

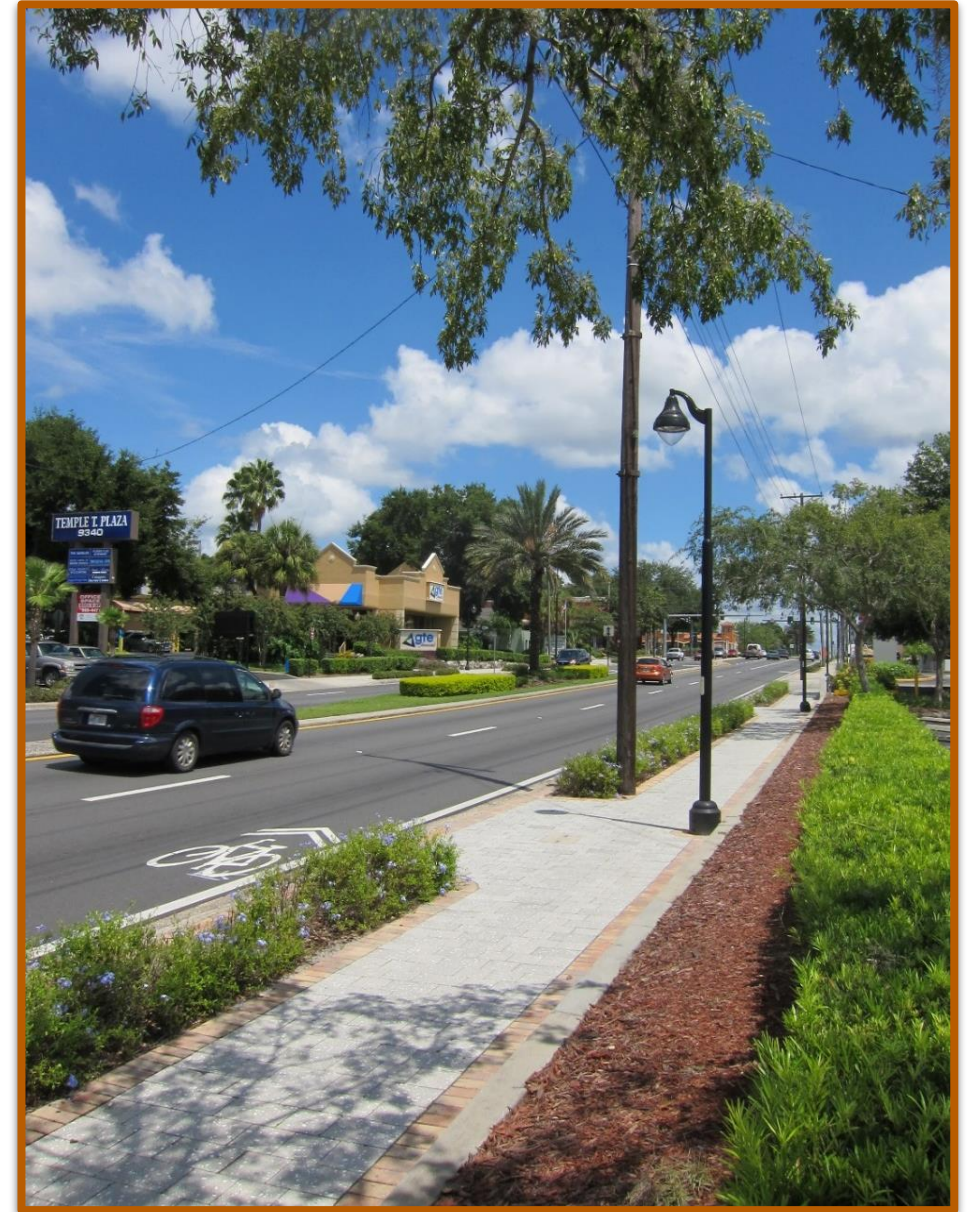


2020 Florida Greenbook Where We Are Headed

Mary Anne Koos, CPM &
Andy Tilton, P.E

Purpose of Florida Greenbook

- Section 334.044, F.S. Florida Statutes
 - Provide uniform minimum standards and criteria
 - Covers design, construction, and maintenance
 - Applies to all streets, roads, highways, bridges, sidewalks, curbs and curb ramps, crosswalks, bicycle facilities, underpasses and overpasses traveled by the public



