

COLLIER COUNTY LANDSCAPE AND IRRIGATION SPECIFICATIONS  
FOR  
BEAUTIFICATION IMPROVEMENTS WITHIN THE PUBLIC RIGHT-OF-WAY  
COLLIER COUNTY, FLORIDA

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## **PURPOSE**

Proposed landscape improvements within public road right-of-way for privately funded and County programs will require permitting and approval. In order to promote the health, safety and welfare to the public and to enhance the natural beauty of Collier County, landscape improvements are allowed within the right of way. Improvements are to include decorative street, pedestrian and accent lighting, decorative paving, right-of-way plantings, median plantings, street/site furniture, pedestrian rest areas, irrigation systems, and other related facilities.

These improvement standards are intended to provide general criteria in preparing landscape plans for public road right-of-way within the unincorporated areas of Collier County and those areas which are located within municipal boundaries, but are maintained by Collier County. The standards contained in this document are intended to be minimum on which to base design plans.

## **GOALS AND OBJECTIVES**

Collier County desires to encourage and promote:

- Safe, innovative, aesthetic and cost-conscious approaches to design, installation and maintenance of right-of-way landscape improvements;
- Water conservation by utilizing Xeriscape, “Florida Friendly” principles and practices;
- Improved air and water quality;
- Reduction of air, noise, heat, water and glare pollution;
- Energy conservation by creating shade to reduce heat on the roadway;
- Direct economic, aesthetic and psychological benefits to the public, while reforesting the roadway corridors.

Through these goals and objectives Collier County citizens, visitors and property owners adjacent to landscape right-of-way improvements will enjoy an enhanced environment and quality of life.

## **TERMS AND DEFINITIONS**

Abbreviations, Definitions, and Terms of Articles shall be in accordance with 1.08.02 DEFINITIONS, in the Collier County Land Development Code (CCLDC), as it may be amended from time to time. In addition to the Abbreviations, Definitions, and Terms of Articles noted above, the following specific definitions shall apply to the provisions of this Ordinance:

### 1. ABBREVIATIONS:

- |          |   |
|----------|---|
| a. LDC   | Collier County Land Development Code      |
| b. FDOT  | Florida Department of Transportation      |
| c. CCSMP | Collier County Streetscape Master Plan    |
| d. SFWMD | South Florida Water Management District   |
| e. ANSI  | American National Standards Institute     |
| f. ROW   | Right-of-Way                              |
| g. MUTCD | Manual of Uniform Traffic Control Devices |
| h. ADA   | Americans with Disabilities Act of 1990   |

## 2. DEFINITIONS:

Median means the area between travel and auxiliary lanes of a divided highway. A median is used to separate opposing traffic flow and control access and turning movements. A median can also provide a pedestrian crossing refuge and streetscape enhancement.

Recovery Area/Zone is an area of horizontal clearance that extends from the edge of the travel and auxiliary lanes outward that is available for corrective action by stray vehicles.

Right-of-Way is the land dedicated, deeded, used or to be used for a street, alley, walkway, boulevard, drainage facility, access for ingress and egress, or other purpose by the public, certain designated individuals or governing bodies.

Roadway is the portion of the right-of-way that includes the paved road and its shoulders.

Roadside is the portion of the right-of-way adjacent to the roadway shoulders and extending to right-of-way line.

Streetscape means the appearance or view of a street to include all items within the public road right-of-way and adjacent properties. Includes the elements within and along the street right-of-way that define its appearance, identity, and functionality, including adjacent buildings and land uses, street furniture, landscaping, trees, sidewalks, and pavement treatments, among others.

Xeriscape (TM) is a landscape method identified in Florida Statutes, Chapter 335.167, State Highway Construction and Maintenance; Xeriscape landscaping within right-of-way with water conserving, drought tolerant landscaping. The seven principles of Xeriscape are appropriate planning and design, use of soil amendments, efficient irrigation, practical turf areas, use of drought tolerant plants, use of mulches, and appropriate maintenance.

### **I. PLANNING AND DEVELOPMENT**

Entities desiring to make landscape improvements within public road right-of-way shall submit plans and documentation consistent with the requirements for a public right-of-way permit. This submission shall be in accordance with the "Construction Standards Handbook for Work within the Public Right-of-Way, Collier County, Florida" (the "Construction Handbook").

The landscape plan shall be prepared by and bear the seal of a Landscape Architect who is registered in the State of Florida and has insurances in accordance with Collier County Design Professionals insurance requirements.

