

CHAPTER 5. ENGINEERING AND CONSTRUCTION STANDARDS

CHAPTER CONTENTS

5	Article 5.1	General	5-1
6	5.1.1	Purpose.....	5-1
7	5.1.2	Applicability	5-1
8	5.1.3	Permits Required.....	5-1
9	5.1.4	Florida Greenbook.....	5-1
10	Article 5.2	Roads.....	5-2
11	5.2.1	Functional Classification.....	5-2
12	5.2.2	Street Design.....	5-2
13	5.2.3	Pavement Width Transitions.....	5-3
14	5.2.4	Culs-de-Sac.....	5-3
15	5.2.5	Medians.....	5-3
16	5.2.6	Roundabouts.....	5-4
17	5.2.7	Bridges	5-4
18	5.2.8	Driveways and Approaches.....	5-4
19	5.2.9	Trench Backfill and Restoration.....	5-4
20	5.2.10	Typical Road Cross Sections	5-4
21	Article 5.3	Traffic Devices and Street Illumination.....	5-4
22	5.3.1	Street Signs.....	5-4
23	5.3.2	Roadway Markings.....	5-5
24	5.3.3	Traffic Signals.....	5-6
25	5.3.4	Roadway Illumination	5-7
26	Article 5.4	Stormwater Management.....	5-8
27	5.4.1	General.....	5-8
28	5.4.2	Allowable Flooding Depths	5-8
29	5.4.3	Drainage Calculations	5-8
30	5.4.4	Stormwater Management Facilities	5-9
31	Article 5.5	Erosion Control	5-9
32	5.5.1	Applicability	5-9
33	5.5.2	Design Requirements.....	5-10
34	5.5.3	Maintenance.....	5-10
35	5.5.4	Turbidity Monitoring.....	5-10
36	Article 5.6	Bicycle and Pedestrian Facilities	5-10
37	5.6.1	Bicycle Facilities	5-10
38	5.6.2	Pedestrian Facilities	5-11
39			

1 **Article 5.1 General**

2 **5.1.1 Purpose**

3 The purpose of this Chapter is to set standards for the construction of public improvements to
4 serve new development and for the reconstruction and upgrading of existing public
5 infrastructure within the County. These improvements include roads, bikeways, sidewalks, on-
6 site parking, stormwater management facilities, erosion control, and other enhancements as
7 required by the development review process, this Code, the Charlotte County Code of Laws
8 and Ordinances, and other policies that may be adopted by the Board of County
9 Commissioners.

10 **5.1.2 Applicability**

11 The standards in this Chapter shall apply to all improvements within the public right-of-way, to
12 all proposed improvements within any proposed public right-of-way, for all improvements
13 intended for ownership and maintenance by the County, and for all improvements that require
14 the approval of the County Engineer.

15 **5.1.3 Permits Required**

16 All work within the public right-of-way shall require a Right-of-Way Permit. Specific
17 stipulations or conditions regarding the project will be imposed at the time of permit
18 application.

19 **5.1.4 Florida Greenbook**

20 These engineering and construction standards are based upon the latest edition of the Florida
21 Department of Transportation’s *Manual of Uniform Minimum Standards for Design,
22 Construction and Maintenance for Streets and Highways*, commonly known as the “Florida
23 Greenbook.” The Greenbook is available at:

24 <http://www.dot.state.fl.us/rddesign/FloridaGreenbook/FGB.htm>

25

26

1 **Article 5.2 Roads**

2 **5.2.1 Functional Classification**

3
4 **5.2.2 Street Design**

5 **A. Design Speeds**

6 The design speeds of all road classifications shall be in accordance with the latest
7 edition of the *Florida Greenbook*.

8 **B. Lane Widths**

- 9 1. Lane widths for local roads shall be a minimum of 11 feet.
- 10 2. Lane widths for all other road classifications shall be a minimum of 12
11 feet

12 **C. Shoulders**

- 13 1. Local roads do not require shoulders.
- 14 2. All other road classifications shall require a minimum shoulder of four
15 feet on the outside edge of the outermost travel lane in each direction.