56th Street, Temple Terrace

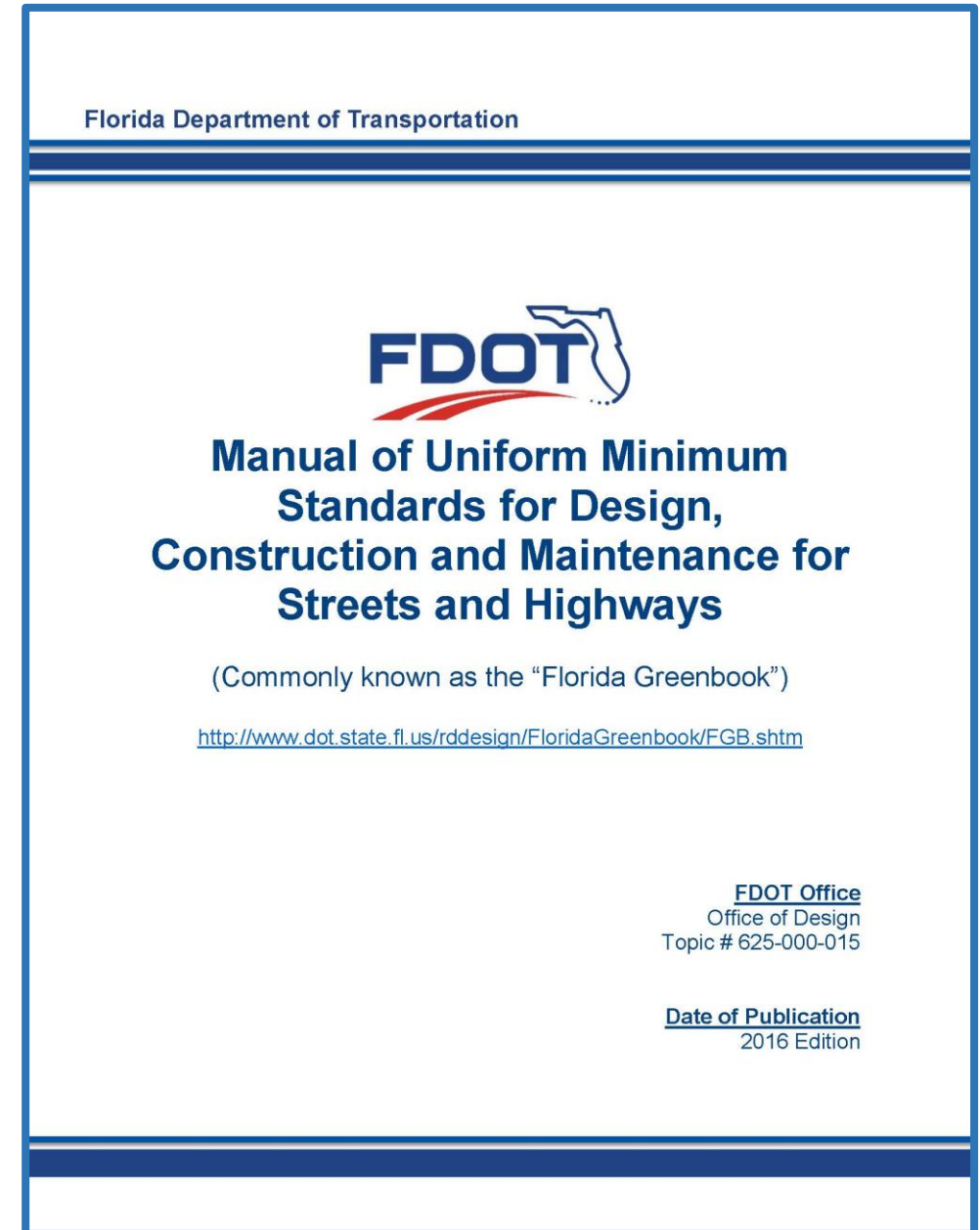
Florida Greenbook Advisory Committee

- 4 members per FDOT District (28 total)
 - Professional engineers representing rural and urban local governments
 - Professional engineer not employed by a government agency
 - FDOT's District Design Engineer



Florida Greenbook

- 2016 Florida Greenbook is the current edition
 - Was effective **June 19, 2017**
- 2018 Florida Greenbook is drafted and has begun rulemaking
 - Expect to be adopted fall 2019
- Draft 2018 Florida Greenbook posted on FDOT's web page:
 - ✓ <http://www.fdot.gov/roadway/>
- 2020 Florida Greenbook is being drafted now





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>

Draft 2018 Florida Greenbook

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

Roadway Design / Roadway Criteria / Florida Greenbook

roadway intersection

Florida Greenbook

Current Florida Greenbook

2016 Florida Greenbook
Effective June 19, 2017
Summary of Major Changes

DRAFT Florida Greenbook

2018 Florida Greenbook DRAFT
Proposed for 2019 Effective Date
Summary of Major Changes
Design Exception and Variation Sample Letter

Archived Florida Greenbook

2013	1997
2011	1989
2007	1986
2005	1984
2002	1981
2001	1976

1994-Revision

Committee Meetings

FLORIDA GREENBOOK ADVISORY
COMMITTEE MEETING

Agenda and Meeting Package
Thursday, March 28, 2019, 8:00 AM – 5:00 PM
Friday, March 29, 2019, 8:00 AM - 12:00 PM

PLEASE NOTE:

The *Manual of Uniform Minimum Standards for Design, Construction and Maintenance (Florida Greenbook)* provides criteria for public streets, roads, highways, bridges, sidewalks, curbs and curb ramps, crosswalks, bicycle facilities, underpasses, and overpasses used by the public for vehicular and pedestrian travel.

Authority for the *Florida Greenbook* is established by **Chapters 20.23(3)(a), 334.044(10)(a), and 336.045, Florida Statutes**, and **Rule 14-15.002, Florida Administrative Code**. This manual is intended for all projects not on the state and national highway systems.

This site contains the current and past editions, meeting information, and committee membership for the *Florida Greenbook* in *.PDF format

To receive notices of updates to the *Florida Greenbook*, users should register their preferences and e-mail addresses in the Department's Contact Management database. Users can register at the following link:

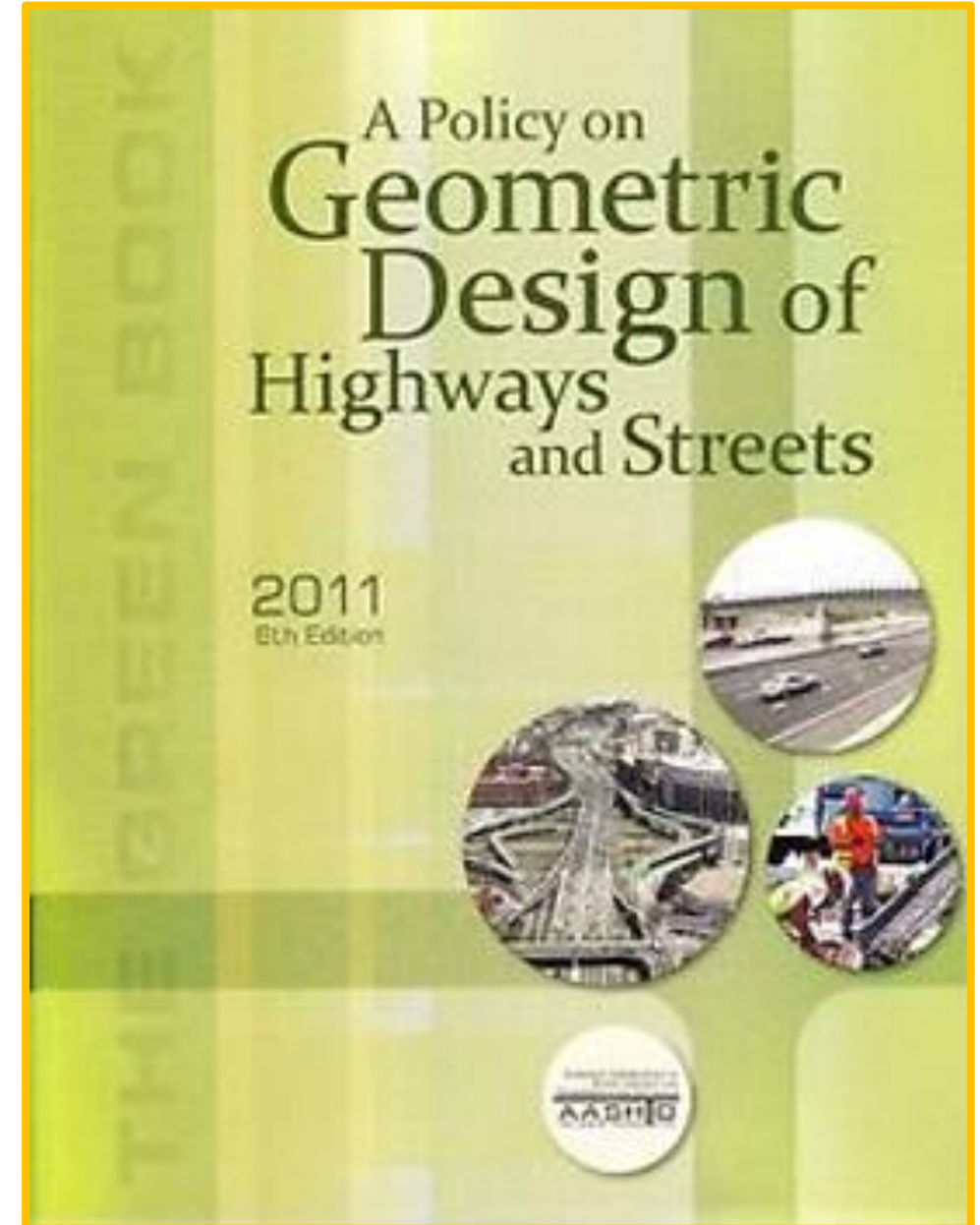
<http://www.fdot.gov/designsupport/ContactDatabase.shtm>