#### Permitting

Landscaping Permit within the public right-of-way:

Improvements to unimproved medians in the right of way: A private owner, Developer or civic or homeowners' association desiring to landscape within a public right-of-way shall submit landscape and irrigation construction documents prepared by a licensed landscape architect for County review. The Permit application shall include three (3) sets of detailed plans indicating the existing right-of-way facilities and the type and location of the proposed plantings, location of electrical and irrigation systems(s). After acceptance of the landscape and irrigation plans, a landscape agreement shall be prepared by the contracting parties and approved by the County Attorney's Office. (See Appendix for example.) The purpose of the landscape agreement is to ensure that the permittee, or his successors or assigns, shall be responsible to maintain such material and irrigation system until removed or unless otherwise specified.

For permittees requesting additional landscaping, the requirements are the same as an applicant to unimproved medians in the right of way. (See previous paragraph for permit application requirements).

For permittees requesting the removal of landscaping, the removal may be due to turnlane construction, deceleration lanes, sidewalk construction, or any other type of construction where the removal of County landscape plant and irrigation is required to complete the project. The reimbursement for removed plant material and restoration of the median to the current level of landscaping, Type B or Type B-C1 is mandatory. Landscape and Irrigation Plans are to be prepared by a Florida registered landscape architect. The permittee shall submit landscape and irrigation construction documents prepared by a licensed landscape architect for County review. The Permit application shall include three (3) sets of detailed plans indicating the existing right-of-way facilities and the type and location of the proposed plantings, location of electrical and irrigation systems(s). If it is determined by the landscape architect that the plant material cannot be relocated or in the case where it cannot be replace, payment shall be accepted for the existing material. The redesign, replacement and restoration of the landscaping are required based on the Landscape Beautification Master Plan.

1. Related Documents: (All related documents refer to latest active editions).
  - a. Collier County Land Development Code
  - b. Collier County Landscape Beautification Master Plan
  - c. Collier County Roadway Elements Task Force  
"Typical Roadway Sections"
  - d. F.D.O.T. "Roadway and Traffic Design Standards" Indexes
  - e. U.S. Department of Transportation Federal Highway Administration  
"Manual on Uniform Traffic Control Devices' (MUTCD), Part VI
  - f. South Florida Water Management District "Xeriscape Plant Guide II"
  - g. South Florida Water Management District Water Use Restrictions
  - h. F.D.O.T. "Florida Highway Landscape Guide"
  - i. Florida Irrigation Society "Standards and Specifications for Turf and Landscape Irrigation Systems" third edition, 1996
  - j. Florida Department of Agriculture and Consumer Services  
"Grades and Standards for Nursery Plants"
  - k. Florida Power & Light "Right Tree Right Place" Publication
  - l. F.D.O.T. Manual of Uniform Minimum Standards for Design, Construction and Maintenance
  - m. "Americans with Disabilities Act of 1990"
  - n. F.D.O.T. "Utilities Accommodation Manual"

- o. F.D.O.T. “Plans Preparation Manual”, Volume I & II
- p. ANSI A300 “Standard Practices for Trees, Shrubs and Other Woody Plant Maintenance
- q. FDOT “Standards Specifications for Road & Bridge Construction”

2. Public Involvement

Entities planning to request landscaping within the public right-of-way are encouraged to solicit public participation before and during the planning and development phase of the project and can obtain information from local Municipal Service Taxing Units (MSTU) organizations and the County web page, [www.colliergov.net](http://www.colliergov.net).

3. County Roadway Planning and Typical Roadway Sections

Base level landscaping is to be incorporated in all roadway projects. A base level of landscaping includes a minimum of 8” of landscape soil, irrigation sleeving, and type F curbing. Other types of curbing may be used in accordance with the Collier County Landscape Beautification Master Plan. In areas of future landscaping, brick pavers may be incorporated instead of concrete median separators (see Appendix).

4. Current Landscape Policy: Landscape Beautification Master Plan (BCC Approved 4/22/2003)

On April 23, 2003, the Collier County Board of Commissioners unanimously approved the “Collier County Landscape Beautification Master Plan” and determined a level ‘B-C1’ landscaping for future roadway beautification projects of arterial and collector roadways. When roadways are designed, the “base level” of landscaping is designed in the roadway plans. The base level includes electrical sleeving, irrigation sleeving, planting soil and brick pavers.

The timeline for the “Collier County Landscape Beautification Master Plan”, as presented, is based on Transportation Engineering and Construction Management’s Five Year Road Construction Work Plan. The purpose of this action is to provide a level of landscaping along improved roadways and to maintain a signature streetscape appearance based on established levels of landscaping within the community.