16 **D. Structural Cross Sections**

17 The structural cross sections for all road classifications shall comply with the following
18 table:

Road Classification	Subgrade 12"	Base Group*	Structural Type S-1	Wearing Surface
Shoulder	Same as abutting pavement			
Local	LBR 40	6	1.25"	1.25"
Collector (Minor)	LBR 70	7	2.50"	1.25"
Collector (Major)	LBR 70	9	3.25"	1.25"
Arterial	LBR 70	10	4.25"	1.25"

*Base Group per latest edition of FDOT Design Standards

19
20 **E. Horizontal and Vertical Alignment**

21 All limits for both horizontal and vertical roadway alignments shall be in accordance
22 with the latest edition of the *Florida Greenbook*.

23 **F. Intersection Sight Obstruction Requirements**

24 **1. Road-to-Road Intersections**

25 All road-to-road intersections shall be designed to provide minimum
26 unobstructed sight lines in accordance with the latest edition of the *Florida
27 Greenbook*.

28 **2. Road-to-Driveway Intersections**

- 29 a. Curb cuts should only be as wide as necessary to accommodate
30 needed lanes, and curb radii should be kept to a minimum.

31 **G. Utility Accomodations**

- 32 1. Provisions for planned utilities must be made within established or
33 planned road rights-of-way as much as possible. Drainage and utility
34 easements may be used when the road right-of-way is not available.
- 35 2. Placement of utiliites should be done according to the following standards
36 as much as possible:
 - 37 a. Potable and recycled water lines and all overhead utility lines
38 shall be placed along the north and west sides of road rights-of-
39 way.

- b. Sanitary sewer lines and all other underground utility lines shall be placed along the south and east sides of road rights-of-way.
- c. All aboveground facilities shall be placed at the outermost edge of the road right-of-way.

5.2.3 Pavement Width Transitions

When the pavement width on any road changes, those changes shall be designed in accordance with the latest edition of the *Florida Greenbook*.

5.2.4 Culs-de-Sac

A. General

- 1. All culs-de-sac shall be designed to allow anticipated vehicle traffic to safely turn around without leaving the paved surface.
- 2. All culs-de-sac shall be designed to accommodate design vehicle Passenger Car P, as defined in the latest edition of the *Florida Greenbook*.
- 3. Road details of standard culs-de-sac are shown in the following figures:

[Insert figure of Standard Road Detail of Cul-de-Sac with Swale]

[Insert figure of Standard Road Detail of Cul-de-Sac with Sidewalk and Swale]

- 4. Commercial or industrial development sites may require larger culs-de-sac, subject to the following standards:
 - a. Dimensions will be determined by the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets* for the anticipated design vehicle.
 - b. The anticipated design vehicle, as defined by the *Florida Greenbook*, shall be approved by the County Engineer.
- 5. Hammerhead culs-de-sac shall only be allowed when unavoidable physical restraints prevent the use of a round cul-de-sac.

B. Hammerhead Culs-de-Sac

- 1. Hammerhead culs-de-sac shall only be allowed with the prior written permission of the County Engineer.
- 2. Road details of hammerhead culs-de-sac are shown in the following figures:

[Insert figure of Standard Road Detail of Hammerhead Cul-de-Sac with Swale]

[Insert figure of Standard Road Detail of Hammerhead Cul-de-Sac with Sidewalk and Swale]

5.2.5 Medians

A. Requirement

- 1. All roads with more than one travel lane in each direction shall be designed with raised medians separating the opposing lanes.
- 2. Roads with a single travel lane in each direction may be designed with a raised median separating the opposing lanes.

B. Widths

The widths of all raised medians shall be in accordance with the latest edition of the *Florida Greenbook*.

C. Openings

- 1. All median openings shall provide sufficient storage for the anticipated allowed movements of traffic.
- 2. All median openings in residential developments shall be designed to accommodate design vehicles Passenger Car P, Single Unit Truck SU, and Car & Boat Trailer P/B, as defined by the latest edition of the *Florida Greenbook*.

- 1 3. All medians shall provide a minimum four-inch raised FDOT Traffic
2 Separator between all left-turn lanes and opposing traffic lanes.

3 **5.2.6 Roundabouts**

4 All roundabouts shall be designed in accordance with the latest edition of FHWA's
5 *Roundabouts: An Informational Guide*, as modified by AASHTO and FDOT.