If you have any questions, comments or suggestions regarding the Florida Greenbook, please contact **Mary Anne Koos, Special Projects Coordinator**

Email: maryanne.koos@dot.state.fl.us
Phone: (850) 414-4321

2011 AASHTO Greenbook

- 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



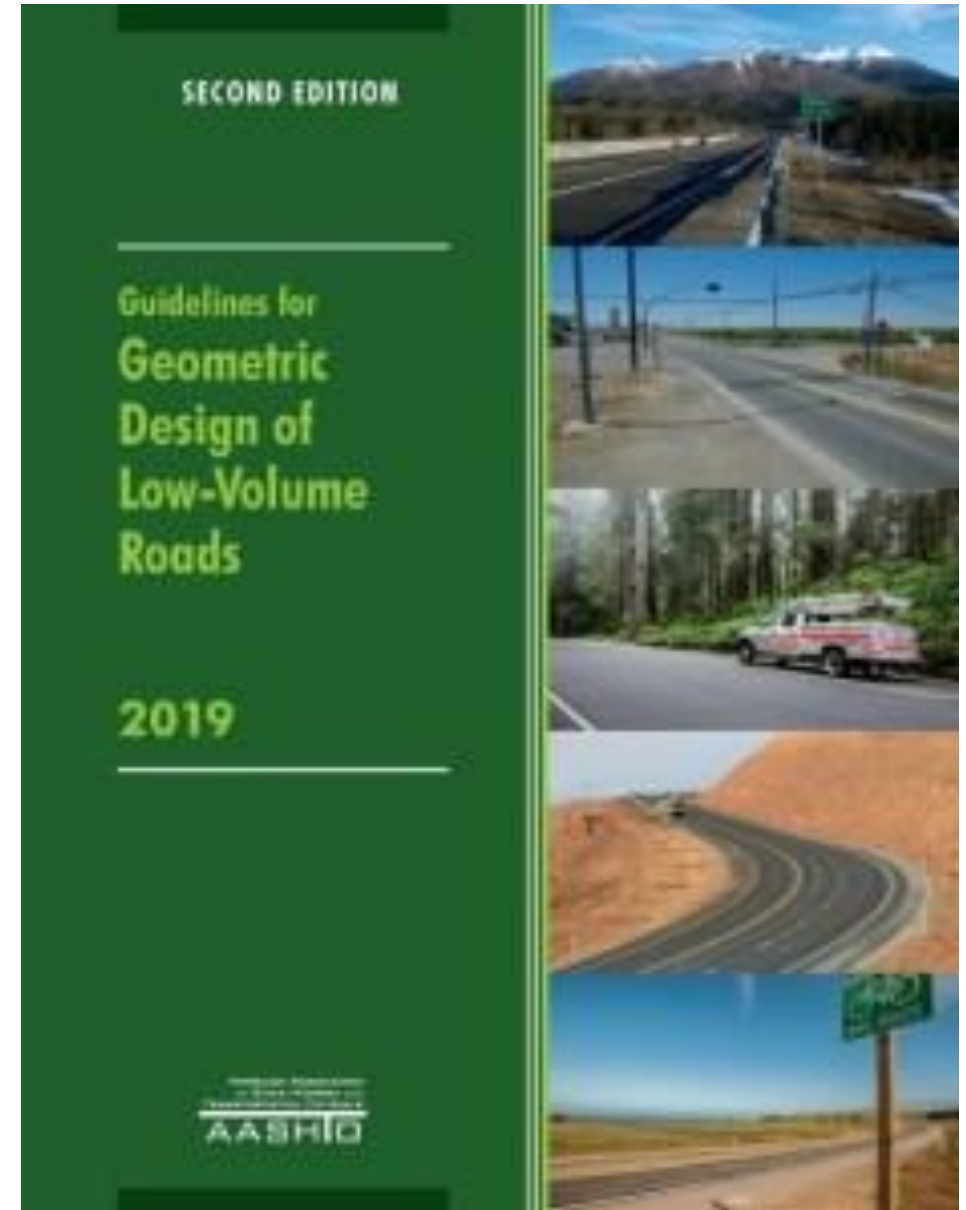


2018 AASHTO Greenbook?

- 2011 AASHTO Greenbook is still the incorporated reference based upon FHWA's published Final Rule to Title 23, Code of Federal Regulations Part 625
 - FHWA reviewed the 2018 Green Book and found the updates meet or improve upon the criteria of the 2011 Green Book
 - State DOTs may adopt the 2018 Green Book for use *on* NHS projects
 - Until 23 CFR part 625 is updated through rulemaking, the 2018 AASHTO Green Book should be considered guidance only
 - <https://www.fhwa.dot.gov/design/standards/190510.pdf>
 - http://downloads.transportation.org/publications/GDHS-7_SummaryOfChanges.pdf