- a) A base level of landscaping is the ground preparation for future planting. The sequencing of road expansion and landscape base preparation prevents any duplication of base construction costs. A base level of landscaping includes: electrical and irrigation sleeving, clean median backfill with a minimum of eight (8”) inches of landscape soil, non-mountable curbing (FDOT Type F). Base level landscaping is to be incorporated in all roadway projects. Within the engineering project team, staff landscape architects will ensure that these elements are included.
- b) “Type A” landscaping builds upon the base preparation of landscaping to include a mainline pop-up irrigation system for planting beds at the median ends and separate bubblers for trees. There is a planting of

canopy trees and/or palms (grouped or single) spaced 50-100 feet apart.

- c) “Type B” landscaping Shrubs, flowering trees and planting beds are planted the entire length of the median. “Type B” landscaping requires 100% irrigation of the median to support the growth of St. Augustine grass and other plantings.
- d) “Type C” landscaping has all of the elements of a Type B median with additional side of the right-of-way trees or palms. There are two levels of side road plantings, a street tree planting or Type C1 and a buffer planting Type C2.
- e) “Type C1” landscaping has side of the road canopy trees and/or palms (grouped or singles) 50-100 feet apart irrigated through bubbler irrigation system. The side of the roadway remains planted with Bahia sod.
- f) “Type C2” landscaping has side of the right-of-way canopy trees and/or palms (grouped or singles) 50-100 feet apart irrigated through a bubbler irrigation system for trees. In addition, shrubs, flowering trees, planting beds and St. Augustine may be planted. The beds and grass would require a 100% pop-up irrigation system.
- g) Wet Retention Ponds: “Type A” Retention Pond includes palms and native trees and shrubs, littoral zone planting, Bahia grass and planting beds.
- h) Wet Retention Ponds: “Type B” Retention Pond includes palms and native trees and shrubs, littoral zone planting, Bahia grass, planting beds and lighted aeration fountains. In addition, there would be an opportunity for additional site amenities and improvements such as benches and paths.

## 5. Budget and Funding

Budget establishment and funding for the Collier County Landscape Beautification Master Plan projects is coordinated through the Collier County Transportation Division, Alternative Transportation Modes Department. If funded by another funding source, past information of existing beautification project budgets, development costs and maintenance costs are available upon request for informational purposes.

## 6. Gateway Roadways/Areas

Collier County has selected certain roadway corridors and interstate interchanges as Gateway areas, which are designated for enhanced streetscape improvements. Community Gateways will serve as main entry points and corridors to Collier County’s improvement Streetscape roadway system. Community Gateway intersections will extend the same one mile limits as the LDC major intersections. Community Gateway corridors will encompass multiple

mile portions or entire roadway corridors based upon the designated beginning and end.

Seven Community Gateways are identified and defined in the Naplescape 90's Streetscape Master Plan (Appendix: Figure E1):

1. Marco Island East Trail Gateway
2. I-75/CR 951 Gateway
3. I-75/Pine Ridge Gateway
4. I-75/Golden Gate Parkway Gateway
5. North Trail Gateway
6. I-75/Immokalee Road Gateway
7. Livingston Road Gateway

Community Gateway streetscape improvements should be developed around a uniform theme incorporated into the landscaping, hardscape elements and site furnishings throughout the Gateway areas. The minimum streetscape improvements shall comply with the Collier County Landscape Beautification Master Plan roadway median Type 'B' and side of the roadway, Type 'C1'. Reference: Collier County Streetscape Master Plan Gateway Zones Schedule (see Appendix).

7. Utilities

All underground and overhead utilities within the project area must be considered and shown on the plans. Agencies having utilities within the project area should be contacted and made part of the planning and construction process.

8. Concept Plan Development

Creation of a streetscape concept plan must occur during the planning and development phase of a project and submitted for review during the 30, 60, 90, 100 percent plan reviews. In a preliminary format, the submittal shall minimally contain the following elements:

1. A written summary of the proposed method of funding for construction and annual maintenance.
2. Locations of limit of clear sight or clear areas for sight distance per F.D.O.T. Indexes.
3. General description of the proposed irrigation system, water sources, and electrical.
4. Preliminary list of proposed plant species to be used.
5. General location of proposed landscape/streetscape improvements.

## **II. DESIGN AND PERMITTING**

1. General Design Criteria and Standards

Streetscape construction plans shall be drawn at an appropriate scale of one-inch (1") equals twenty-feet (20'-0") or larger scale, road plans may be at 1"=40'.

The plans are to include dimensions, north arrow, date and title to clearly show the plans' intent for construction purposes. The construction set shall include a legend indicating graphic plant symbols, botanical and common name, quantity, native status, drought tolerance rating, plant height, spread, and spacing at maturity. The limits of clear sight lines, existing median utilities, street signage, existing trees, and encroachments shall be shown on the plans.

