

FDOT Transportation Symposium Webinar Series

2022 Florida Greenbook (Draft)

Florida Department of Transportation

Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways

(Commonly known as the Florida Greenbook)

<https://www.fdot.gov/roadway/floridagreenbook/fgb.shtm>



FDOT Office
Office of Design
Topic # 625-000-015

Date of Publication
2022 Edition

2022 Florida Greenbook

- Has been approved by the Greenbook Advisory Committee, reviewed by FDOT's legal office, but not completed rulemaking.
- No effective date yet.
- Can be downloaded from FDOT Greenbook web page.
- <https://www.fdot.gov/roadway/floridagreenbook/fgb.shtm>

[Home](#) / [Roadway](#) / [FloridaGreenbook](#)

Roadway Design

Florida Greenbook

Current Florida Greenbook

[2018 Florida Greenbook](#)

Effective July 20, 2021

[Summary of Major Changes](#)

[Design Exception and Variation Sample Letter](#)

DRAFT Florida Greenbook

[2022 Florida Greenbook DRAFT NEW](#)

[Summary of Major Changes](#)

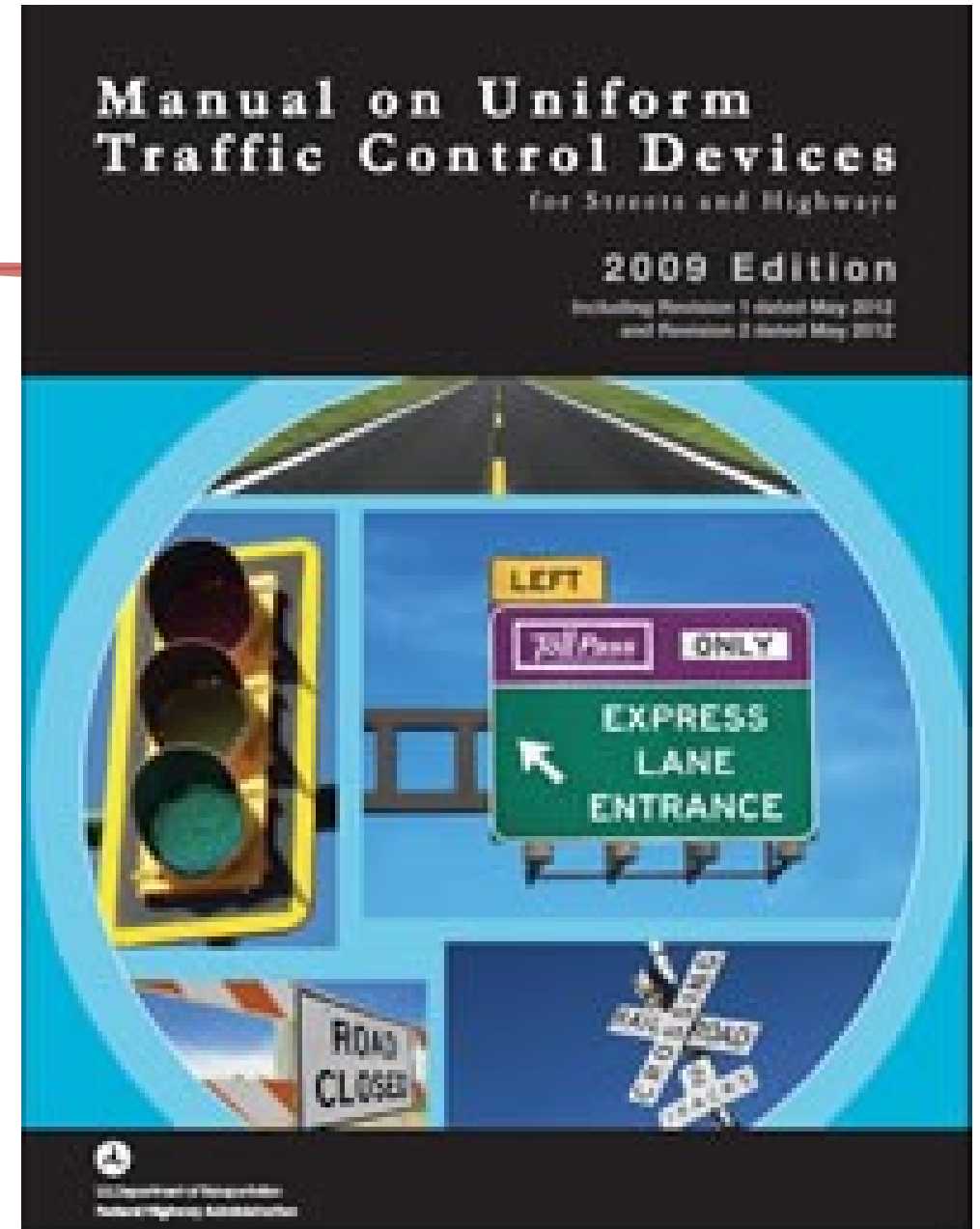
Purpose of Florida Greenbook

- Chapter 335.01, F.S. Designation and systemization of public roads. -
 - (1) All roads which are open and available for use by the public and dedicated to the public use, according to law or by prescription, are hereby declared to be, and are established as, public roads.
 - (2) *Public roads* shall be divided into four systems:
 - (a) The State Highway System;
 - (b) The State Park Road System;
 - (c) The county road system; and
 - (d) The city street system.

Purpose of Florida Greenbook

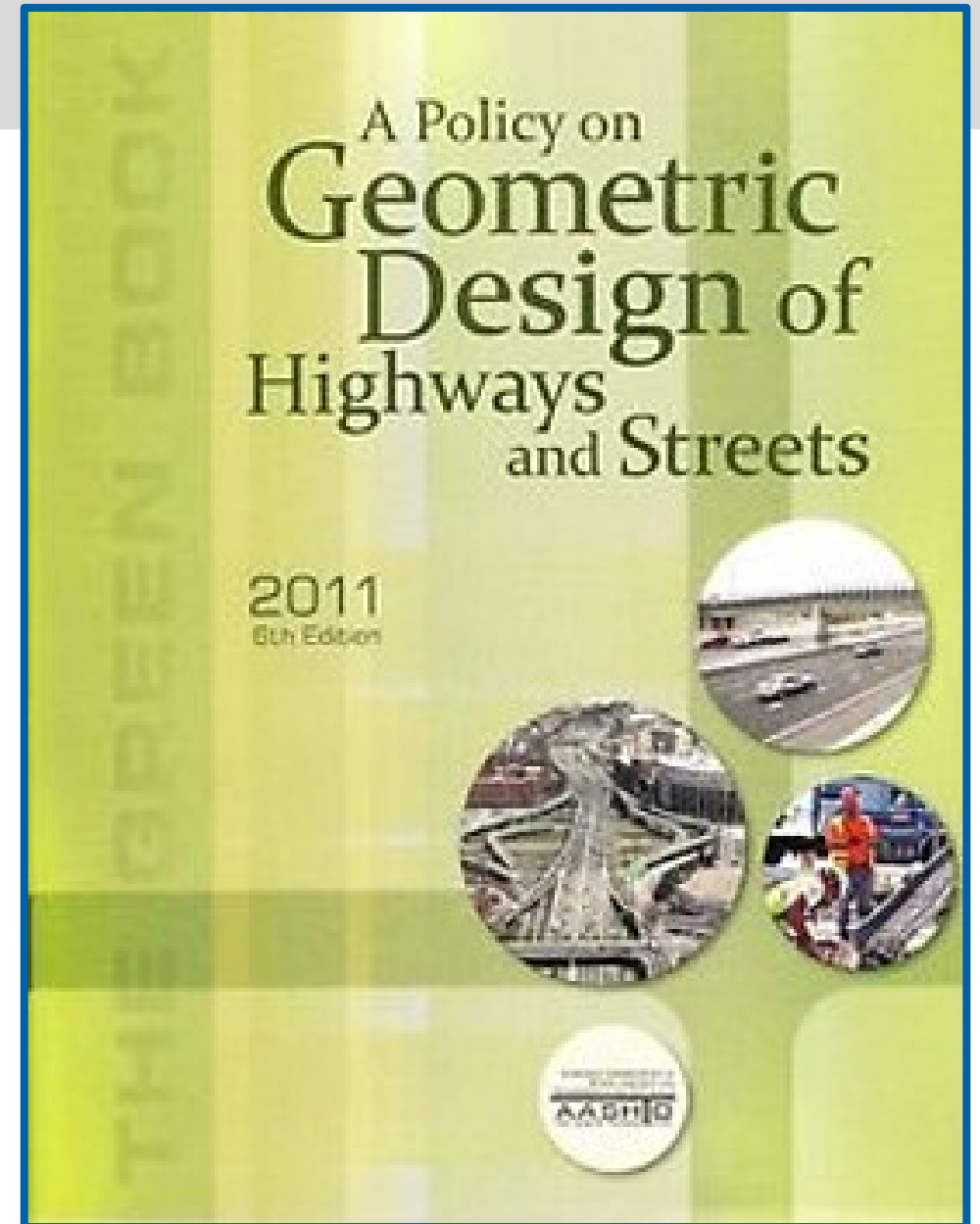
- Chapter 336.045, F.S. Uniform minimum standards for design, construction, and maintenance; advisory committees.-
 - (1) ... department shall develop and adopt uniform minimum standards and criteria for the design, construction and maintenance of *all public streets, roads*, ... bridges, ...sidewalks, ...bicycle ways... used by the public for vehicular and pedestrian traffic. ...consider design approaches which provide for the compatibility of such facilities with the surrounding natural or manmade environment.
 - (2) An advisory committee of professional engineers ... composed of: one member representing an urban center...; one member representing a rural area...; one member within each district who is a professional engineer ... not employed by any governmental agency; and one member employed by the department for each district.