6 **5.2.7 Bridges**

7
8 **5.2.8 Driveways and Approaches**

- 9 1. All driveway designs and grades shall be in accordance with the latest
10 edition of FDOT's Design Standards for Design, Construction,
11 Maintenance, and Utility Operations on the State Highway System.
12 2. Road details of driveways are shown in the following figures:

13 ***[Insert figure of Standard Road Detail of Commercial Driveway with Swale]***
14 ***[Insert figure of Standard Road Detail of Commercial Driveway with Sidewalk and Swale]***
15 ***[Insert figure of Standard Road Detail of Residential Driveway with Swale]***
16 ***[Insert figure of Standard Road Detail of Residential Driveway with Sidewalk and Swale]***

17 **5.2.9 Trench Backfill and Restoration**

- 18 1. Open cutting of existing pavements is discouraged, and will only be
19 permitted where and when alternatives are not possible to implement.
20 2. When permitted, an open cut shall be restored in accordance with the
21 following figures, using whichever best applies to the pre-cut condition.

22 ***[Insert figure of Standard Road Detail of Flexible Pavement Restoration for Trenches Cut in***
23 ***Public ROW]***

24 ***[Insert figure of Standard Road Detail of Rigid Base Restoration for Trenches Cut in Public***
25 ***ROW]***

26 **5.2.10 Typical Road Cross Sections**

27 ***[Insert 9 Road Cross-Section Diagrams Here]***

28
29
30 **Article 5.3 Traffic Devices and Street Illumination**

31 **5.3.1 Street Signs**

32 **A. General**

- 33 1. All sign blanks shall be fabricated from aluminum sheet conforming to
34 ASTM Specifications B209, with 5052-H38 Alloy.
35 2. All signs shall be printed on 0.08 blanks.
36 3. All signs shall be of a standard size and shape, and conform to the latest
37 edition of FHWA's *Manual on Uniform Traffic Control Devices*.
38 4. 3M material shall be used for all sheeting. Silk screening or Electro Cut
39 material may be overlaid onto the sheeting.

40 **B. Regulatory Signs**

41 All regulatory signs shall be made of high intensity prismatic material.

42 **C. Warning Signs**

43 All warning signs, with the exception of pedestrian warning crossing signs, shall be
44 made of high intensity prismatic material.

45 **D. Pedestrian Warning Crossing Signs**

46 All pedestrian warning crossing signs shall be made of Diamond Grade fluorescent VIP
47 Yellow Green microprismatic reflective sheeting.

48 **E. School Signs**

1 All school signs shall be made of high intensity prismatic material, with the yellow
2 made of Diamond Grade fluorescent VIP Yellow Green microprismatic reflective
3 sheeting.

4 **F. Road Signs**

- 5 **1.** Road sign sizes shall be limited to nine inches in height and 30, 36, or 42
6 inches in length, depending upon the length of the road name.
- 7 **2.** All road signs shall be made of silver high intensity material with green
8 EC material overlaid. Road signs shall be green with silver lettering.
- 9 **3.** All road signs shall have a border of 0.375 inches.
- 10 **4.** The radii of the corners of all road signs shall be 1.5 inches.
- 11 **5.** All Road names shall be printed in six-inch C Series letters, with three-
12 inch C Series letters designating the road type. If the road name, once
13 laid out, will not fit on the 42-inch blank, the size of the letters may be
14 reduced to fi-inch Series C letters.

15 *[Insert Road Sign Diagram]*

16 **G. Sign Height and Setback Distances**

17 All post-mounted signs shall conform to the standards for height and setback from the
18 roadway established in the latest edition of FHWA's *Manual on Uniform Traffic Control*
19 *Devices*.

20 **H. Sign Posts**

- 21 **1.** All standard sign posts shall be fabricated from 14-gauge full-punched
22 square galvanized steel posts.
- 23 **2.** All standard sign posts shall be square and two inches wide on each side
24 unless a decorative post is requested or specified.
- 25 **3.** All standard sign posts, except those installed in concrete medians, shall
26 be concreted in using a high-strength concrete mix which meets or
27 exceeds ASTM C387 specifications.
- 28 **4.** All standard sign posts, except those installed in concrete medians, shall
29 be installed in post holes that have a minimum of 20 pounds to a
30 maximum of 40 pounds of concrete mix added during sign installation.
- 31 **5.** Sign posts installed in concrete medians shall conform to the following
32 standards:
 - 33 **a.** Posts shall have a ten-inch cutout in the median with a PVC,
34 CPVC, or fiberglass insert placed into the cutout and fit firmly
35 against the inner edge. This insert shall extend below the
36 median into the substrate material at least 12 inches, and must
37 be cut off flush with the top of the median. The insert may be
38 installed prior to the pouring of the concrete median.
 - 39 **b.** Following the installation of a post in a concrete median, the hole
40 shall be filled with soil up to between one and 0.5 inches from
41 the top of the median.
 - 42 **c.** The following figure shows details of a sign post installed in a
43 concrete median:

44 *[Insert Concrete Median Diagram]*

45 **5.3.2 Roadway Markings**

46 **A. Roadway Striping, Longitudinal Lines, and Gore Markings and Islands**

- 47 **1.** All longitudinal lines shall be applied with water emulsion-based
48 materials that must be listed on FDOT's Qualified Products List.
- 49 **2.** All permanent striping shall be applied at a minimum wet film thickness
50 of 15 mils.
- 51 **3.** All temporary striping shall be of sufficient thickness to last until
52 permanent striping is applied.

- 1 4. Glass spheres, meeting the requirements of the latest edition of FDOT's
2 *Standard Specifications for Road and Bridge Construction* Sections 971-1
3 and 971-14, shall be immediately and uniformly applied following the
4 application of any painted lines, at a level of not less than six pounds per
5 gallon of paint.

6 **B. Transverse Markings, Stop Bars, Crosswalks, Symbols, and Word**
7 **Messages**

- 8 1. All transverse markings, stop bars, crosswalk lines, symbols, and word
9 messages shall be applied with thermoplastic or preformed thermoplastic
10 materials that must be listed on FDOT's Qualified Products List.
- 11 2. All spray- or extrusion-applied markings shall have a thickness of
12 between 0.10 inches and 0.15 inches when measured above the
13 pavement surface at the edge of the marking.
- 14 3. All preformed thermoplastic markings shall have a thickness of between
15 0.02 inches and 0.09 inches when measured above the pavements
16 surface at the edge of the marking.
- 17 4. All stop bars shall be 24 inches wide.
- 18 5. All crosswalk lines shall be 12 inches wide and installed as two parallel
19 lines horizontal to the direction of travel. Hash marks inside the
20 crosswalk lines shall not be used unless the engineer states the lines are
21 needed for additional visibility.
- 22 6. Glass spheres, meeting the requirements of the latest edition of FDOT's
23 *Standard Specifications for Road and Bridge Construction* Sections 971-1
24 and 971-14, shall be immediately and uniformly applied following the
25 application of any thermoplastic markings, at a level of not less than
26 0.10 pounds per square foot of thermoplastic surface, with 50 to 60
27 percent embedment. Glass spheres shall not be applied to preformed
28 thermoplastic markings.

29 **C. Raised Retro-Reflective Pavement Markers**

- 30 1. All raised pavement markers shall be Class B and meet the requirements
31 of the latest edition of FDOT's *Standard Specifications for Road and*
32 *Bridge Construction* Section 970, and must be listed on FDOT's Qualified
33 Products List.
- 34 2. All raised pavement markers shall be installed one inch off any double
35 solid, solid-skip, or single solid painted lane lines.
- 36 3. All raised pavement markers shall be installed at an interval of 40 feet
37 along the road, except that raised pavement markers in single skip areas
38 shall be installed at an interval of 80 feet directly in line with the skip line
39 and spaced evenly between the skip directly before and after the raised
40 pavement marker.

41 **5.3.3 Traffic Signals**

42 Traffic signal installation shall conform to the requirements established by the latest editions
43 of the following documents:

- 44 **A.** FHWA's Manual on Uniform Traffic Control Devices.
- 45 **B.** FDOT's Design Standards for Design, Construction, Maintenance, and Utility
46 Operations on the State Highway System.
- 47 **C.** FDOT's Standard Specifications for Road and Bridge Construction.
- 48 **D.** FDOT's Florida Intersection Design Guide.
- 49 **E.** FDOT's Plans Preparation Manual.
- 50 **F.** FDOT's Minimum Specifications for Traffic Control Signals and Devices.
- 51 **G.** Charlotte County's *Supplemental Specifications for Traffic Signal Installations*
52 (available at:

1 www.charlottecountyfl.com/communitydevelopment/engineering/transportation/traffic
2 [csignalinstallation.asp](http://www.charlottecountyfl.com/communitydevelopment/engineering/transportation/traffic)).