The irrigation plans shall be drawn at one-inch (1") equals twenty-feet (20'-0") or larger scale indicating the location of all piping, sleeves, valves, controller, back flow preventer, rain/freeze shut-off switch, sprinkler heads and point of electrical service. Pipe sizes, strengths, sprinkler head nozzles indicating radius and pattern, specifications, water use data and other pertinent information are required to be shown.

When a project is completed, the As-Built Drawings, (or Record Drawings), shall be submitted in reproducible and electronic format on a compact disk (CD) in a current AutoCAD format, showing all landscaping improvements and the location and depths of installed pipe and sleeving to the Collier County Transportation Division, Alternative Transportation Modes Department. Streetscape improvements along the roadside areas shall not impede motorist, pedestrian or cyclist visibility at sight triangle locations at roadway intersections or access ways.

a. Sight Distance at Intersections and Median Openings

Streetscape plans for major arterial or collector roadways limit-of-clear-sight-lines and areas free of sight obstructions shall comply with all the FDOT criteria and standards: Reference FDOT "Roadway and Traffic Design Standards" Standard Index 546 sheets 1 & 2, latest edition (see Appendix).

b. Horizontal Clear Zone

Streetscape plan horizontal clear zones shall comply with all the FDOT criteria and standards. Reference FDOT "Plans Preparation Manual," Volume I, latest edition (see Appendix).

c. Sight Distance Triangles

Sight distance triangles shall be as set forth in the Collier County Land Development Code 4.06.01,D.1, Landscaping, Buffering, and Vegetation Retention (see Appendix).

d. Pedestrian and Cyclist Facilities

Pedestrian sidewalks and bike pathways shall be designed to comply with the "Americans with Disabilities Act of 1990" (ADA).

Streetscape improvement projects involving pedestrian pathways are encouraged to use decorative paving at major intersections or other key locations to enhance the streetscape. Decorative sidewalk treatments should not interfere with ADA compliance.

e. Utilities

All underground and aboveground existing and proposed utilities within the streetscape improvement areas shall be shown on the plans.



All utility agencies with utilities in the streetscape improvement areas shall be notified of the proposed improvements and provided copies for review and comments. The agency's name, address, phone number and name of a contact person shall be shown on the cover of the plans.

All plans shall have the following notification:

“Investigate Before You Excavate”  
Call Sunshine State One  
1-800-432-4770 Toll Free  
Fl. Statue 553.851 (1979) Requires  
Min. 2 days and Max. of 5 days  
Notice before you excavate.

- f. Lighting  
Streetscape improvement landscaping should be coordinated with roadway lighting, pedestrian and accent lighting to assure minimum interference with the lighting distribution. Refer to FDOT “Florida Highway Landscape Guide” Section 4, for additional information and/or considerations.
  
- g. Detention/Retention Areas and Drainage  
All existing or proposed drainage structures, retention areas, detention areas and curb types must be shown on the plans if landscaping is proposed in accordance with the Collier County Landscape Beautification Master Plan. (Reference: FDOT “Florida Highway Landscape Guide” Section 4, for additional information and requirements.)
  
- h. Maintenance of Traffic  
Streetscape improvement project plans for general landscape and irrigation improvements shall provide maintenance of traffic plans. Such plans shall be in accordance with Collier County's Maintenance of Traffic Policy No. 5807 for specific requirements related to “Work Zone Setup” and Traffic Control; Chapter 10 of the FDOT “Roadway Plans Preparation Manual” ; Chapter 6 of the FHA “Manual on Uniform Traffic Control Devices for Streets and Highways” or U.S. Department of Transportation Federal Highway Administration “Manual on Uniform Traffic Control Devices’ (MUTCD), Part VI and the FDOT Roadway and Traffic Design Standards” Index Series 600, Traffic Control through Work Zones.

### **III. PLANT MATERIAL SELECTION**

The proper use and placement of plant material will provide low maintenance, aesthetically pleasing and safe right-of-way for the public. Landscape plans shall be prepared to reflect mature plant size with regard to motorist visibility, proposed plant spacing as specified and quantity of plants which will greatly reduce maintenance requirements in accordance with Department of Environmental Protection Best Management Practices.

All plant materials shall be Florida #1, or better, as defined in the most current edition of the "Grades and Standards for Nursery Plants", Part I and Part II, as amended, published by the Florida Department of Agriculture and Consumer Services. The use of native plant materials is encouraged when appropriate. Root-bound and circular root container material is not acceptable.

Trees can be assets to the public road right-of-way; however, the wrong tree selection and placement may result in future removal due to severe pruning for visual and vehicular clearance or interference with adjacent structures. When selecting canopy trees and palms for narrow width medians, the height and spread of the plant at installation and maturity must be considered so not to create a pruning problem. (Reference: "Right Tree, Right Place for SW Florida," Florida Power & Light publication.)