2009 MUTCD with Revisions 1 and 2 (May 2012)



2011 AASHTO Green Book

- Effective November 12, 2015
- FHWA published the Final Rule to Title 23, Code of Federal Regulations Part 625
- The rule modifies regulations governing new construction, reconstruction, resurfacing (except for maintenance resurfacing), restoration, and rehabilitation projects on the NHS

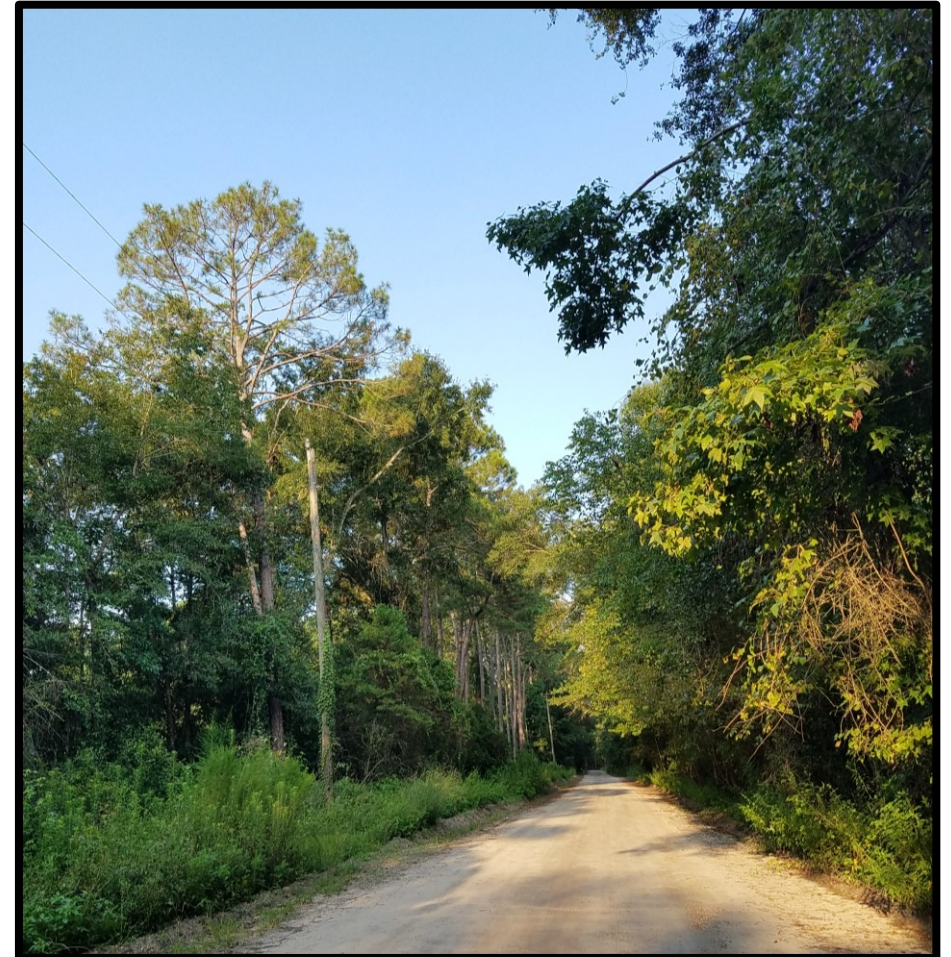


2018 AASHTO Green Book?

- 2018 AASHTO Green Book was adopted by FHWA on January 3, 2022
 - Published Final Rule to Title 23, Code of Federal Regulations Part 625 (Design Standards for Highways)
 - Use of the updated standards is required for all National Highway System (NHS) projects authorized to proceed with design activities on or after February 2, 2023.
- <https://www.fhwa.dot.gov/programadmin/rrr2021.cfm>
- http://downloads.transportation.org/publications/GDHS-7_SummaryOfChanges.pdf

2001 AASHTO Geometric Design of Very Low-Volume Roads

- Local roads and minor collectors with ADT of ≤ 400 vehicles per day
 - Lane Widths
 - Bridge Width
 - Roadside Design



On or Off the State Highway System (SHS)?

- Intended for use on all streets and highways OFF the SHS
- Unless using federal funds and project is:
 - On the National Highway System (NHS),
 - Has a construction value \geq \$10 million, or
 - Includes a vehicular bridge, pedestrian bridge over a roadway, certain box culverts.
- Then use FDOT's Design Manual (FDM) and Standard Plans



Fort George/Talbot Island Bridge, FL

What Criteria To Use?

For LAP Projects with federal funds Only!

- ✓ Check Table 1: Project Classification in Chapter 17 of Local Programs Manual
- ✓ <https://www.fdot.gov/programmanagement/lap/lap-toc.shtm>

Project Classifications	Design Criteria and Standards ₁ *	Specifications*	Materials Testing*	Qualifications
Class A On the State or National Highway Systems	FDOT Design Manual and FDOT Standard Plans	FDOT Standard Specifications for Road & Bridge Construction	Samples Testing and Reporting Guide and FDOT Materials Manual	FDOT Prequalified Consultants and Contractors
Class B Off the State and National Highway Systems with an estimated construction value of \$10 million or greater.	FDOT Design Manual and FDOT Standard Plans	FDOT Standard Specifications for Road & Bridge Construction	Samples Testing and Reporting Guide and FDOT Materials Manual	FDOT Prequalified Consultants and Contractors
Class C Off the State and National Highway Systems and includes structural components: <ul style="list-style-type: none">• a vehicular bridge• pedestrian bridge over a roadway• box culvert meeting the definition of a bridge as stated in 23 CFR 305	1) For structures components, use the FDOT Design Manual and FDOT Standard Plans 2) For all other components, use the Florida Greenbook	1) For the structure components, FDOT Standard Specifications 2) For all other components, LAP Big 4 or approved Local Agency Specs	1) For structures components, use the Samples Testing and Reporting Guide and FDOT Materials Manual 2) For all other components, use Local Agency materials testing process	FDOT Prequalified Consultants and Contractors
Class D Off the State and National Highway Systems, may include structural components: <ul style="list-style-type: none">• pedestrian bridges not over a roadway• bridges on shared use path not over a roadway• box culverts that do not meet the definition of a bridge as stated in 23 CFR 305	Florida Greenbook -Or- Approved Minimum Design Standards chosen by local agency which conform to the minimum criteria provided in Florida Greenbook	LAP Big 4 or approved Local Agency Specs	Local Agency materials testing process	Local Agency qualified consultants and contractors

Purpose, Policies and Objectives, and Definitions

- Purpose
 - Provides information on –
 - Statutory Authority
 - Intended Use (new, reconstruction, resurfacing, maintenance)
 - Adoption of 2009 MUTCD and Revisions 1 and 2
 - Reference to Local Programs Manual (former LAP Manual for further requirements)
 - Context based design policy and key objectives
 - Definition of terms



SR 100, Putnam County

Purpose, Policies and Objectives, and Definitions

- Policies and Objectives

- Requires that policies developed by local governments related to streets and highways support context based design objectives.
 - Specifies all users
 - Applies to all projects
 - Procedure for exceptions and variations
 - Creates a network
 - Adoptable by all agencies
 - Latest and best design criteria
 - Context-sensitive
 - Establishes performance measures
 - Includes specific steps for implementation