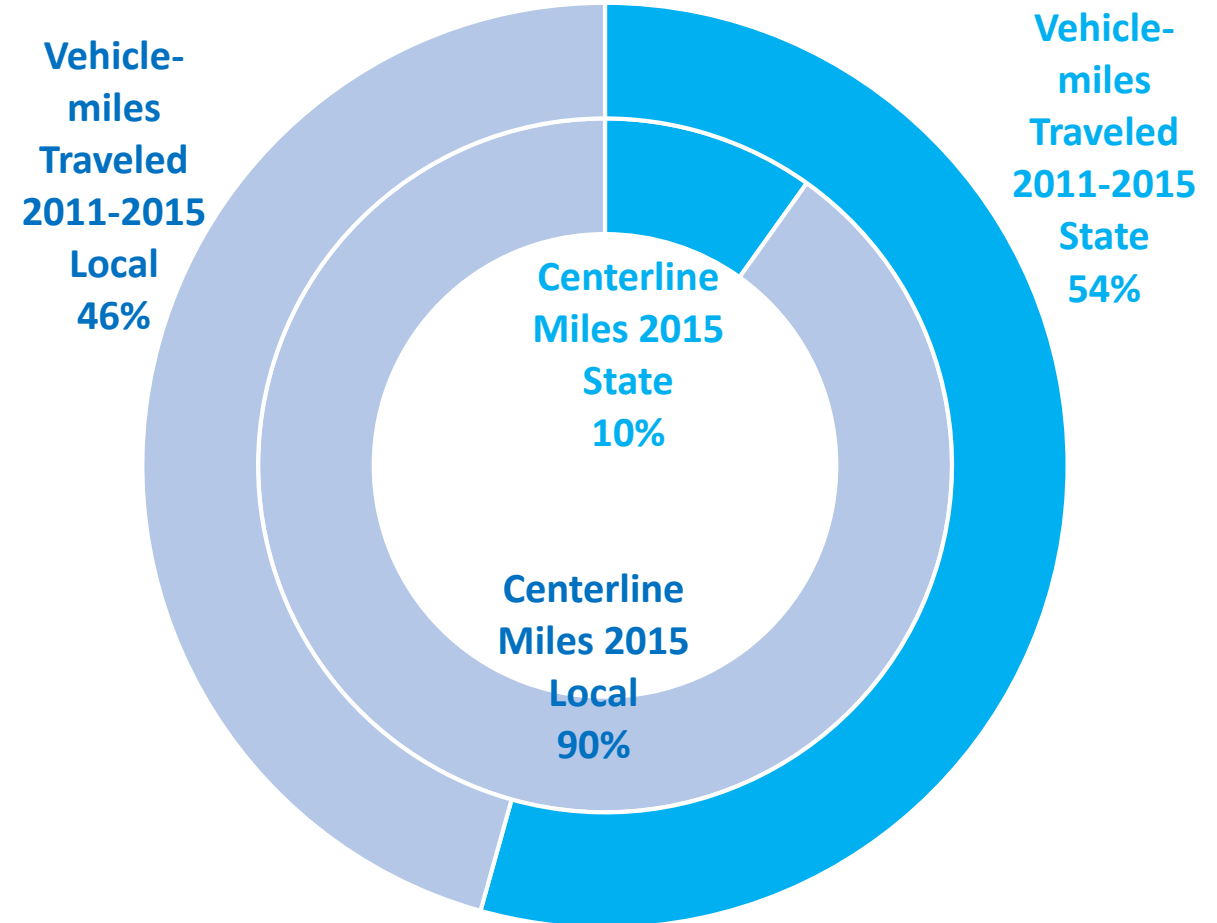
2019 AASHTO Geometric Design of Low Volume Roads