Trees or palms planted under overhead utility lines shall be limited in height so that at maturity or maintained height the tree or palm remains outside of a ten (10) foot separation from the high voltage power lines. Trees or palms planted adjacent to overhead utility lines shall have a mature spread that will not interfere with such utility lines. Where underground utilities exist, tree placement shall not adversely impact the utility. The trees or palms mature caliper and lower branching shall allow for clear sight visibility and unobstructed pedestrian and vehicular circulation.

Plant material considered for placement within the public road right-of-way shall meet as many of the following characteristics as practical.

- a) Native or naturalized species but non-invasive;
- b) Non-brittle and deep rooting plants resistant to wind damage;
- c) Non-poisonous/non-toxic to humans;
- d) Naturally resistant to insects and diseases;
- e) Palms/trees lacking an invasive and extensive root system and whose mature canopy can be maintained within the planting area and at a fifteen foot (15') minimum clearance height over the travel lanes;
- f) Cold tolerance
- g) Site specific and roadway climate oriented;
- h) Compatible with site-specific soil and moisture conditions; Free from noxious odors;
- i) Free of nuts or fruit greater than one-half inch in diameter when planted adjacent to pathways or roadways where the fruit or nut may fall onto the pathway or roadway;
- j) Variation in blooming seasons; longevity; low maintenance, including reduced or limited pruning.
- k) Longevity;
- l) Low maintenance, including reduced or limited pruning;
- j) Tolerant to high-stress urban conditions; drought tolerant; ability to adapt to a wide range of soil types and high ph.
- k) Drought tolerant;
- l) Ability to adapt to a wide range of soil types and high pH.

Consideration shall be given to plant selection with respect to the amount of water applied or received (i.e., reclaimed non-potable water may require a minimum number of gallons to be used annually - plants chosen for this type of water source must be compatible).

- a. Plant Material Placement  
 Plant placement shall ensure motorist, pedestrian and maintenance personnel safety. Motorists and pedestrians must be provided with an unobstructed window of visibility at intersections, turn lanes, median crossovers, and pedestrian crosswalks (Appendix, FDOT Index).  
  
 Streetscape improvement project median plantings should not place maintenance personnel in any greater danger by locating plant material in plant beds too close to the back edge of the curb. Median plantings upon maturity or at the maintained limit of planting beds shall have a minimum one to two foot (1'-6") setback from the back of curb. A minimum thirty-six inch (36") planting setback, from the center of the plant to the edge of the curb is required for all shrubs and ground cover plantings. The spacing between two different beds of plant material should provide a 2' clearance between plant beds.
- b. Xeriscape Principles and Drought Tolerance  
 The seven principles of Xeriscape are appropriate planning and design, use of soil amendments, efficient irrigation, practical turf areas, use of drought tolerant plants, use of mulches, and appropriate maintenance. Reference the Florida Water Management District's water conservation publications and Collier County L.D.C. latest editions.
- c. Cold Tolerance  
 Plant palette selection shall generally comply with the Collier County Roadway Plant Material Cold Tolerance Map and the "Collier County Native Plant List" as well as "Roadway Plant Materials" (see Appendix).
- d. Recommended Roadway Plant Material List  
 Plantings on the list may not necessarily be approved for all portions of Streetscape improvement projects. Pedestrian and motorist safety and visibility will govern plant selection. Reference: "Recommended Roadway Plant Materials" (see Appendix), for plant material selection.
- e. Turf Grasses and Sod Placement  
 Turf grasses use the most water and require the most maintenance. Turf shall be located only in areas where it will provide functional benefits. Turf shall not be considered for use within medians sixteen feet (16') or less in width measured from back of curb to back of curb. Turf may be considered or used as follows:
  1. On non-curbed medians to create a continuous thirty-six inch (36") border around the median.
  2. In interconnected rather than isolated areas for maintenance mowing.
  3. Turf placement under canopy tree groupings shall be selectively evaluated.
  4. St. Augustine "Floritam" is recommended in all irrigated turf areas.
  5. Bahia grass shall be used on all non-irrigated landscape installations.

Sod placement in ditches and swales:

1. The responsible property owner or his authorized agent must apply for

a “Permit to Perform Work and/or Maintenance in the Public Right-of-way” for the placement of sod or other ground cover in any roadside swale or ditch.

2. A drawing shall be submitted which shall show at a minimum the following information:

(1) Distances from:

- a. Centerline of closest the traveled way to the property line and/or /right-of-way line.
- b. Edge of pavement to swale invert.
- c. Edge of pavement to property line and/or right-of-way line.
- d. Location and width of driveway/accessway and distance to side property line.

(2) Lot, block, and unit number, as well as street name and number.