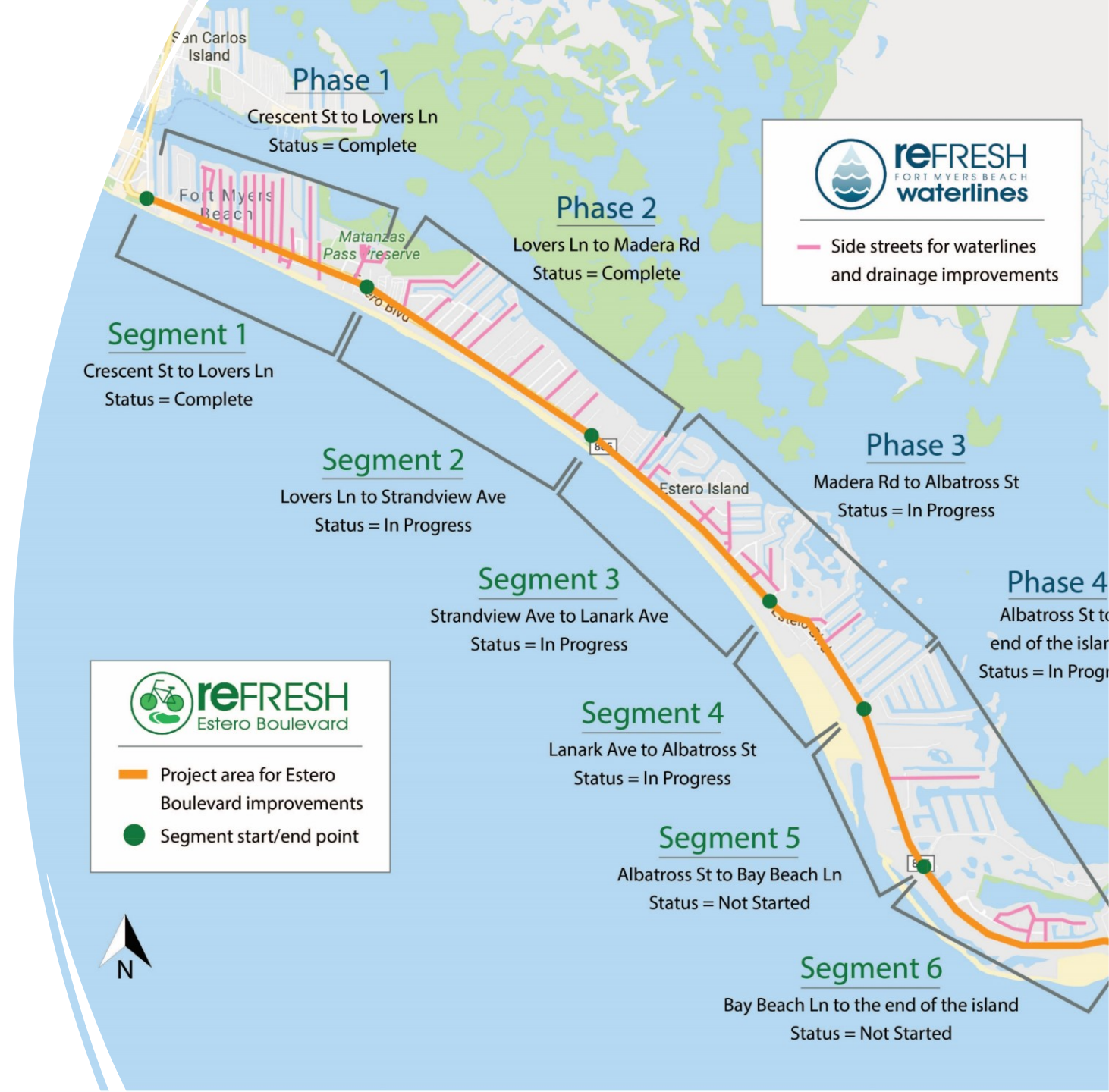
Purpose, Policies and Objectives, and Definitions

- Tampa's East West Green Spine Cycle Track
- https://www.tampa.gov/tss-transportation/info/projects/green_spine



Ft. Myers Beach and Lee County

- Refresh Estero Boulevard
- Refresh Ft. Myers Beach Waterlines
- <https://refreshfmbeach.com/overview/>



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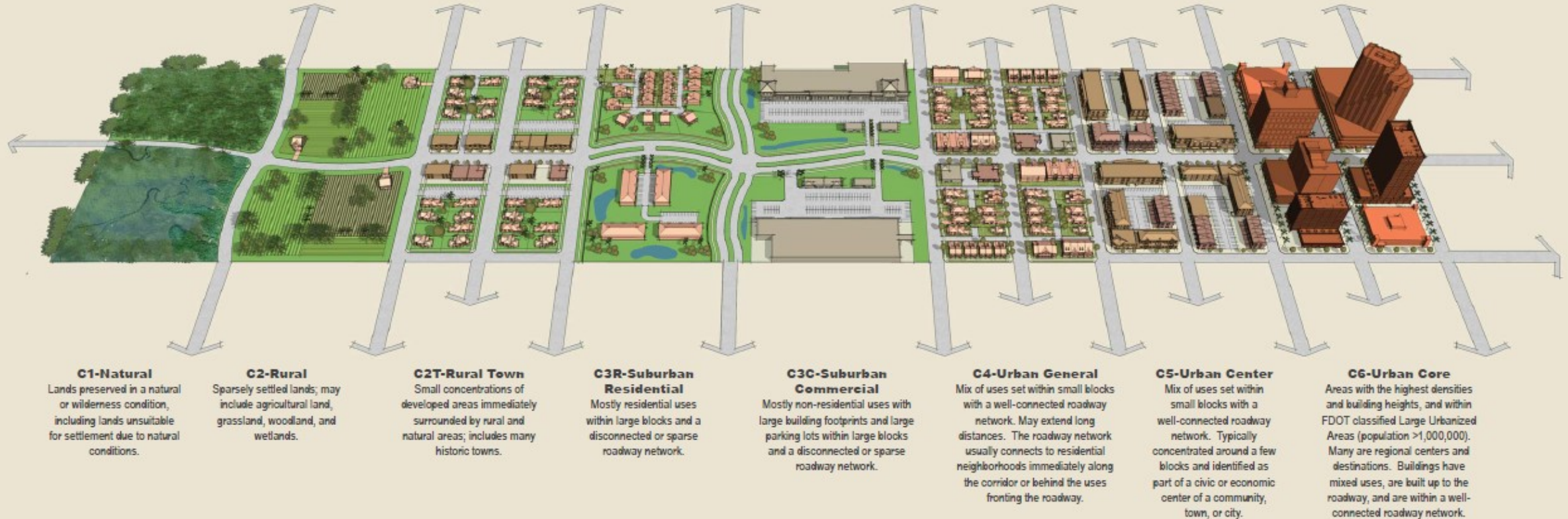
Chapter 1 – Planning and Land Development

- Functional and context based design classification determined by the local government
- Terms rural and urban are based upon population density
- Encouraged to use the same definitions for land areas as in FDOT's Context Classification Guide



Context Based Design

FDOT CONTEXT CLASSIFICATIONS



Chapter 1 – Planning and Land Development

- Lane Repurposing
 - Data Needs
 - Multidisciplinary Review Team
 - Concept Reports
 - Project Description
 - Proposed Modifications
 - Traffic Analysis
 - Safety Analysis
 - Public Involvement



Franklin Blvd, Tallahassee, Florida

Chapter 2 – Land Development

- Merged into Chapter 1 – Planning and Land Development



A1A, Florida

Chapter 3 – Geometric Design

- Parking
 - Parallel or angle (traditional or reverse)
 - Posted speeds of 35 mph or less
 - Recognizes that on-street parking may:
 - Help manage traffic speeds
 - Provides separation between the sidewalk and travel lanes
 - May decrease through capacity, reduce traffic flow, and increase crash potential
 - ADA Requirements
 - Parking Restrictions at driveways, intersections, mid-block pedestrian crossings



FAMU Way, Tallahassee, Florida

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FAMU Way, Tallahassee, Florida