- Local roads and minor collectors with ADT of ≤ 2000 vehicles per day



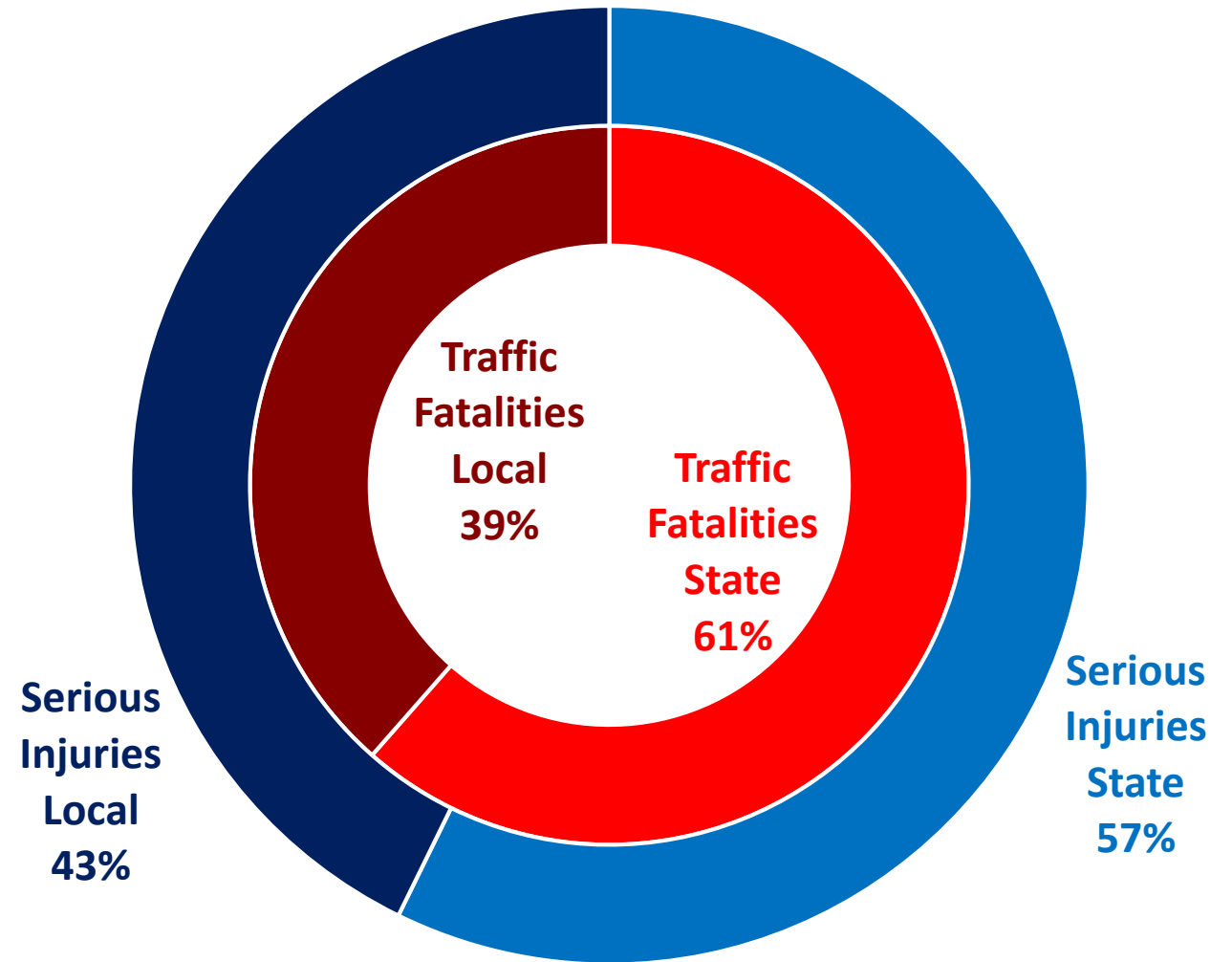
Florida's Public Roadways

State-maintained and Locally-maintained



Florida's Public Roadways

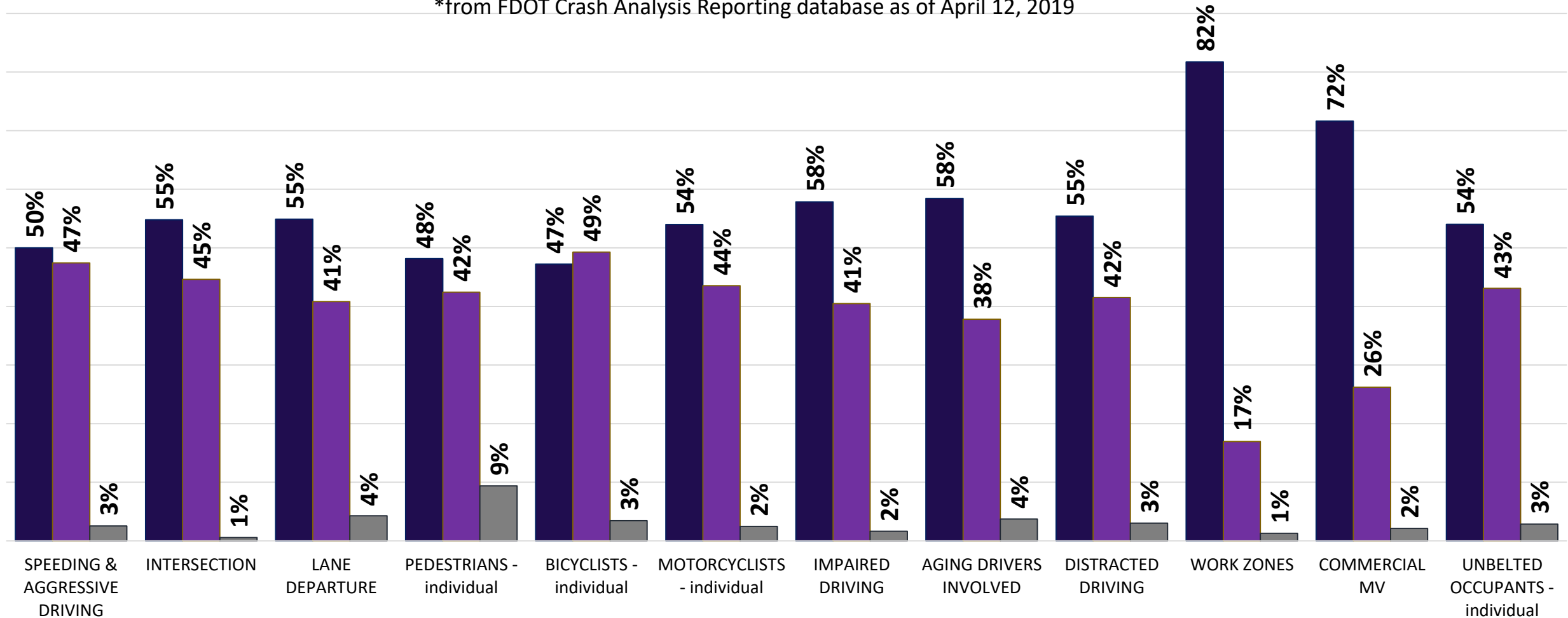
Traffic Fatalities and Serious Injuries: Local versus State



Fatalities and Serious Injuries by SHSP Category

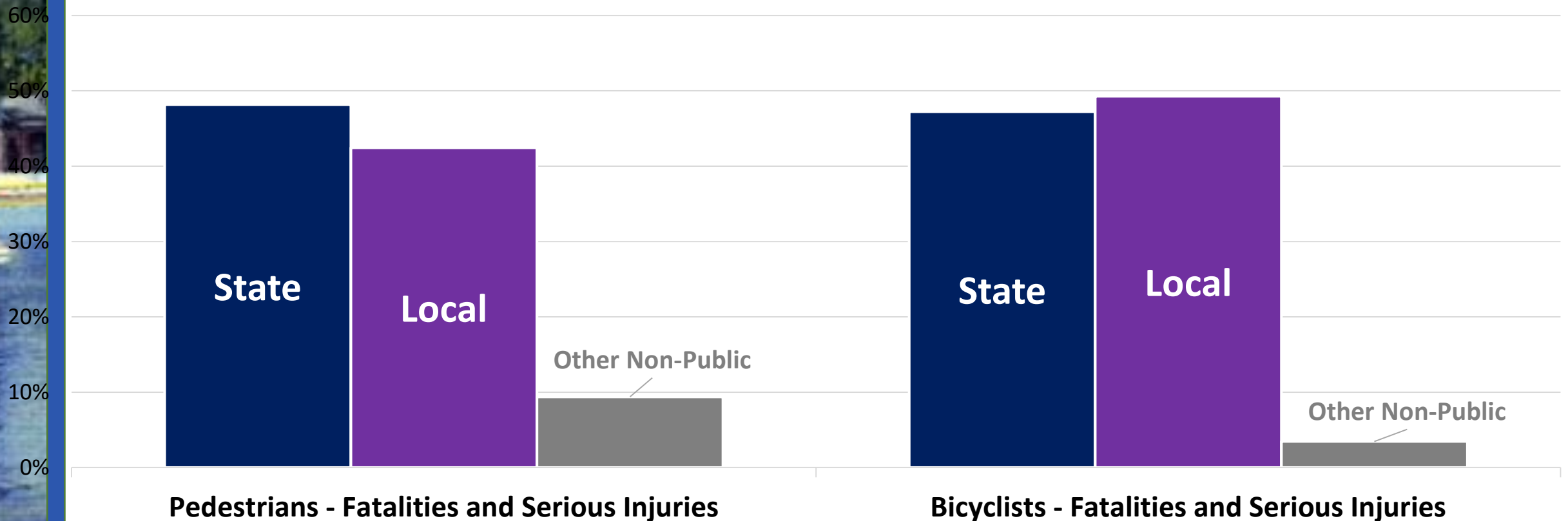
2011-2015 Percentage of Local versus State

*from FDOT Crash Analysis Reporting database as of April 12, 2019



Florida Pedestrian and Bicyclist Fatalities and Serious Injuries

Florida Pedestrian and Bicyclist Fatalities and Serious Injuries 2011-15, by Roadway System





Major Changes in 2020 Greenbook - Drafted

- Introduction and Definition of Terms
- Chapter 1 – Planning
- Chapter 3 – Geometric Design
- Chapter 5 – Pavement Design and Construction
- Chapter 10 – Maintenance and Resurfacing
- Chapter 20 – Drainage