- 3 **H.** The National Fire Protection Association’s *National Electric Code*.
- 4 **I.** The Institute of Electrical and Electronics Engineers’ *National Electric Safety Code*.
- 5 **J.** The Occupational Safety Health Administration.

6 **5.3.4 Roadway Illumination**

- 7 **A.** All roadway lighting shall be designed using the latest editions of the following
8 documents:
 - 9 **1.** FDOT’s Design Standards for Design, Construction, Maintenance, and
10 Utility Operations on the State Highway System.
 - 11 **2.** FDOT’s Standard Specifications for Road and Bridge Construction.
 - 12 **3.** FDOT’s Plans Preparation Manual.
 - 13 **4.** The Illuminating Engineering Society’s *Model Lighting Ordinance*.
 - 14 **5.** AASHTO’s Roadway Lighting Design Guide.
 - 15 **6.** The Institute of Transportation Engineers’ *Fundamentals of Traffic*
16 *Engineering*.
 - 17 **7.** Charlotte County’s *Supplemental Specifications for Roadway Lighting*
18 *Systems* (available at:
19 [www.charlottecountyfl.com/communitydevelopment/engineering/transpo](http://www.charlottecountyfl.com/communitydevelopment/engineering/transportation/roadwaylightingsystems.asp)
20 [rtation/roadwaylightingsystems.asp](http://www.charlottecountyfl.com/communitydevelopment/engineering/transportation/roadwaylightingsystems.asp)).
 - 21 **8.** Charlotte County’s *Supplemental Specifications for Decorative Lighting*
22 *Systems* (available at:
23 [www.charlottecountyfl.com/communitydevelopment/engineering/transpo](http://www.charlottecountyfl.com/communitydevelopment/engineering/transportation/decorativelightingsystems.asp)
24 [rtation/decorativelightingsystems.asp](http://www.charlottecountyfl.com/communitydevelopment/engineering/transportation/decorativelightingsystems.asp)).
 - 25 **9.** The National Fire Protection Association’s *National Electric Code*.
 - 26 **10.** The Institute of Electrical and Electronics Engineers’ *National Electric*
27 *Safety Code*.
 - 28 **11.** The Occupational Safety Health Administration.
- 29 **B.** All roadway lighting shall be high pressure sodium lighting, unless otherwise
30 approved by the County Engineer.
- 31 **C.** All electrical components shall be UL-approved or approved by testing labs accepted
32 by FDOT.
- 33 **D.** The installation of all roadway lighting shall require a roadway lighting plan which
34 shall show the following:
 - 35 **1.** The locations of all poles, conduits, junction boxes, photo cells,
36 transformers and controllers, cabinets, and electric utility service points.
 - 37 **2.** Specifications for all proposed and existing lighting fixtures including
38 photometric data, fixture height, mounting and design, glare control
39 devices, type and color rendition of lamps, and hours of operation.
 - 40 **3.** A photometric plan that illustrates the levels of illumination at ground
41 level from all on-site light sources, proposed and existing.
- 42 **E.** Contractors shall be responsible for all traffic control during the installation of
43 roadway lighting.
- 44 **F.** All roadway lighting on local residential streets shall be installed in locations that
45 conform to criteria outlined by the Board of County Commissioners, and conform to
46 criteria established by the electrical utility.

1 **Article 5.4 Stormwater Management**

2 **5.4.1 General**

3 Unless otherwise specified, all stormwater management facilities shall be designed in
4 accordance with the latest edition of FDOT’s *Drainage Manual*.

5 **5.4.2 Allowable Flooding Depths**

6 All new or improved roads shall be designed and constructed to not exceed the following
7 allowable flooding depths.

8 **A. Local Roads**

- 9 **1.** No flooding above the crown of the road elevation during a 5-year
10 frequency, 24-hour duration rainfall event.
- 11 **2.** No more than six inches above the crown of the road elevation during a
12 25-year frequency, 24-hour duration rainfall event.
- 13 **3.** No more than ten inches above the crown of the road elevation during a
14 100-year frequency, 24-hour duration rainfall event.