Chapter 3 – Geometric Design

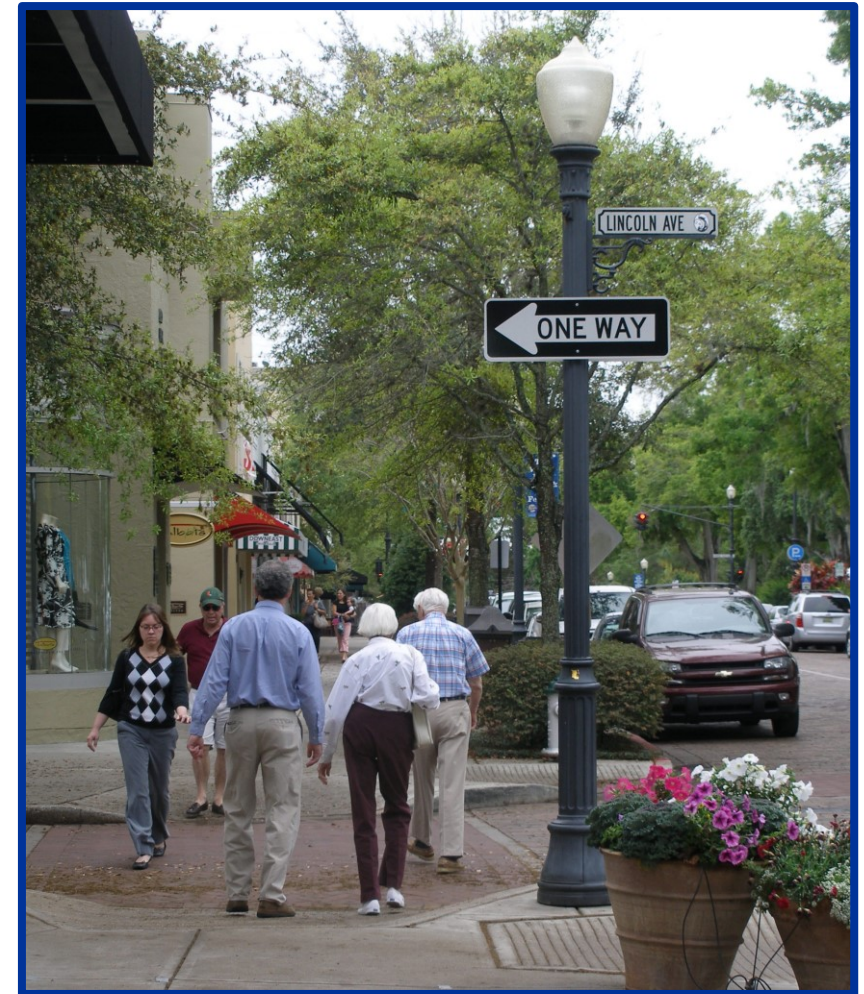
- Accessibility Requirements for Sidewalks and Shared Use Paths
 - Design criteria provided in Greenbook
 - *USDOT ADA Standards for Transportation Facilities (2006)* and *Department of Justice ADA Standards (2010)* as required by 49 C.F.R 37.41 or 37.43
 - *2020 Florida Building Code – Accessibility, 7th Edition* as required by *Rule Chapter 61G20-4.002, Florida Administrative Code*
 - *Proposed Public Rights-of-Way Accessibility Guidelines (PROWAG)* provides additional information on the design of accessible pedestrian facilities



Palm Beach Operations Center, Palm Beach County, Florida

Chapter 4 – Roadside Design

- Clarified that Table 4 – 1 for Clear Zones applied to both curbed and flush shoulder roadways
- Lateral Offset:
 - Distance from a specified point on the roadway to roadside hazard
 - Applies to all roadways and determined by type of facility (curbed or flush shoulder), design speed, design element, project type (new construction, RRR)
 - Table 4 – 2 now includes criteria for urban curbed roadways with design speeds ≤ 25 mph



Park Avenue, Winter Park, Florida

Chapter 4 – Roadside Design

Table 4 – 1 Minimum Width of Clear Zone (feet)¹
(Curbed and Flush Shoulder Roadways)



Design Speed mph	AADT ≥ 1500			AADT < 1500		
	Travel Lanes & Multilane Ramps		Aux Lanes and Single Lane Ramps	Travel Lanes & Multilane Ramps		Aux Lanes and Single Lane Ramps
	1V:6H or flatter	1V:5H to 1V:4H	1V:4H or flatter	1V:6H or flatter	1V:5H to 1V:4H	1V:4H or flatter
≤ 40	14	16	10	10 ²	12 ²	10 ²
45 – 50	20	24	14	14	16	14
55	22	26	18	16	20	14
60	30	30 ³	24	20	26	18
65 – 70	30	30 ³	24	24	28	18

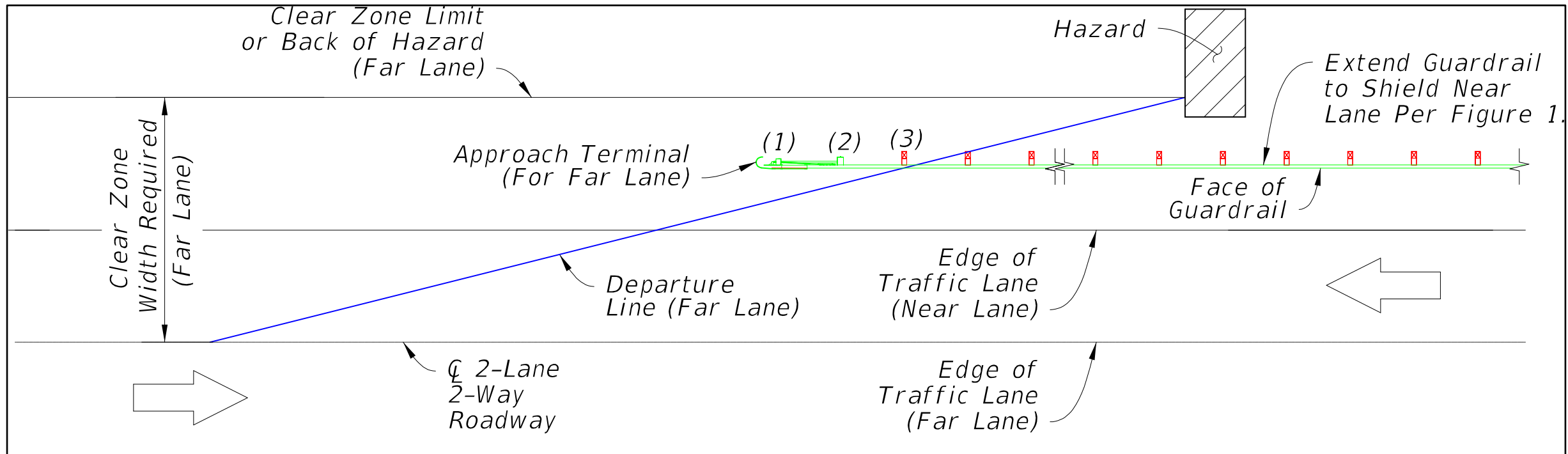
Chapter 4 – Roadside Design

Table 4 – 2 Lateral Offset (feet)

Roadside Feature	<u>Urban Curbed Roadways</u> <u>Design Speed ≤ 25 (mph)</u>	Urban Curbed Roadways Design Speed ≤ 45 (mph)	All Other
Above Ground Objects ¹	<u>1.5 ft. from Face of Curb^{3,4}</u>	4 ft. from Face of Curb ^{2,4}	Clear Zone Width
Drop Off Hazards ^{5a}	<u>Clear Zone Width</u>	Clear Zone Width	Clear Zone Width
Water Bodies	<u>Clear Zone Width</u>	Clear Zone Width	Clear Zone Width
Canal Hazards	<u>See Section B.2.c</u>	See Section B.2.c	See Section B.2.c
<p>1. Above ground objects are anything greater than 4 inches in height and are firm and unyielding or do not meet crashworthy or breakaway criteria. For urban curbed areas ≤ 45 mph this also includes crashworthy or breakaway objects except those necessary for the safe operation of the roadway.</p> <p>2. May be reduced to 1.5 ft. from Face of Curb on roads functionally classified as Local Streets and, on all roads, where the 4 ft. minimum offset cannot be reasonably obtained and other alternatives are deemed impractical. <u>For very low-volume roads, ≤ 400 vpd, a minimum of 1.5 feet of clearance is desirable but may be reduced to 6" from the face of curb where the corridor is constrained. AASHTO's Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400), 2001 provides additional information.</u></p> <p>3. <u>May only be used in areas where development patterns and land use would qualify as an Urban Center or Urban Core Context Classification.</u></p> <p>a. <u>Urban Center - Mix of uses set within small blocks with a well-connected roadway network. Typically concentrated around a few blocks and identified as part of the community, town, or city of a civic or economic center.</u></p> <p>b. <u>Urban Core - Areas with the highest densities and with building heights typically greater than four floors. Many are regional centers and destinations. Buildings have mixed uses, are built up to the roadway, and are within a well-connected transportation network.</u></p> <p>2-4. <u>A design variation for failure to meet clear zone criteria is not required for existing, low speed, curbed roadways if the requirements for the placement of above ground fixed objects are met.</u></p>			

Chapter 4 – Roadside Design

- End Treatments and Crash Cushions
 - Figures added to illustrate how to determine when an approach terminal, trailing anchorage or crash cushion should be selected when using guardrail to provide protection for a hazard.