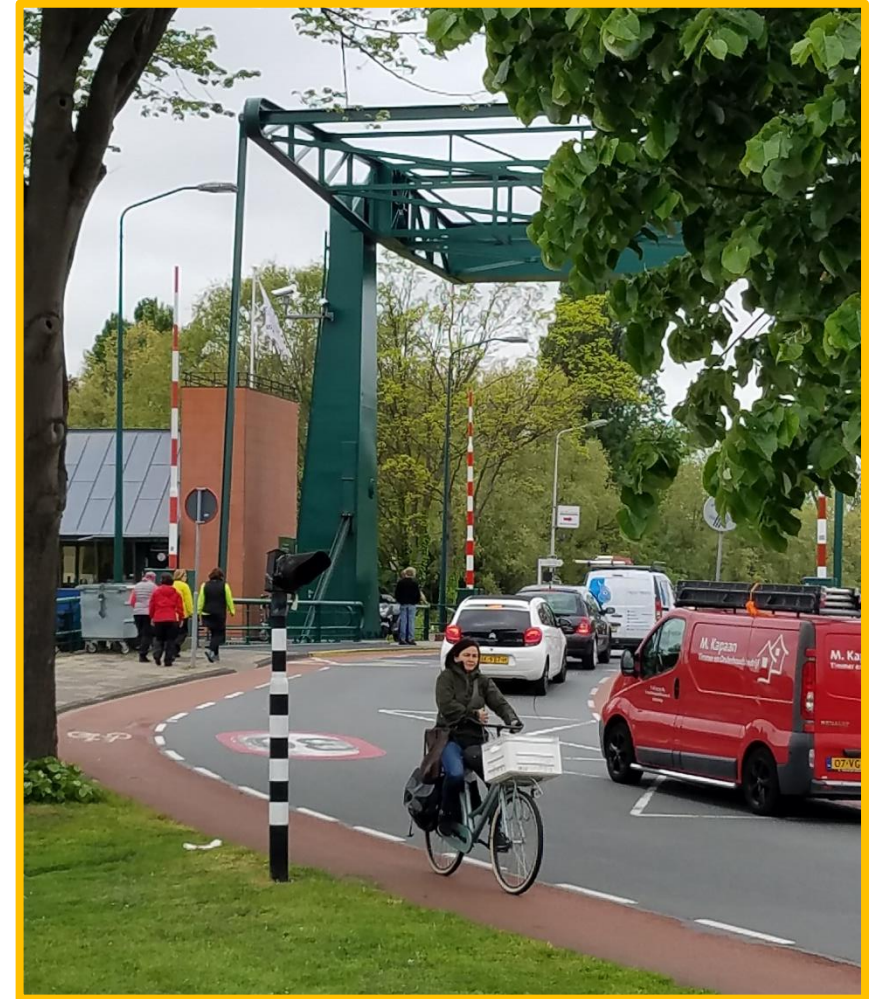
Major Changes in 2020 Greenbook – Future Work

- Chapter 1 – Planning (road diets/repurposing pavement)
- Chapter 2 – Land Development (TND area planning, mixed use and high density development)
- Chapter 3 – Geometric Design (organize to be similar to 2018 AASHTO Greenbook, reflect context classifications, controlling criteria, and parking)



Major Changes in 2020 Greenbook – Future Work

- Chapter 9 – Bicycle Facilities (separated bike lanes)
- Chapter 11 – Work Zone Safety (pedestrian and bicycle facilities)
- Chapter 15 – Traffic Calming (speed management)
- Chapter 19 – TND (delete)
- Chapter 20 – Drainage (sustainable stormwater, bio swales, permeable pavements)



Leiden, Netherlands

Introduction

- Context-based planning and design
- Statutory Authority
- Florida Greenbook Committee
- Intended Use (new, reconstruction, resurfacing, maintenance)
- When exceptions and variations are required
- Policies and Objectives
- Definitions



SR 100, Putnam County



Introduction – Policies and Objectives for Context Based Design

- 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 next steps for implementation



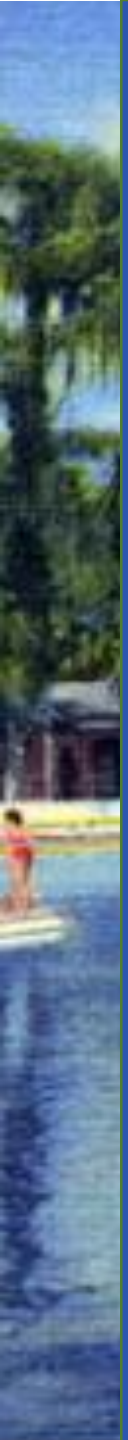
Introduction – Definitions

- **Bridge** – Structure erected over a depression, water, highway, or railway, having a track or passageway for carrying traffic or other moving loads, and having a total span of more than 20 feet between undercopings of abutments.
- **Context Classification System** – Broadly identifies the built environments in Florida, based upon existing and future land use characteristics, development patterns, network scale, and roadway connectivity of an area.
- **Cross Slope** – Transverse slope and/or superelevation described by the roadway section geometry.
- **Design User** – Anticipated users of a roadway (including pedestrians, bicyclists, transit riders, motorists, and freight handlers) that form the basis for each roadway's design.

Chapter 1 – Planning

- The Florida Greenbook's Context-Based Design policy captures three core concepts:
 - Serve the needs of transportation system users of all ages and abilities, including pedestrians, bicyclists, transit riders, motorists, and freight handlers.
 - Design streets and highways based on local and regional land development patterns and reflect existing and future context.
 - Promote safety, quality of life, and economic development.





Functional Classification	Primary Characteristics
Limited Access Facilities	<ul style="list-style-type: none">• Limited access• Through traffic movements• Primary freight routes• Guided by FHWA Design Standards for Highways (NHS)
Principal Arterial	<ul style="list-style-type: none">• Through traffic movements• Longer distance traffic movements• Primary freight routes• Access to public transit• Pedestrian and bicycle travel
Minor Arterial	<ul style="list-style-type: none">• Connections between local areas and network principal arterials• Connections for through traffic between arterial streets or highways• Access to public transit and through movements• Pedestrian and bicycle travel
Collector	<ul style="list-style-type: none">• Carry traffic with trips ending in a specific area• Access to commercial and residential centers• Access to public transit• Pedestrian and bicycle travel
Local Roads	<ul style="list-style-type: none">• Direct property access—residential and commercial• Pedestrian and bicycle travel