(3) Any other information deemed necessary for issuance of the permit by the Transportation Services Division.

3. The sod shall be placed to the proper grade and cross-section to ensure the flow of water in the swale or ditch. In excavating for the placement of sod, a minimum three-inch (3”) undercut is to be provided. It is the responsibility of the Permittee to ensure an adequate undercut to maintain water flow.

4. It shall be the abutting property owner’s responsibility to maintain the sodded ditch or swale area and to ensure that the swale is kept open and unobstructed.

5. If the placement of sod is associated with (and is approved as part of) a building permit, the entire swale shall be undercut to allow for the top of the sod to be placed at the design elevation, and the sod shall be installed, unless otherwise approved, prior to the Community Development & Environmental Services Department signing the Building Department’s “Master Control Card”, unless otherwise approved.

f. Prohibited Plant Species

The following types of plant species shall not be permitted (Landscaping, Buffering, and Vegetation Retention, 4.06.00):

1. Cactus
2. Agave American (commonly known as Century plant)
3. Yucca aloifolia (commonly known as Spanish Bayonet)
4. Ficus spp. (unless otherwise approved)
5. Cupaniopsis anacardiopsis (commonly known as Carrotwood);or Prohibited species and prohibited exotic species per the Collier County L.D.C. latest edition.

g. Restricted or Unsuitable Use Plants (Plants not recommended for use unless approval is granted by the County).

The following plant species are considered restricted or unsuitable for use within the right-of-way due to increased maintenance, visibility concerns or other environmental concerns.

1. *Bucida buceras* (commonly known as Black Olive, with the exception of 'Shady Lady')
2. *Chorisia speciosa* (commonly known as Foss Silk Tree)
3. *Coccoloba uvifera* - shrub form within limit of clear sight zones, (commonly known as Seagrape)
4. *Conocarpus erectus* - shrub form (commonly known as Green Buttonwood)
5. *Eriobotrya japonica* (commonly known as Loquat)
6. *Parkinsonia aculeata* (commonly known as Jerusalem Thorn)
7. *Pongamia pinnata* (commonly known as Pongam)
8. *Tabebuia caraiba* (commonly known as Silver Trumpet Tree)
9. *Acoelorrhaphe wrightii*, within limit of clear sight zones, (commonly known as Paurotis Palm)
10. *Phoenix reclinata* (commonly known as Senegal Date Palm, within limits of clear sight)
11. *Calliandra* spp. (commonly known as Powderpuff)
12. *Chrysobalanus icaco* (commonly known as Cocoplum)
13. *Crinum* spp. (commonly known as Crinum Lilly)
14. *Eleagnus pungens* (commonly known as Silverthorn)
15. *Erythrina herbacea* (commonly known as Coral Bean)
16. *Hibiscus rosa-sinensis* (commonly known as Hibiscus Rose of China)
17. *Nerium oleander* (commonly known as Oleander)
18. *Philodendron selloum*, within limit of clear sight zones, (commonly known as Philodendron large split leaf)
19. *Pittosporum tobira* 'Variegata' (commonly known as Variegated Pittosporum);
20. *Stachytarpheta jamaicensis* (commonly known as Blue Porterweed);
21. *Zamia furfuracea*, within limit of clear sight zones, (commonly known as Cardboard Plant)
22. *Catharanthus roseus* (commonly known as Periwinkle)
23. *Juniperus conferta* (commonly known as Shore Juniper)
24. *Lantana* spp. (commonly known as Lantana)
25. *Liriope muscari* 'Variegata' (commonly known as Aztec Grass)
26. *Rumohra adiantiformis* (commonly known as Leather Leaf Fern)
27. *Ipomoea pes-caprae* (commonly known as Railroad Vine)
28. *Tecomaria capensis* (commonly known as Cape Honeysuckle)

h. Existing Landscaping or Vegetation

Streetscape improvement projects are encouraged to utilize existing landscaping or vegetation within the roadway right-of-way whenever possible as long as it complies with the visibility, safety and general requirements as set forth within these standards. For roadways already landscaped, the plant selection and mulch must be the same or similar.

i. Soils/Amendments/Planting Products

Soils within public road right-of-way areas are usually of poor quality and do not have an acceptable pH due to roadway construction debris. Limerock and other roadway construction debris shall be removed so as not to restrict root growth, limit percolation or reduce the efficiency of the irrigation system. As much of the poor quality materials as practical shall be removed and replaced with an acceptable topsoil having a proper pH range of 5.5 to 6.5. (See appendix for specification).

Suitable existing site soil may be amended to improve its pH, water and nutrient-holding capabilities. Existing soils will require reverse rotor tilling to a minimum depth of twelve inches (12") to loosen compacted soil and mix the amendments into the soil. Applications of non-selective herbicides shall be required prior to rotor tilling and after tilling to kill and control existing weeds and grasses prior to plantings.