Chapter 4 – Roadside Design

- Roadside Design in Work Zones
 - Clear zone widths
 - Above ground hazards
 - Non-traversable edge drop-offs, critical slopes and roadside excavations
 - Table 4 – 6 Device Requirements for Edge Drop Offs
 - Temporary barriers in work zones when clear zone widths can not be met
 - Shield edge drop-offs and roadside excavations
 - Shield above ground hazards, including roadside structures, falsework for bridges, material storage sites and/or other exposed objects
 - Provide positive protection for workers
 - Separate two-way traffic
 - Separate pedestrians from vehicular traffic



US 98, Destin, Florida

Chapter 5 – Pavement Design and Construction

- Safety Edge information consolidated and moved to Chapter 10 – Maintenance and Resurfacing



Shady Hills Road, District 7, Florida

Chapter 6 – Lighting

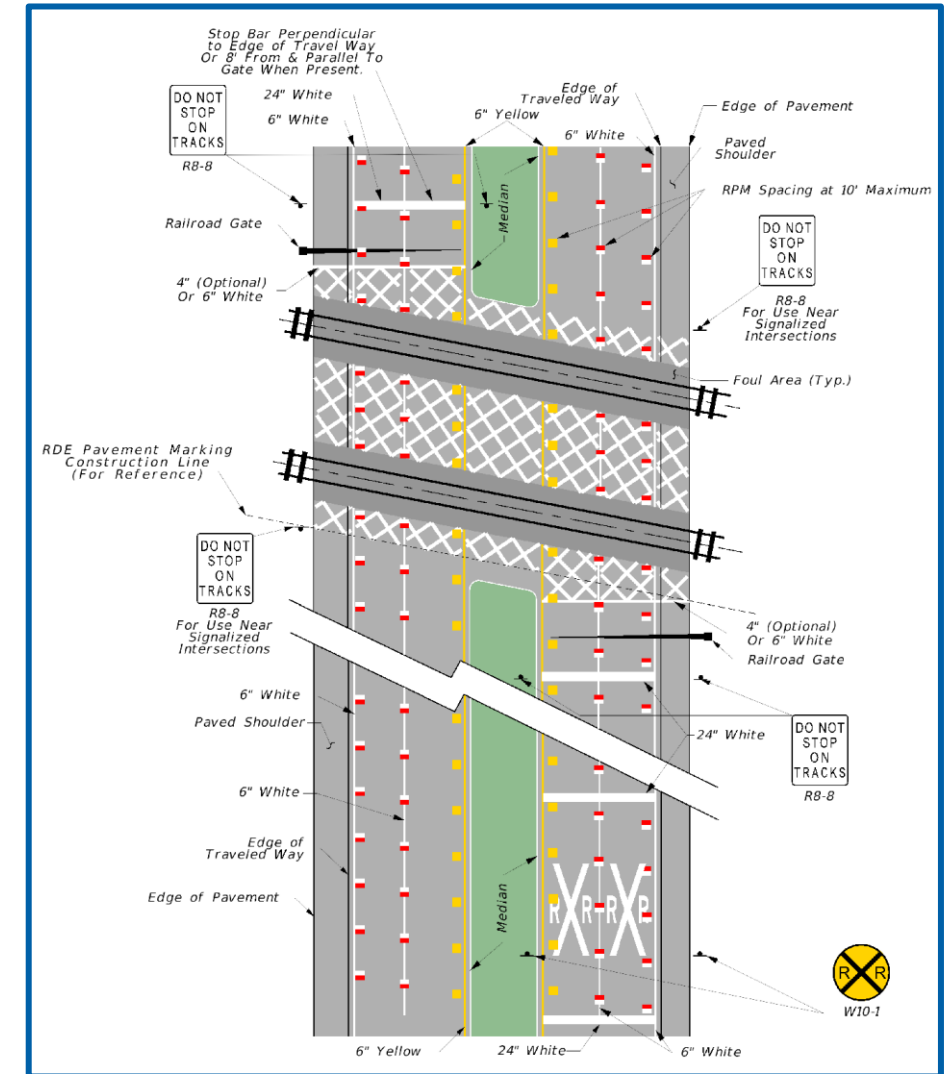
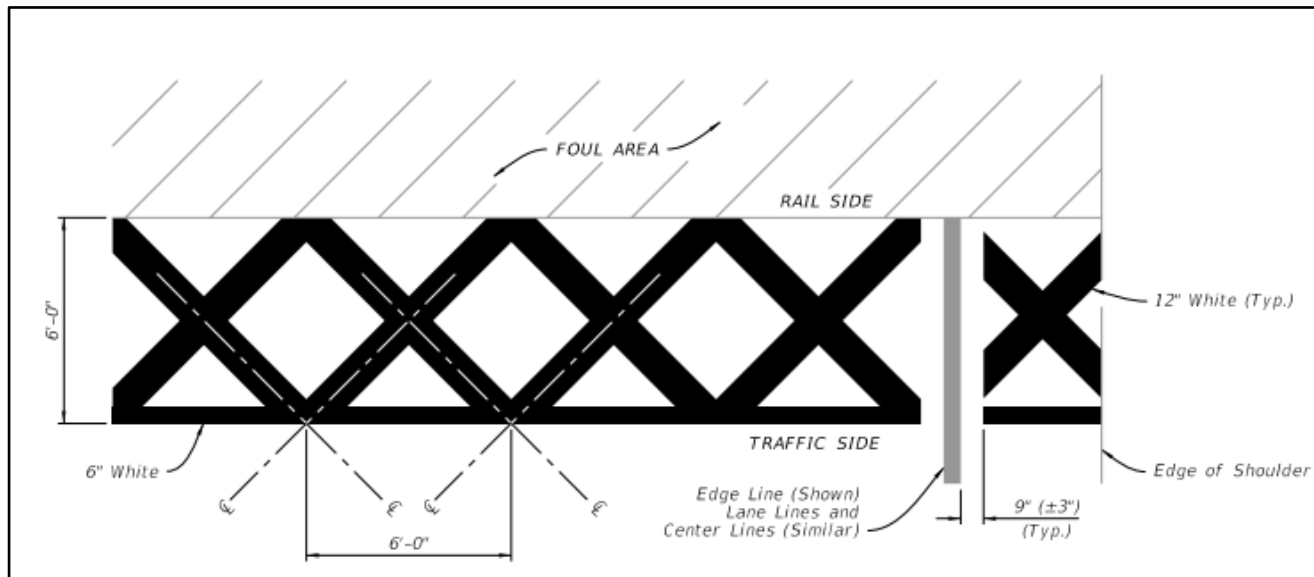
- Wildlife Sensitive Lighting–
 - In coordination with Florida’s Marine Turtle Protection Act (F.S. 379.2431)
 - May require lower lighting levels, adjusting the direction of luminaires, and different types and colors of lighting
 - KMZ layers and shape files to determine wildlife areas of concern can be found on [FDOT’s Office of Environmental Management “OEM Resources”](#) web page, under Turtle Lighting
 - See FDOT’s [Approved Product List \(APL\)](#) in the Wildlife-Sensitive Conventional Lighting category or FWC’s [Certified Wildlife Lighting Guidelines](#) for information on luminaires which met the wildlife sensitive lighting criteria.
 - For night work along coastal roadways, direct work zone lighting away from beach and shield luminaires



Sea Turtle, Escambia County, FL

Chapter 7 – Rail-Highway Grade Crossings

- Railroad Dynamic Envelope
 - Use to delineate area around at-grade railroad crossings where vehicles should not stop



Chapter 8 – Pedestrian Facilities

- Curb ramps shall be provided at all intersections with curb (Section 336.045 (3) F.S.)
- Each crossing should have separate curb ramps, perpendicular with the curb, and landing within the crosswalk
- Curb ramp width:
 - Sidewalks - minimum of 4 feet; curb ramp widths equal to crosswalk widths are encouraged
 - Shared Use Paths - the curb ramp shall be at least as wide as the approaching width of the path
- A turning space at least 4 feet by 4 feet wide shall be provided at the top of the curb ramp



Franklin Blvd, Tallahassee, Florida

Chapter 8 – Pedestrian Facilities

- Provide a minimum 1-foot wide level graded area with a maximum slope of 1:6 along both sides of the sidewalk.
- This would not apply to the side of the sidewalk located immediately adjacent to a curb, structure or the right of way line.



Franklin Blvd, Tallahassee, Florida

Chapter 8 – Pedestrian Facilities

- Curb Extensions
 - Used in conjunction with on-street parking at intersections or midblock locations where there is a crosswalk
 - Shorten the crossing distance, and provide additional space at intersections, allowing pedestrians to see and be seen before entering a crosswalk
- Pedestrian Signals
 - Where pedestrian facilities are provided or planned, include provisions (e.g., conduit, conductors, signal cables, push button pedestals, curb ramps) needed for future installation of APS on all new and reconstructed signalized intersections and signalized crossing locations.
 - Provide a 30 x 48” level landing (in either direction) at the base of all pedestrian pushbutton locations.