Context Based Design

FDOT CONTEXT CLASSIFICATIONS



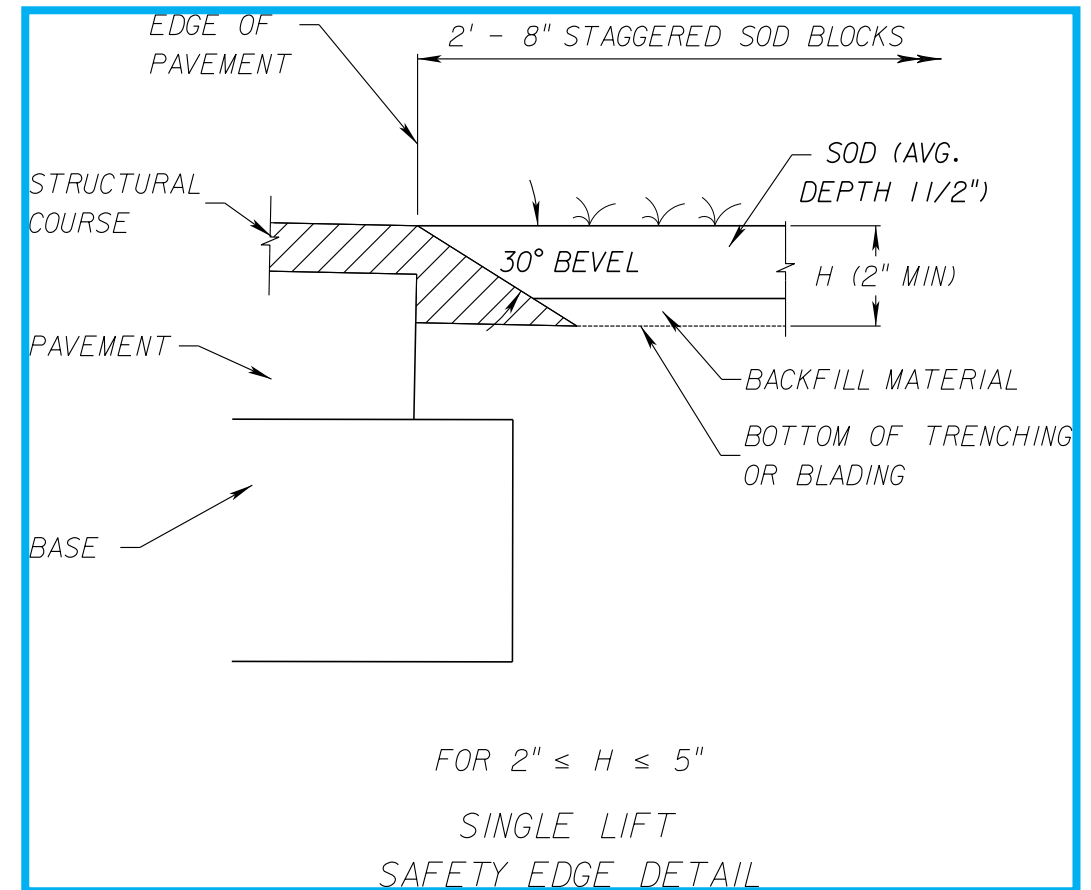
Chapter 10 – Maintenance and Resurfacing

- 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.



Chapter 10 – Maintenance and Resurfacing

- [**FHWA's Office of Safety – Safety Edge**](#), Design and Construction Guide, Guide Specification, Safety Evaluation Tech Brief and Case Studies
- [**FHWA's Crash Modification Factors Clearinghouse**](#) also provides information on the performance of safety edge.
- [**Developmental Specification for Safety Edge – Dev330SE**](#) on the Department's web site which may be used if approved by the agency having jurisdiction.



Chapter 20 – Drainage

- Regulatory Requirements
 - Updated requirements to include Chapter 62-330 F.A.C which implements the comprehensive, statewide environmental resources permit
- Stormwater Management Strategies
 - Watershed Approach to Evaluate Regional Stormwater Solutions (WATERSS)
 - Pond Siting Process
- Open Channel Hydrologic Analysis
 - Added an option for the use of stormwater modeling software with approval of local agency





Watershed Approach to Evaluate Regional Stormwater Solutions (WATERSS)

- Regional stormwater management process
 - Promotes collaboration among stakeholders to implement innovative stormwater management practices
- Identify and screen broader strategies
 - Conventional, stormwater watershed-wide opportunities, and other innovative regional strategies
- Collaborate with external partners
 - Discovery of stormwater management partnership opportunities
- Expand on and revise the current Environmental Look Around and Pond Siting processes



WATERSS Benefits over Traditional Ponds

- Collaborate with external partners
 - Discovery of stormwater management partnership opportunities
- Identify and screen broader strategies
 - Conventional, stormwater watershed-wide opportunities, and other innovative regional strategies
- Regional stormwater management process
 - Promotes collaboration among stakeholders to implement innovative stormwater management practices
- Benefit more than one roadway project (regional solution)
- Expand on and revise the current Environmental Look Around and Pond Siting processes

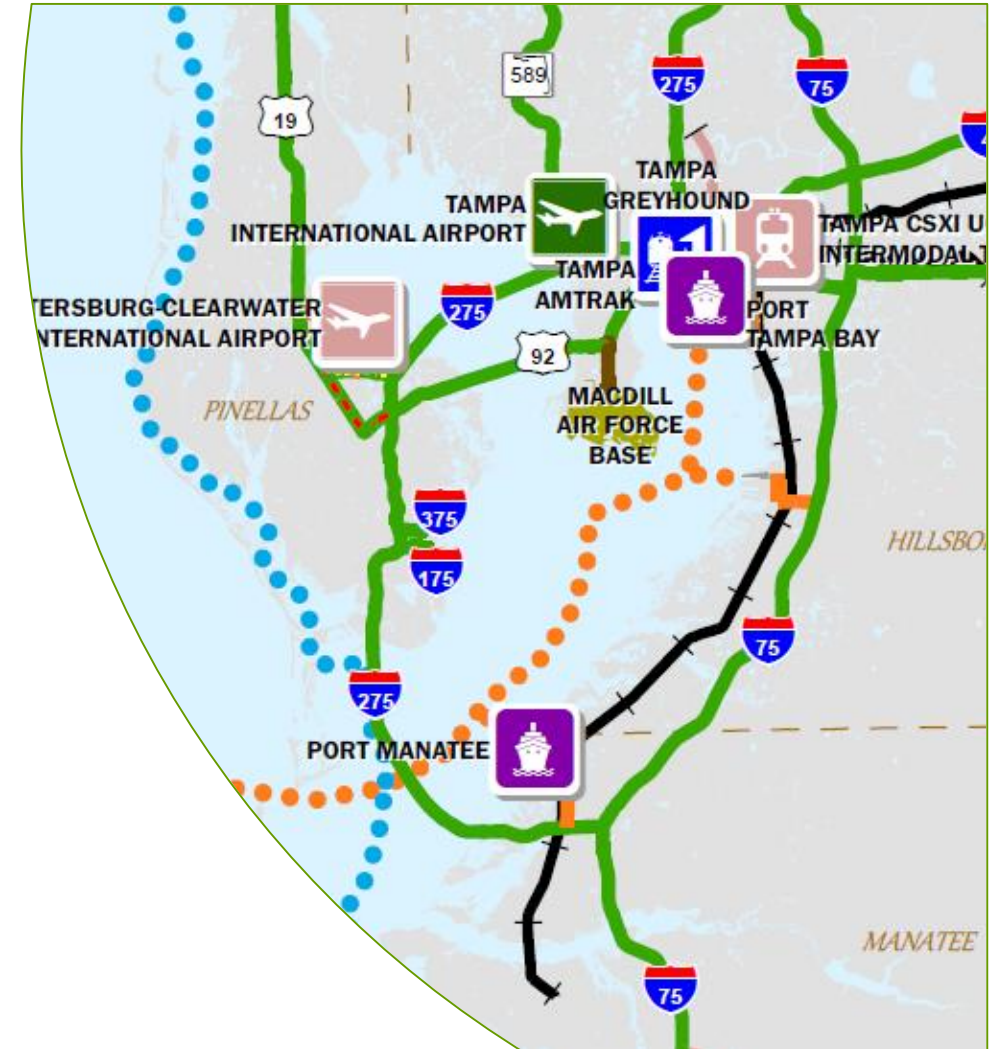


WATERSS Benefits over Traditional Ponds

- Cost per pound of nutrients removed is often less
- Reduce additional environmental impacts
- Greater overall benefit to watershed
- Water-use advantages
- Reduced long term maintenance costs
- Focus on sources of impairments (roadway not a major source of nutrients)

Step 1 – Project Corridor Identification

- Identify overall project characteristics
 - Project location
 - Environment and land use context (urban vs. rural project)
 - Facility type
 - Alternatives being considered
 - Potential stormwater needs.