15 **B. Collector Roads**

- 16 **1.** Not less than one lane of traffic in each direction shall remain above the
17 design high-water elevation resulting from a 25-year frequency, 24-hour
18 duration rainfall event, distributed in accordance with methodologies
19 approved by the appropriate Water Management District.
- 20 **2.** No more than six inches above the crown of the road elevation during a
21 100-year frequency, 24-hour duration rainfall event.

22 **C. Arterial Roads**

23 Not less than all lanes shall remain flood-free, where water does not exceed the lowest
24 edge of pavement elevation, from stormwater resulting from a 100-year frequency,
25 24-hour duration rainfall event, distributed in accordance with methodologies
26 approved by the appropriate Water Management District.

27 **5.4.3 Drainage Calculations**

28 All drainage calculations shall be prepared in accordance with FDOT’s Drainage Manual and the
29 appropriate Water Management District requirements.

30 **A. Water Quantity**

31 **1. Open Basins**

- 32 **a.** Open basins shall be designed to manage a 25-year frequency,
33 24-hour duration rainfall event.
- 34 **b.** The post-developed discharge rate from an open basin shall not
35 exceed the calculated pre-developed discharge rate or an
36 allowable discharge rate based upon a previously-approved
37 drainage study.
- 38 **c.** If attenuation is not required for an open basin, the facility must
39 provide the elevation necessary to convey the post peak rate of
40 runoff through the outfall structure. This elevation shall be
41 contained within the banks of the facility.

42 **2. Closed Basins**

- 43 **a.** Closed basins shall be designed to manage a 100-year
44 frequency, 24-hour duration rainfall event.
- 45 **b.** The required retention volume of a closed basin shall be the
46 post-developed runoff volume minus the pre-developed runoff
47 volume.

48 **3. Exemptions**

49 A development site may be exempt from providing on-site stormwater
50 management if it meets either of the following conditions:

- a. It discharges directly into a tidal system verified to have no downstream flow restrictions such as culverts, bridges, or similar structures.
- b. It discharges directly into a tidal system that has downstream flow restrictions but which has been designed to accommodate the post-developed runoff from the contributing drainage area.

B. Water Quality

Water quality requirements shall be in accordance with all Federal, State, and local requirements.

C. Off-Site

- 1. The engineer shall indicate whether any offsite drainage flow patterns or hydraulic features will be interrupted by the proposed improvements.
- 2. Verification will be required to determine offsite flow patterns. Acceptable forms of verification include, but are not limited to:
 - a. Historic drainage maps.
 - b. Contour maps.
 - c. Survey topography.

D. Hydrologic and Hydraulic Analysis

Hydrologic and hydraulic analysis shall be done in accordance with standard practices and methodologies applicable to the area, and in accordance with guidelines prepared by FDOT and the appropriate Water Management District.

5.4.4 Stormwater Management Facilities

A. Culverts

- 1. All roadway culverts shall be made of concrete.
- 2. Non-roadway culverts may use other materials upon approval by the County Engineer.
- 3. All culverts shall be a minimum of 15 inches in diameter, or an equivalent oval size.

B. Retention Ponds

- 1. All stormwater management facility banks shall provide a minimum of three inches of freeboard from the design high water elevation within the facility.
- 2. All outfall structures and overflow pipes shall be made of a hardened surface.
- 3. All discharge pipes draining onto County rights-of-way shall include concrete mitered slope pads at the point of discharge.

C. Ownership and Dedication

- 1. Stormwater management facilities permitted in the name of the County shall be dedicated to the County.
- 2. Stormwater management facilities permitted in the name of a private entity, such as a homeowners or property owners association, shall be dedicated to that private entity.
- 3. When a stormwater management facility accepts runoff from public roads, maintenance easements shall be dedicated to the County.

Article 5.5 Erosion Control

5.5.1 Applicability

These standards shall apply to all construction projects in the County, regardless of size.