Venice, Florida

Chapter 8 – Pedestrian Facilities

- U.S. Access Board
 - Public Rights of Way - Sidewalks, Shared Use Paths, Parking
 - <https://www.access-board.gov/prowag/>
- Florida Building Code
 - Accessibility, 7th Edition
 - <https://codes.iccsafe.org/codes/florida>


(Proposed) Public Rights-of-Way Accessibility Guidelines

[PDF](#)

About the ADA and ABA Accessibility Guidelines for the Public Rights-of-Way

The Access Board is developing new guidelines under the Americans with Disabilities Act (ADA) and the Architectural Barriers Act (ABA) that will address access to sidewalks and streets, crosswalks, curb ramps, pedestrian signals, on-street parking, and other components of public rights-of-way. These guidelines also review shared use paths, which are designed primarily for use by bicyclists and pedestrians for transportation and recreation purposes.

The Access Board issued proposed guidelines for public comment. The Board is in the process of finalizing these guidelines.



Chapter 9 – Bicycle Facilities

- Separated Bicycle Lanes
 - One-way or two-way traffic
 - Amount of separation tends to increase as motorized traffic volumes and speeds increase
 - Adjacent to on-street parking – at least 3' separation
 - Adjacent to travel lanes – varies by posted speed and whether a vertical element is added, from 2 – 8' minimum separation
 - Width
 - One-way – 7' preferred, 6' minimum
 - Two-way – 12' preferred, 10' minimum
 - Separation is maintained between bicycle and motorized vehicle traffic through intersections
 - Conflict points are minimal and mitigated through pavement markings, color or other treatment



Chapter 9 – Bicycle Facilities

- Shared Use Path Width and Clearance
 - At least 2' wide graded, clear area with a maximum 1:6 slope shall be maintained adjacent to both sides of the path
 - 3 feet + is desirable to provide clearance from trees, poles, walls, fences, guardrails, or other lateral obstructions



Four Freedoms Trail, Madison, FL

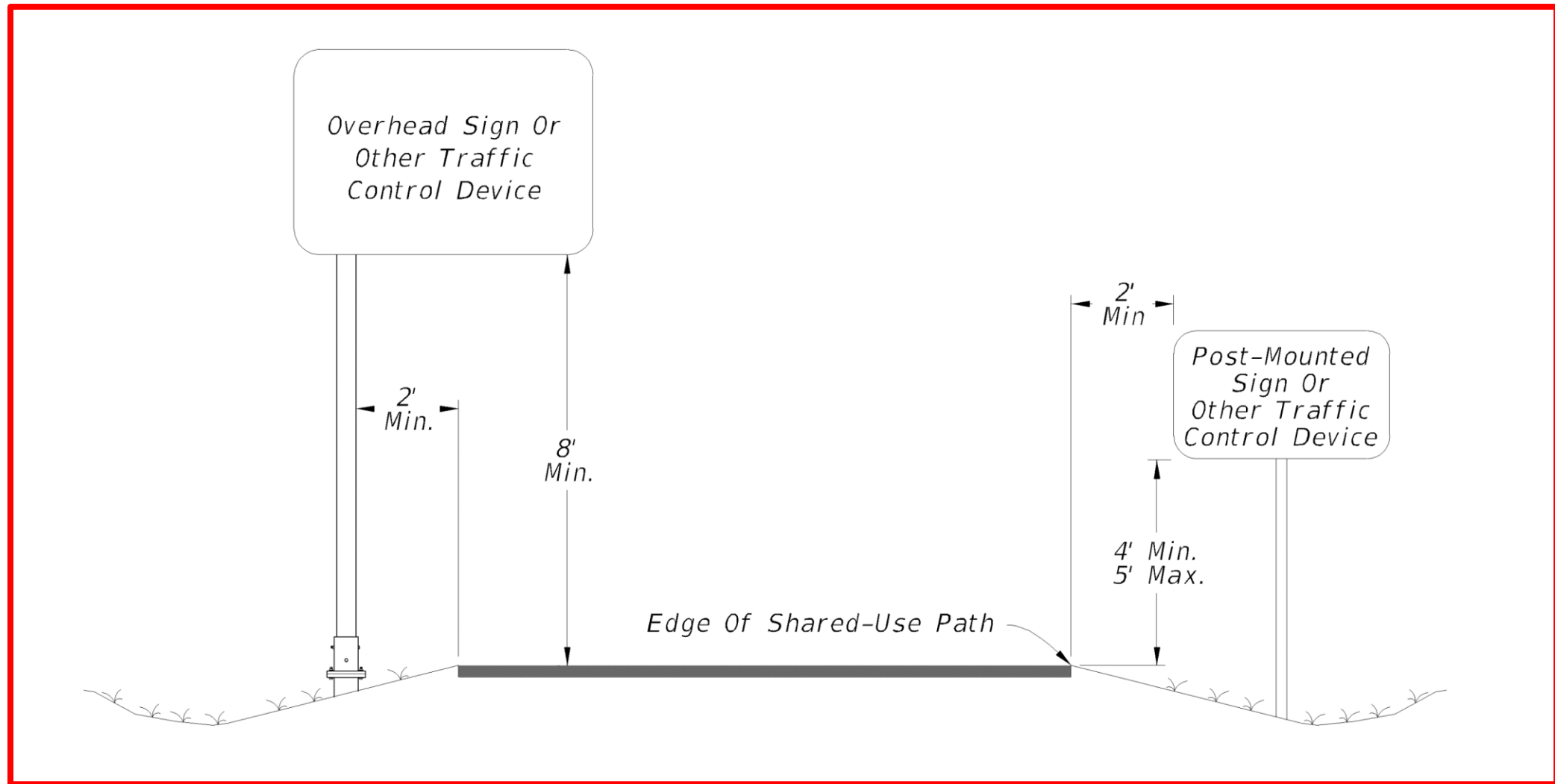
Chapter 9 – Bicycle Facilities

- Shared Use Paths require a separation from the roadway (horizontal space of at least 5' or barrier)
 - Curbed – measured from face of curb to nearest edge of the path
 - Paved Shoulder – outside edge of the paved shoulder to nearest edge of the path
 - Unpaved Shoulder – outside edge of traveled way to inside edge of the path
 - Where the separation is less than 5 feet, a physical barrier or railing should be provided between the path and the roadway.



Magnolia Road, ?, FL

Sign Placement on Shared Use Paths



Chapter 9 – Bicycle Facilities

- Shared Use Path Grade
 - Within a highway right of way, grade shall not exceed the general grade established for the highway
 - Where not within a highway right of way, the grade shall be 5 percent maximum
 - Compliance to the max. extent feasible allowed when not practicable to meet the 5% max. due to existing terrain or infrastructure, right-of-way availability, a notable natural feature, or similar existing physical constraints
- The cross slope of a shared use path shall be 2% maximum