As part of future road-widening, median backfill soil is placed within the medians to a planting depth (see Appendix for Median Backfill specification).

j. Root Guard Protection

Root guard protection systems for large canopy trees and palms shall be used and specified on construction plans where concerns exist for potential root damage to roadways, curbing, pathways or utility facilities.

k. Mulches

Mulch shall be used around all individual plants or within plant beds. Reference: Collier County L.D.C. 4.06.00 Landscaping, Buffering, and Vegetation Retention for additional mulch requirements.

There are numerous forms and grades of organic mulch. Large wood chip mulches shall not be used. A minimum four-inch (4") fluffed depth of shredded, Grade "A" certified mulch product is required. A three-inch (3") layer should be maintained to insure optimum results.

Non-organic type mulches shall have prior approval by Collier County Alternative Transportation Modes Department. Landscape-type gravel installed with drainage filter cloth/fabric may be considered for limited use. No gravel shall be greater than one half inch (1/2") in diameter. Non-organic mulches may not be used within ten feet (10') of the edge of pavement of non-curbed landscape areas. When non-organic mulches are used adjacent to curbing, the finished elevation of the mulch shall be 1/4" below the top of curbing.

When non-organic mulch is used adjacent to turf or organic mulch areas, it shall be installed with a wood or plastic edging material. All non-organic mulches shall be installed at a minimum three inch (3") depth. Crushed non-organic mulches such as washed shell may be used without drainage cloth.

- IV. Decorative Concrete Pavers: Paver installations for sidewalks, pathways, roadway medians and roadway crosswalks shall have six inches (6") of compacted limerock aggregate base and one inch leveling sand. The limerock base shall be compacted to a 98 percent density and compaction test performed at each separate paver installation location. Paver edges shall match the elevation of any adjacent pavement or curbing. Roadway crosswalk paver installations shall have all sides border with concrete curbing or by eighteen-inch (18") by twelve-inch (12") steel reinforced concrete bands/grade beams (see Appendix). Paver installation colors and patterns shall be specified on the construction plans and must be approved by the County prior to construction. A concrete base may be specified instead of limerock where there is heavy truck and eighteen wheeler deliveries.

V. Irrigation Design and Systems

The source of irrigation water, such as reclaimed, well or potable, will affect landscape plant selection and irrigation system design. Recommended water sources for landscape irrigation purposes in order are:

- Reclaimed or reused non-potable water (required when available)
- Well and pump system as permitted by South Florida Water Management District
- Potable water

The following shall be considered in the design and permitting phase:

- a) A meeting shall be held with the Transportation Department Alternative Transportation Modes Section prior to planning and design to review the controller options and requirements.
- b) Turf and plant bed areas shall be zoned separately when practical. High water demand landscape areas shall be zoned separately from low water demand landscape areas. Plant beds shall be designed so that they contain plants with similar water requirements.
- c) Quick coupler valves shall be located three hundred feet (300') maximum on center in the medians and other isolated areas for watering-in new or replacement plant materials. Quick coupler keys shall be provided to the Transportation Services Department Landscape Operations Section.
- d) A pressure-reducing back-flow preventer is required on all potable water sources. The backflow preventer shall conform to the latest detail and requirements set forth by the utility company servicing the site or as provided by Collier County.
- e) Manual gate shut-off valves shall be installed on pressurized mainlines to isolate individual zone control valves to facilitate maintenance repairs.
- f) Approved sprinkler head protective devices may be placed around all pop-up sprinkler heads within turf areas.
- g) Electrical services shall be mounted on an approved concrete pedestal with breaker box, lightning arrestor, grounding rod and other electrical connections or components required. All electric work shall meet National, State, County Electric Codes.
- h) Valves shall be wired from the controller in consecutive order. Zone or valve schedules shall be provided on the plans and posted inside the controller door.