1 **5.5.2 Design Requirements**

2 All erosion control shall be consistent with Best Management Practices established in the latest
3 editions of FDOT's **[Design Standards]** and FDEP's *Florida Stormwater Erosion and*
4 *Sedimentation Control Inspector's Manual*. In addition, the following standards shall apply:

- 5 **A.** Prior to any site disturbance, perimeter controls must be in place to control runoff
6 and capture sediments.
- 7 **B.** Development sites adjacent to water bodies, or with direct connections to water
8 bodies and which have the potential to cause discharge of eroded soil or sediment-
9 laden discharge, shall implement additional BMPs.
- 10 **C.** A pre-construction site conference shall be required to review to on-site
11 management of runoff including, but not limited to:
- 12 **1.** Management of off-site runoff.
 - 13 **2.** Diversion swales.
 - 14 **3.** Construction sequencing.
 - 15 **4.** Construction entrances.
 - 16 **5.** Equipment washing.
 - 17 **6.** Storage of chemicals.
 - 18 **7.** Maintenance of perimeter controls.
- 19 **D.** Development sites that disturb one acre of land or more shall be required to obtain a
20 National Pollutant Discharge Elimination System (NPDES) Construction Permit from
21 FDEP prior to beginning construction activities.

22 **5.5.3 Maintenance**

23 The maintenance schedule for BMPs shall be no less than weekly, and immediately following
24 all rainfall events of 0.5 inches or greater.

25 **5.5.4 Turbidity Monitoring**

26 The County Engineer may require turbidity monitoring for any construction activities with the
27 potential to cause turbidity within adjacent or directly connected water bodies. If required,
28 turbidity monitoring will be established in the permit approval.

29
30
31 **Article 5.6 Bicycle and Pedestrian Facilities**

32
33 **5.6.1 Bicycle Facilities**

- 34 **A.** Bicycle facilities shall be installed according to the Interconnectivity standards of this
35 Code.
- 36 **B.** Bicycle facilities shall be constructed according to the following standards:
- 37 **1.** Bicycle lanes shall be a minimum of four feet wide.
 - 38 **2.** Bicycle lanes shall be provided on both sides of the road.
 - 39 **3.** Bicycle lanes shall be separated from motor vehicle lanes with a white
40 stripe. Each lane shall also be marked with the symbol for bicycle lane,
41 as established by FHWA's *Manual on Uniform Traffic Control Devices*.
 - 42 **4.** Bikeways shall be a minimum of eight feet wide.
 - 43 **5.** Multi-use trails, where bicycles may encounter pedestrians, shall be a
44 minimum of 12 feet wide.
 - 45 **6.** Dedicated bicycle facilities shall be constructed of either asphalt or
46 concrete, and must be a minimum of four inches thick. Other
47 construction techniques may be approved by the County Engineer.

1 **5.6.2 Pedestrian Facilities**

2 **A. Installation**

- 3 1. Pedestrian facilities shall be installed according to the Interconnectivity
4 standards of this Code.
- 5 2. Pedestrian facilities shall be constructed according to the following
6 standards:
- 7 a. Sidewalk widths shall be a minimum of five feet wide.
- 8 b. Sidewalks shall be a minimum of four inches thick except at
9 driveway crossings, which shall be installed according to the
10 following additional standards:
- 11 1) Sidewalks shall be a minimum of six inches thick.
- 12 2) Sidewalks shall be reinforced with six-inch by six-inch
13 WWF 10/10 mesh.
- 14 3) When an existing sidewalk is crossed by a new driveway
15 crossing, the sidewalk shall be removed and replaced to
16 meet the standards of this Code.
- 17 c. Sidewalks shall be separated from streets using landscape zones,
18 tree planting areas, or other devices to clearly distinguish the
19 pedestrian area from the vehicular area. Landscape zones
20 should be a minimum of three feet wide, and tree planting areas
21 should be a minimum of six feet wide.
- 22 d. Sidewalks that intersect with or terminate at a road shall be
23 constructed with curb cut ramps that conform to the latest
24 edition of FDOT's *Design Standards for Design, Construction,*
25 *Maintenance, and Utility Operations on the State Highway*
26 *System* and the Americans with Disabilities Act.
- 27 e. Sidewalks shall be installed along both sides of a corner lot.
- 28 f. Sidewalks shall be located within the road right-of-way.
- 29 g. Sidewalks shall be provided for the full width of the lot with a
30 direct link to the primary building entrance.

31 **B. Sidewalk Assessments**

32 The County may, at its discretion, construct sidewalks along any road it feels is
33 needed and appropriate to protect the public health, safety, and welfare. In doing so,
34 the County reserves the right to assess each property owner along the route of the
35 sidewalk on a street-frontage basis.