Surf Road, Wakulla County, FL

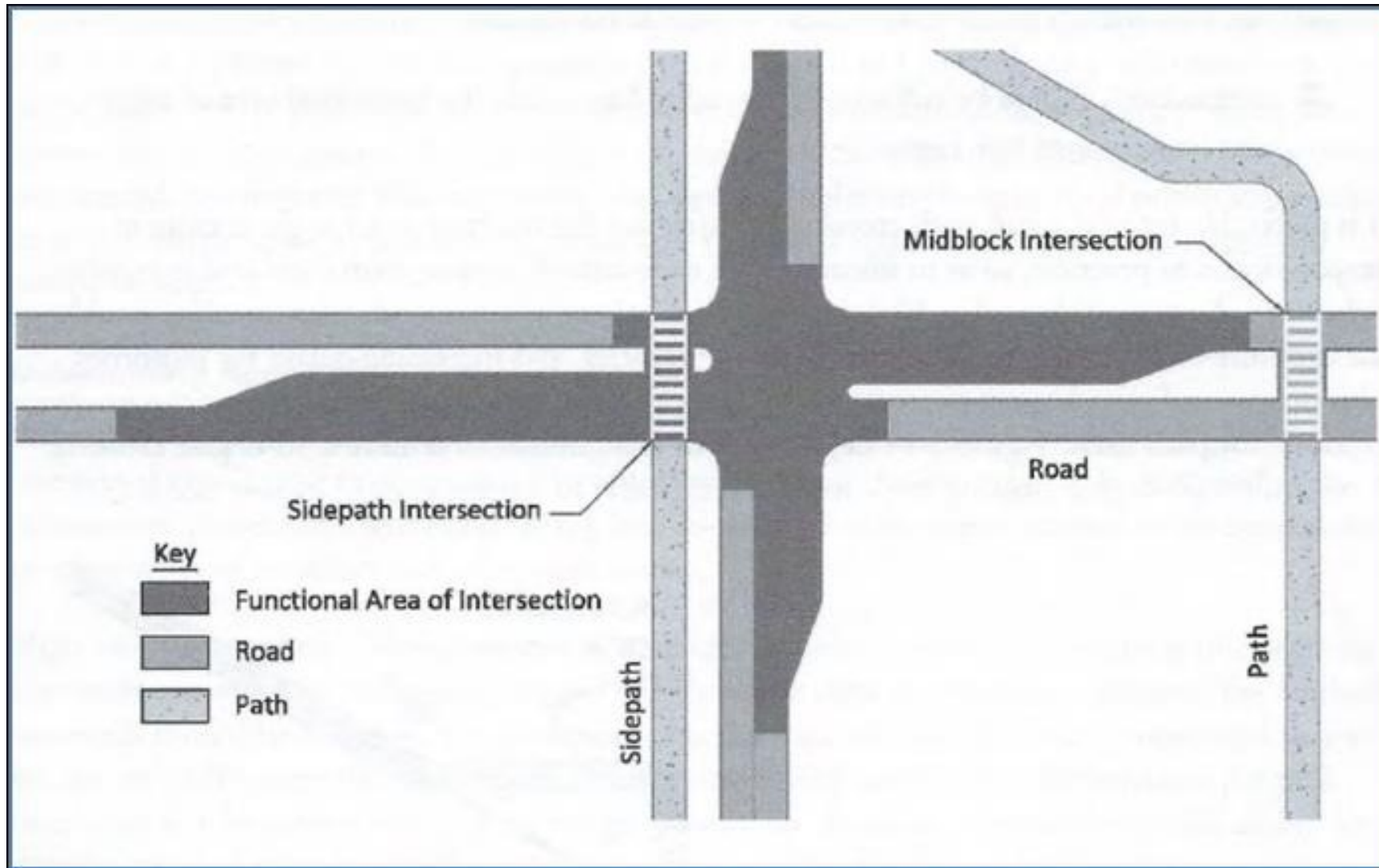
Chapter 9 – Bicycle Facilities

- Curb Ramps and Blended Transitions
 - Shall be parallel to and the full width of the approaching path width.
- Shared Use Path Roadway Intersections
 - Grade Separated Crossings – Crossings consisting of either a bridge over the roadway or an underpass beneath the roadway.
 - Sidepath/Intersection Crossings – Crossings that are located within the functional area of an intersection of two or more roadways and the path is running parallel with the roadway.
 - Midblock Crossings – Crossings that are located outside the functional area of an intersection.



Deland, FL

Chapter 9 – Bicycle Facilities



Chapter 9 – Bicycle Facilities

- Structures Width on Shared Use Paths
 - Clear Width - Shall be the same as the approach width of the path
 - Additional Buffer - At least a 2' wide clear area on each side should be provided
- Structures Grade on Shared Use Paths
 - Where compliance with the 5% max running slope is not practicable due to existing terrain or infrastructure, right-of-way availability, a notable natural feature, or similar existing physical constraints, compliance is required to the extent practicable.



Legacy Trail, Sarasota, FL

Chapter 10 – Maintenance and Resurfacing

- Safety Edge should be provided adjacent to the travel lane on roadways
 - without curb or paved shoulders,
 - with a posted speed of 45 mph or greater, and
 - a history of lane departure crashes
- Additional Resources
 - [FHWA's Office of Safety – Safety Edge](#)
 - [FHWA's Crash Modification Factors Clearinghouse](#)
 - [FDOT's Developmental Specification for Safety Edge – Dev330SE](#)



CR 41, Pasco County, FL

Chapter 11 – Work Zone Safety and Mobility

- Develop and maintain a program consistent with the [MUTCD](#)
 - If federal-aid highway funds are provided, also follow [Title 23 Code of Federal Regulations \(CFR\) 630 Subpart J](#), more commonly known as the [Work Zone Safety and Mobility Rule](#) and [Temporary Traffic Control Devices Rule \(Subpart K\)](#)
- When an existing pedestrian facility is in place, an accessible and continuous route for pedestrians through, in, and/or around construction or maintenance work zones must be provided.



Chapter 11 – Work Zone Safety and Mobility

- Short Term Transverse Rumble Strips
 - In locations with existing raised rumble strip sets (e.g., intersections, approaches to horizontal curves, toll plazas), maintain or replace the raised rumble strip sets throughout construction.
- Temporary Raised Rumble Strip Sets
 - Temporary raised rumble strip sets may be used to supplement the required signs, channelizing devices, and flagging operations in the work zone
 - Lane closure on a two-lane, two-way roadway
 - Existing posted speed prior to construction is 55 mph or greater



Chapter 11 – Work Zone Safety and Mobility

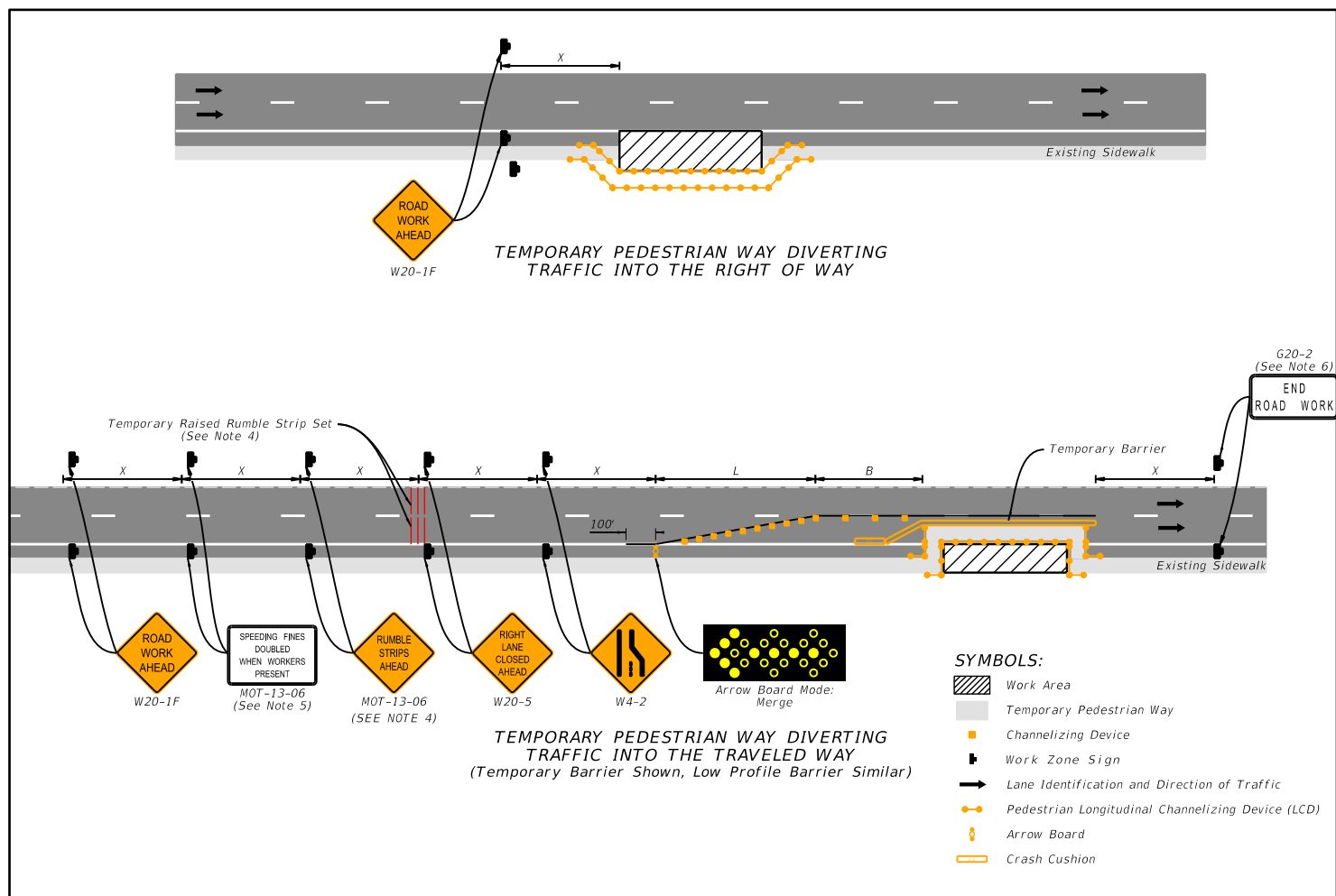
- Number and Width of Travel Lanes, Bike Lanes, Sidewalks and Shared Use Paths
 - Freeways – 11'
 - Arterials – 10' except on transit or truck routes, where a minimum width outside through lane of 10.5' is required
 - Collectors – 10'
 - Local – 10' or to match existing lane widths if less than 10'
 - Sidewalks – 5'
 - Shared Use Paths – 8'
 - Bike Lanes – 4' plus 1' offset from barrier or curb
- Do not allow traffic control and warning devices to encroach on travel lanes, bike lanes, paved shoulders, sidewalks, and shared use paths



US 441, Orange County, FL

Chapter 11 – Work Zone Safety and Mobility

- Figure 11 – 4 Sidewalk/Shared Use Path Diversion (Temporary Sidewalk/Shared Use Path)



Chapter 12 – Construction

- Defined the Engineer of Record (EOR) and the Construction Engineer (CE)
 - EOR - Professional Engineer that develops the criteria and concept for the project, performs the analysis, and is responsible for the preparation of the Plans and Specifications. The Maintaining Authority's Engineer of Record may be in-house staff or a consultant
 - (CE) - Professional Engineer that supervises the construction of the project. The Maintaining Authority's Construction Engineer or Designee may assign in-house staff or a consultant to act on their behalf



US 98, Franklin County, FL

Chapter 12 – Construction

- Alterations in Plans
 - No changes shall be made on any plan or drawing after it is approved by the EOR, except as authorized in writing by the EOR
 - Minor changes may be approved by the CE in consultation with the EOR
- Authority of the CE
 - All work shall be performed to the satisfaction of the CE
- Qualifications for Services for FDOT Administered Projects
 - For projects administered by a local government that are wholly or partially funded by the Florida Dept. of Transportation, there are limitations on who may perform design, and Construction Engineering and Inspection services (CEI). See F.S. 337.14 (7) Application for qualification; certificate of qualification; restrictions, request for hearing.

