shall be done in strict accordance with written specifications to be provided by the Arborist and approved by the Owner. All re-located trees shall be supplied with temporary irrigation throughout the entire contract period, including a mist system for the canopies of specimen trees; these watering systems shall be able to be left in place, fully operational, at the end of construction, for continued use by the Owner, at Owner's option. Re-located trees shall be warranted as required in the RFP, in the reference standards, or for a minimum of eighteen (18) months, whichever is greater. Trees that die or exhibit failure to establish, as determined by the Arborist, within the warranty period shall be replaced in kind on a trunk-inch-for-trunk-inch basis, as directed by the Owner.

Preservation and protection of existing trees to remain shall be implemented strictly in accordance with written specifications to be provided by the Arborist and approved by the Owner. Compliance with the Tree Preservation specification shall be monitored daily throughout construction. Existing trees that are damaged or that die due to failure of construction personnel to fully comply with all requirements of the Tree Preservation specifications shall be replaced in kind, as acceptable to the Owner, at the Design-Build Firm's sole cost.

4.3. Planting Soil Requirements for Proposed Trees



All proposed trees shall be planted in conditions that provide adequate *volume* (cubic feet) of high quality, lightly compacted planting soil. Planting soils shall meet or exceed requirements and recommendations of the University of Florida / IFAS for landscape installation as well as all applicable reference standards. Agronomic soil tests shall be provided for Owner approval verifying soil composition, pH, percent organic material, macro- and micro-nutrients, and salts or other deleterious materials prior to importation or placement. *Lightly compacted* soil means a standard compaction of 85%. **Minimum soil volume requirements** (Cubic Feet) shall be as follows, based on mature tree size (refer to Landscape Plans):

Small Trees	500 CF
Medium Trees	800 CF
Large Trees	1,100 CF

This shall be achieved through the provision of contiguous landscape areas (unpaved) surrounding each tree; where necessary due to spatial limitations (e.g., within streetscape settings) additional structural measures that provide space for additional planting soil beneath selected pavement areas must be utilized. (Example: Silva Cells by Deeproot, Inc. San Francisco, CA <http://www.deeproot.com/products/silva-cell/overview>). Other innovative solutions to provide adequate volume of lightly compacted planting soil may include other types of soil vaults, root paths or covered trenches. Minimum depth of landscape planting soils shall be 32" or as needed to accommodate the depth of root ball of trees to be installed, whichever is greater.

4.4. Plant Grade and Quality Requirements

a. Compliance: Plant material shall comply with required inspections, grading and quality standards and plant regulations as set forth in the latest edition of the Florida Department of Agriculture's "Grades and Standards for Nursery Plants, Part 1 and Part 2". Specifications that supersede the aforementioned document may be called out on the Plans or in the Specifications. Turf grass shall be subjected to the standards established by the Turf Grass Producers Association of Florida, Inc. All plants not listed in the Grades and Standards for Nursery Plants, shall conform to a Florida No. 1 as to:

- i. Health and vitality;
- ii. Condition of foliage;
- iii. Root system;
- iv. Trunk structure;
- v. Branch arrangement;
- vi. Freedom from pest or mechanical damage; and,
- vii. Heavily branched and densely foliated according to the accepted normal shape of the species based on the Florida Nursery Grades and Standards tree matrix index.

b. Exception to "Grades and Standards": Any section of Florida Department of Agriculture's "Grades and Standards" which allows nails or spikes in the trunks of trees or palms shall be **excluded** from these Specifications. Nails and spikes must not be used in trunks, branches, or any other parts of the plant materials.

4.5. Landscape Installation and Maintenance Requirements

All landscape installation and procedures, including landscape watering and maintenance, shall be performed in compliance with the American National Standards Institute (ANSI) (most recent editions):



- a. ANSI A300 (Part 1): Pruning.
- b. ANSI A300 (Part 2): Fertilization.
- c. ANSI A300 (Part 3): Support Systems – Cabling, Bracing, and Guying Established Trees.
- d. ANSI A300 (Part 5): Management of Trees and Shrubs during Site Planning, Site Development and Construction.
- e. ANSI Z133.1-2000: Pruning, Trimming, Repairing, Maintaining, Removing Trees, and Cutting Brush – Safety Requirements.
- f. ANSI Z133.1-2000: Pruning, Trimming, Repairing, Maintaining, Removing Trees, and Cutting Brush – Safety Requirement.
- g. ANSI 260.1: American Standard for Nursery Stock (Guidelines for pruning / training and root-pruning in the nursery).
ANSI A300 (Part 1): Pruning.
- h. ANSI A300 (Part 2): Fertilization.
- i. ANSI A300 (Part 3): Support Systems – Cabling, Bracing, and Guying Established Trees.
- j. ANSI A300 (Part 5): Management of Trees and Shrubs during Site Planning, Site Development and Construction.
- k. ANSI Z133.1-2000: Pruning, Trimming, Repairing, Maintaining, Removing Trees, and Cutting Brush – Safety Requirements.
- l. ANSI Z133.1-2000: Pruning, Trimming, Repairing, Maintaining, Removing Trees, and Cutting Brush – Safety Requirement.
- m. ANSI 260.1: American Standard for Nursery Stock (Guidelines for pruning / training and root-pruning in the nursery).
ANSI A300 (Part 1): Pruning.
- n. ANSI A300 (Part 2): Fertilization.
- o. ANSI A300 (Part 3): Support Systems – Cabling, Bracing, and Guying Established Trees.
- p. ANSI A300 (Part 5): Management of Trees and Shrubs during Site Planning, Site Development and Construction.
- q. ANSI Z133.1-2000: Pruning, Trimming, Repairing, Maintaining, Removing Trees, and Cutting Brush – Safety Requirements.
- r. ANSI Z133.1-2000: Pruning, Trimming, Repairing, Maintaining, Removing Trees, and Cutting Brush – Safety Requirement.



- s. ANSI 260.1: American Standard for Nursery Stock (Guidelines for pruning / training and root-pruning in the nursery).

4.6. Irrigation

All landscape areas of the project located in FIU are to be irrigated by an automatic system to meet or exceed FIU's irrigation standards and requirements.

All landscape areas of the project located in the City of Sweetwater are to be irrigated by an automatic system to meet or exceed the City of Sweetwater's irrigation standards and requirements.

4.7. CEPTED

The landscape and hardscape design in both FIU and the City of Sweetwater shall follow the Crime Prevention Through Environmental Design (CEPTED) principles.