- i) The irrigation system shall be designed to prevent water from being applied onto or over impervious surfaces (i.e.; roadways, sidewalks, etc.).
- j) Pressure reducing valves and sprinkler heads shall be used to reduce fogging caused by high water pressure. The use of low trajectory spray nozzles is encouraged to reduce the effect of wind on the spray stream.
- k) Low volume irrigation systems will be considered to control and limit over spray on adjacent pavement areas.
- l) A rain/freeze shut-off sensor with a bypass switch shall be installed to interrupt watering cycles when watering is unnecessary due to sufficient rainfall or freezing weather.
- m) Deep-watering practices are encouraged to promote deep root growth.
- n) All non-potable water irrigation systems shall be specified on the plans and designated in the field with violet color-coding for reused water. Items to be color-coded shall be mainlines two inches (2") or greater in diameter and all valve or meter boxes. The site shall also be properly signed in accordance with State Statutes.
- o) Mainline drains or the ability to provide flushing of the irrigation main is required.
- p) All valve wiring shall be placed within Schedule 40 PVC pipe or conduit.
- q) All mainlines shall be installed with continuous metallic tape for future locating purposes.
- r) Locator, Omni ball or equivalent are to be placed along lateral irrigation lines in between trees, 50'-100' feet on center, at directional turns and at the end of directional bores.
- s) The removal of obstructions and tree plantings in directional medians.
- t) Reference: Collier County L.D.C. for additional requirements.
- u) Reference: FDOT "Utility Accommodations Manual."

Sprinkler Irrigation Placement in ditches and swales:

- a. The responsible property owner or his authorized agent must apply for a "Permit to Perform Work and/or Maintenance in Public rights-of-way" for the placement sprinklers within a public right-of-way.
- b. A drawing shall be submitted and shall contain showing at a minimum the following information:
  - 1. Distances from:
    - a. Centerline of closest traveled way to the property line and/or right-of-way line.
    - b. Edge of pavement to centerline of proposed sprinkler pipe installation.
    - c. Property lines to and feeder lines.
    - d. Edge of pavement to ditch or swale centerline.
    - e. Ditch or swale centerline to proposed sprinkler pipes installation.
    - f. Edge of pavement to property line / or right-of-way line.
    - g. Proposed sprinkler pipes installation to sidewalks/bikepath (where applicable), pathways, and bike lanes if applicable.
    - h. Width and location of driveway/access way and distance to side property line.
    - i. Size and depth of the proposed irrigation lines and placement of sprinkler lines and heads and valves.
    - j. Lot, block and unit number, as well as street names and number.
    - k. All existing utilities and services.



2. Lot, block, unit number, street name or number of property Specification:
3. Sprinkler heads shall be placed no closer than twenty-four inches (24") to the center line of the ditch or swale and a minimum of six feet (6') from the edge of pavement; on arterial and collector roadways, of uncurbed minor roadways; a minimum of eight feet (8') from the edge of pavement; arterial or collector roadways; and a minimum of six inches (6") from sidewalks/bikepaths pathways.
4. Pipes shall be pushed, not jetted, under a sidewalk/pathway at a minimum depth of six inches (6") measured from the bottom of the sidewalk/pathway.
5. Pipes under commercial or public driveways/access ways shall be pushed at a minimum depth of 20" measured from the bottom of the driveway surface roadway base material.
6. Pipe under private driveways shall be pushed at a minimum depth of thirty-six inches measured from the bottom of the driveway pavement surface material.
7. Drawings shall show all work to be performed by the Permittee in the rights-of-way.
8. The sprinkler heads must be adjusted such that the spray from the sprinkler system shall be directed away from the traveled way and sidewalks/bikepaths.
9. The Permittee shall maintain the sprinkler irrigation system. Failure to maintain the system in a manner satisfactory to the County shall cause for removal of the system at the Permittee's sole expense, after written notice by the County to the Permittee.
10. Whenever necessary for construction, repair, maintenance, improvements, alterations or relocation of public right-of-way, or roadway as determined by the County, the Permittee shall have the sprinkler irrigation system removed from the public right-of-way or reset or relocated thereon at the sole expense of the Permittee/abutting property owner. The County will give the property owner written notice of such proposed work, and shall allow two (2) weeks for the property owner to perform the secure resetting, removal or relocation of its facilities.

## VI. MAINTENANCE

Maintenance is the most important aspect of a streetscape improvement project and will determine the project's immediate and long-term success.

Reference: Sample 90-Day Maintenance Specifications and Annual Maintenance specifications attached.

## VII. APPENDIXES

1. Collier County Roadway Typical Sections
2. C.C.S.M.P .Gateway Zones Schedule
3. F.D.O.T. "Roadway and Traffic Design Standards" Index 546  
Sheets 1& 2
4. F.D.O.T. "Plans Preparation Manual" Volume I & II  
Horizontal Clearance Schedule
5. L.D.C. 4.06.01,D.1, Sight Distance Triangle Diagrams

6. Roadway Plant Material Cold Tolerance Map and Native Plant List
7. Recommended Roadway Plant Materials List
8. Sample Annual Maintenance Specifications
9. Design and Permitting Check List
10. F.D.O.T. "Standard Specifications for Road & Bridge Construction"  
Division II, Construction Details, Incidental Construction, Section 580.  
By reference.
11. Median Backfill Soil Specification
12. Paver Specification
13. Landscape Maintenance Agreement
14. Irrigation Specifications