Chapter 13 – Transit

- Shelters
 - Shelters should be installed at locations where demand warrants installation and in accordance with clear zone and lateral offset criteria
- Red-Colored Pavement for Transit Lanes
 - FHWA has issued an interim approval for the optional use of red-colored pavement
 - to enhance the conspicuity of station stops, travel lanes, or other locations in the roadway
 - [MUTCD – Interim 1A-22](#)



Lakeland, FL

Chapter 14 – Design Exceptions & Variations

- Design Exceptions are required when existing or proposed design elements are below both the criteria in this Manual and AASHTO's new construction criteria for the Controlling Design Elements
 - For projects using safety funds and developed to improve specific safety problems, only the elements identified under the scope of work for the safety improvement project are subject to these approval processes.
 - For drainage projects, only elements identified in the scope of services for the drainage project are subject to these approval processes.
 - For landscape-only projects, intersection sight distance Design Variations may be processed by the Responsible Landscape Architect of Record. For design projects with landscaping, intersection sight distance Design Variations must be processed by a Professional Engineer.
 - Maintenance Resurfacing, Ride Only (a.k.a., Ride Rehabilitation) and Skid Hazard Projects do not require Design Exceptions or Variations other than for accessible curb ramp or blended transition requirements. If compliance with accessible curb ramp or blended transition requirements is determined to be technically infeasible, documentation as a Design Variation is required.

Chapter 17 – Bridges and Other Structures

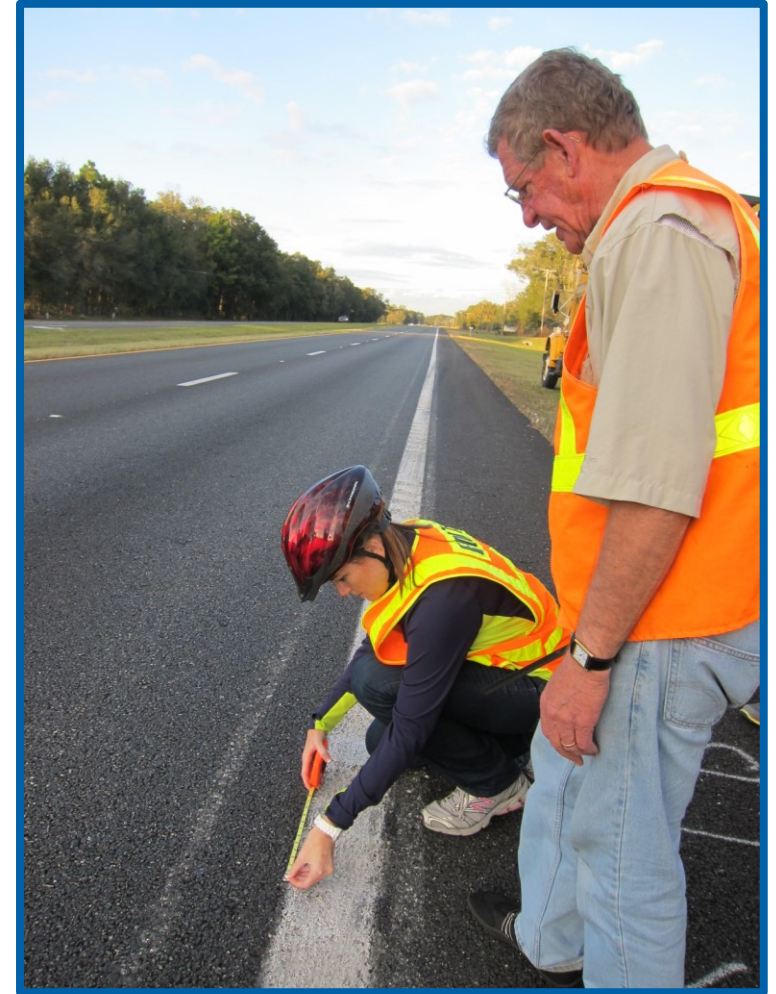
- Wildlife Crossing Features
 - Consider the use of wildlife connectivity features (e.g. shelves and wildlife fencing) in accordance with the **FDOT Wildlife Crossing Guidelines**
 - New or modified structures, such as bridges, bridges with shelves, specially designed culverts, enlarged culverts or drainage culverts and/or exclusionary devices such as fencing, walls or other barriers, or some combination of these features
 - Wildlife refers to listed, protected, or otherwise regulated species



Bridge with Shelves for Wildlife, FL

Chapter 18 – Signing and Marking

- Pavement Markings
 - When the installation of pavement markings are included on a roadway project with flush shoulders and posted speeds of 50 mph or greater, use Standard Thermoplastic, Profiled Thermoplastic, Preformed Thermoplastic, Permanent Tape, or a Two Reactive Component material for the final pavement markings.
- Longitudinal Audible Vibratory Treatments (AVTs)
 - AVTs are a countermeasure to reduce the severity and frequency of lane departure crashes. Longitudinal AVTs shall be used on high speed roadways (posted speed 50 mph or greater) with flush shoulders. Longitudinal AVTs must not be placed within the limits of intersections or crosswalks.
 - AVT options include cylindrical ground-in rumble strips, sinusoidal ground-in rumble strips, and profiled thermoplastic. The sinusoidal ground-in rumble strip option provides the most durable solution with less noise pollution.



US 301, Marion County, FL

Chapter 19 – Traditional Neighborhood Development

- Information historically in this chapter has been incorporated into the remaining chapters of the Florida Greenbook



Ft. Myers, FL

Chapter 20 – Drainage

- Regulatory Requirements
 - Chapter 62-330 F.A.C., implements the comprehensive, statewide environmental resource permit (ERP) program under Section 373.4131, F.S.
- Stormwater Management Strategies
 - Watershed Approach to Evaluate Regional Stormwater Solutions (WATERSS)
 - Pond Siting Process
- Green Stormwater Elements
 - Bioretention/Biofiltration Planter
 - Bioretention Swale
 - Hybrid Bioretention Cell
 - Pervious Strips
 - Street Trees
 - Pervious Pavers/Permeable Pavement



Port Townsend, Washington

Chapter 20 – Drainage

- Hydrologic Analysis
 - Stormwater modeling software, approved by the maintaining agency or local government jurisdiction
- Hydraulic Openings
 - Design stage for a ditch bottom inlet may be allowed to exceed the inlet top when the ditch or swale can accommodate the capacity
- Cross Drain Hydraulics
 - One-dimensional models - best suited for in-channel flows and when floodplain flows are minor
 - Two-dimensional models - used when flow patterns are complex and one-dimensional model assumptions are significantly violated
 - Table 20 – 9 Bridge Hydraulic Modelling Selection may be used to determine the appropriate modeling approach



Port Townsend, Washington

Chapter 20 – Drainage

- Culvert Materials

- Durability

- In tannic water need to consider the effect of microbially induced corrosion of concrete pipes, especially in industrial or sewer systems
 - The Culvert Service Life Estimator based on standard measurement of soil and water parameters. Tannic water can provide an environment for organisms to grow on the material surface that is not taken into consideration by this tool, which will over-predict the facility life.

- Structural Design

- The structural design of all culverts, storm drain pipes and drainage structures shall be in accordance with specifications (including guide specifications) published by the American Association of State Highway and Transportation Officials (AASHTO). At a minimum, the ***AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications, 9th Edition (2020)*** shall be used.

Contact Mailer

- How can I find out when its effective?
- “Self Service” web page where you can register to receive information from FDOT
- Options include information on design criteria and standard changes, specifications and estimates updates, training opportunities, and Greenbook!
- <http://www.dot.state.fl.us/projectmanagementoffice/ContactDatabase.shtm>



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Questions?

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