Step 2 – Explore and Collect Data

- Identify existing stormwater-related conditions
 - Potential partnerships
 - Innovative stormwater solutions available
 - Utilize GIS support tools
 - Query National Pollutant Discharge Elimination System(NPDES) Coordinator regarding:
 - Total Maximum Daily Load (TMDL)
 - Basin Management Action Plan (BMAP)
 - Potential stormwater needs.



Step 3 – Determine Stormwater Goals & Requirements

- Identify and document stormwater management goals and requirements based upon information discovered in Step 2
 - Understand scope of proposed roadway project and potential right of way needs



Step 4 – Initial Stakeholders & Regulatory Coordination Meeting

- Introduce project to stakeholders
- Present stormwater goals and opportunities being considered
 - Project overview
 - Stormwater Goals & Requirements
 - Baseline schedule
 - Preliminary costs
- Discuss cooperative or regional opportunities
- Understand stakeholder priorities



Step 5 – Define Potential Stormwater Management Strategies

- Discuss options from Step 4 and screen out non-viable solutions
- Agree on criteria for selection
 - Constraints or limiting factors such as cost, permitting challenges, maintainability, constructability, schedule, and environmental considerations
- Additional factors could include
 - Reliability of partners, compatibility with production schedule, benefit/cost ratio
- Compile a matrix for the comparison of solutions



Step 6 – Present Potential Stormwater Strategies at Stakeholders Meeting

- Present viable partnership solutions
- Provide stakeholders and regulators an opportunity to provide input
- Inform them of any innovative solutions being pursued
- Learn about other projects that should be considered



Step 7 – Further Coordination, Data Gathering & Analysis

- Continue coordination with prospective partners
- Technical Investigation – preliminary survey, geotech, etc.
- Meet with regulatory agencies/water management districts to determine permit feasibility



Step 8 – Negotiate and Execute Agreement with Partners

- Formal agreements are developed by agency legal staff and executed between the agency and its partners
 - State or federal agencies – MOA or MOU
 - Local governments – JPAs or easements

Step 9 – Traditional Pond Siting

- If traditional ponds are needed to meet regulatory requirements and right-of-way will be required, the Pond Siting Process begins.



Step 10 – WMD Coordination and ERP Permit

- Begin developing stormwater component of ERP for a conceptual stormwater management permit
- See Table 20-3 for permitting scenarios involving full and partial solutions

Innovative Solutions - Full	Innovative Solutions - Partial	Pond Siting Process Complete	Resource Requirements Satisfied and Roadway Plans Sufficiently Developed	Conceptual Permit	Construction Permit
✓	-	-	✓		✓
✓	-	-	X*	✓	
-	✓	✓	✓		✓
-	✓	✓	X*	✓	

* Conceptual plans will be needed for the Conceptual Permit application.



Step 11 – Stormwater Management Report

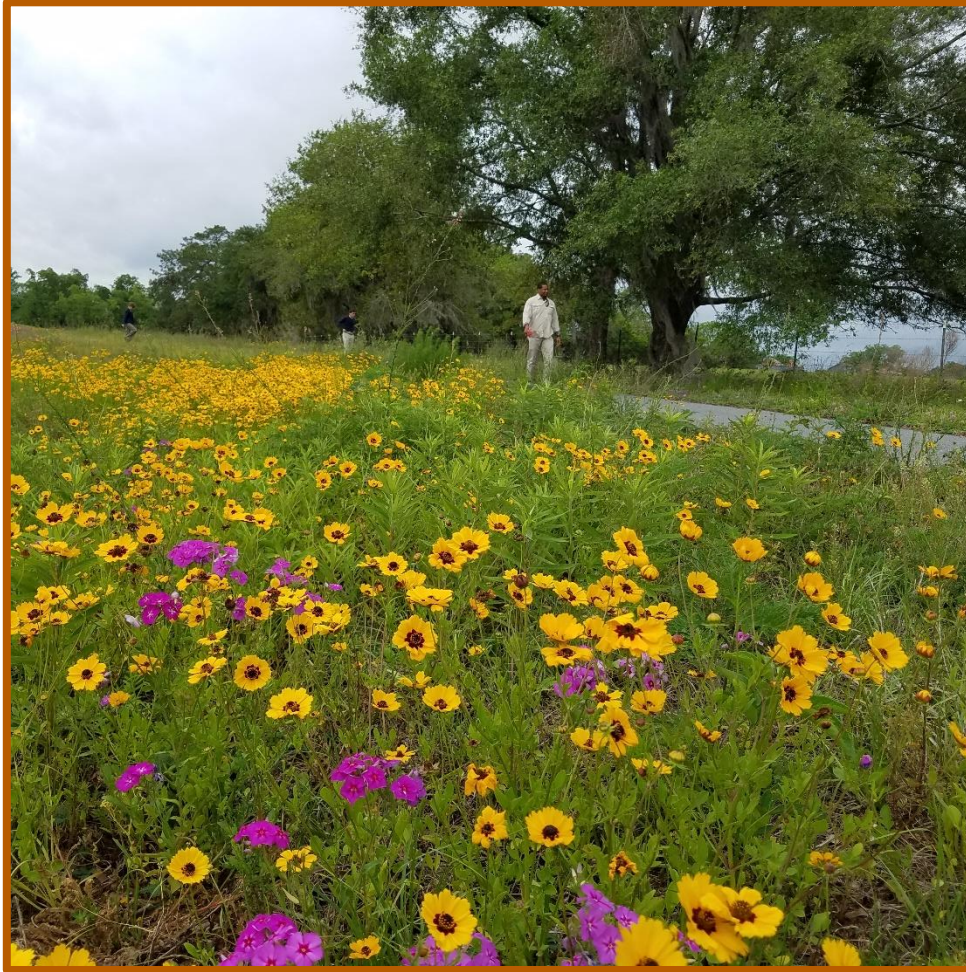
- Summarizes the memoranda prepared in planning:
 - Stormwater solutions analyzed
 - Solutions considered but eliminated
 - Documents solutions which will satisfy water quality and attenuation needs
- Includes agreements with stakeholders and meeting minutes
- If traditional pond siting pursued, contains:
 - Preliminary drainage design
 - Information on all traditional pond sites analyzed

Step 12 – Final Design, Final Permits, Construction, and Maintenance

- Design and stormwater plans finalized
- Construction permits are obtained
- Stakeholder coordination and communication continue
- Transfer of maintenance responsibility to partners (if agreed upon)



Questions?



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