Purpose of 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
On or Off the State Highway System?

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

FDOT Design Symposium 2018
Florida Greenbook

• 2016 Florida Greenbook is the current edition
  • Effective June 19, 2017
• 2018 Florida Greenbook is drafted
Major Changes in 2018 Greenbook

• Introduction and Definition of Terms
• Chapter 1 – Planning
• Chapter 3 – Geometric Design
• Chapter 4 – Roadside Design
• Chapter 6 - Lighting
• Chapter 8 – Pedestrian Facilities
• Chapter 9 – Bicycle Facilities
• Chapter 11 – Work Zone Safety
• Chapter 14 – Design Exceptions and Variations
• Chapter 17 – Bridges and Other Structures
• Chapter 18 – Signing and Marking
New Construction or RRR?

- New construction and reconstruction projects
  - Geometric Design, Roadside Design, Lighting, Rail Highway Crossings, Pedestrian and Bicycle Facilities, Transit, Drainage
- Maintenance and resurfacing projects
  - Maintenance and Resurfacing, Pedestrian and Bicycle Facilities
- All projects
  - Design Exceptions...and Variations
Introduction

• Applies to all transportation facilities off the state highway system

• For all projects when a standard is not met, follow process in Chapter 14 – Design Exceptions and Variations
Introduction - Definitions

• New definitions for –
  • Border Area
  • Clear Zone
  • Lateral Offset
  • Low Speed
  • Reconstruction
  • Shared Street
  • Shared Use Path/Multi-Use Trail
Chapter 1 – Planning

• Design should be based upon exiting and proposed land uses and development patterns

• Terms rural and urban are based upon population density

• Urban Area 1-Mile Buffer Maps
  • http://www.fdot.gov/roadway/BufferMaps/Default.shtm

Orange County Urban Area Buffer Map
Chapter 2 – Land Development

• Defines road users as pedestrians, bicyclists, transit and motor vehicle operators and passengers

• Provide desirable geometry that supports appropriate cross sections and sight distance

• Provide sufficient right of way for stormwater, utilities, pedestrian features

• Design for target speed
Chapter 3 – Geometric Design

• Revised table for stopping sight distance to include grades

• New tables for:
  • Decision sight distance
  • Deflections thru intersections
  • Min. length of horizontal curves
  • Length of compound curves in turning roadways

• Superelevation criteria revised
  • Two types – a) rural highways, urban freeways, and high speed urban highways
    b) low speed urban arterials and collectors
  • New tables for superelevation rates, minimum radii, and transition slope rates

• Values for traveled way widening revised to reflect a WB-62 as base vehicle.
Chapter 3 – Geometric Design (con.)

- Revised notes for maximum grade table
- Revised notes in lane widths table to allow 11-14’ lanes on 3- and 5-lane typical sections
- Reduced the min. shoulder widths for multi-lane divided highways
- New table for median widths which allows for narrower medians in constrained sections
- New section for islands for channelization, division, and refuge (painted and raised)
- Roadside slopes, clear zone, and lateral offset moved to Chapter 4
Chapter 3 – Geometric Design (con.)

- Revised section for auxiliary lanes at intersections (turn lanes)
- New table for pavement widths for turning roadways
- Clarified that accessibility requirements apply to sidewalks, shared use paths, transit boarding and alighting areas
Chapter 4 – Roadside Design

• Brand new chapter - 1/3 of all crashes are lane departure crashes and 50% of highway fatalities

• Definitions for recoverable, non-recoverable and traversable slopes

• New table for clear zone widths with provisions for cost, terrain, right-of-way, or social/environmental impacts

• New section for lateral offset requirements for above ground objects, drop offs, drainage features

• New section for barriers, crash test criteria, safety hardware upgrades
Chapter 4 – Roadside Design (con.)

- New section for offset requirements for signs, signals, lighting supports, utility poles, trees and similar features
  - Performance requirements for breakaway devices
  - Miscellaneous section for fire hydrants, railroad warning devices, mailbox supports, bus benches and shelters

- New section for barriers, end treatments and crash cushions
  - Performance requirements
  - Warrants (including median barriers)
  - Work Zones
Chapter 4 – Roadside Design (con.)

- Barrier Types (guardrail, concrete barrier, high tension cable barrier, and temporary barrier)
  - Selection guidelines
  - Placement
  - Location relevant to other features (e.g. shared use paths and guardrails)
  - Deflection space and zone of intrusion
  - Grading
  - Curbs
  - Flare rate
  - Length of need

- End treatments and crash cushions

- Bridge Rails
Chapter 6 – Lighting

• New definitions for LED, HPS, and MH luminaires
• Explanation of the lighting methods
  • Luminance – straight roadways, based upon surface type
  • Horizontal and vertical illuminance – pedestrian areas
  • Horizontal illuminance – intersections and interchanges, includes variable for surface type
• New requirements for underpasses
  • Use wall mounted luminaire attached to pier, pier cap or wall copings
  • Daytime and nighttime requirements
• Requirements for decorative and architectural lighting
Chapter 8 – Pedestrian Facilities

- Guidance for evaluation of existing driveways for accessibility and placement of new utility poles
- Revised section for curb ramps and blended transitions
- Clarifications of when to place detectable warnings
Chapter 9 – Bicycle Facilities

• Updated placement of bicycle lane markings and figures
• Added example of obstruction pavement marking
• Added requirement to redistribute pavement width to provide bicycle facilities with new table for lane widths
• New section on buffered bike lanes and green bike lanes
• Revised shared lane marking section to place in middle of lane
Chapter 9 – Shared Use Paths

• Extensive update of entire section
  • Standard widths and conditions for adjustments
  • Minimum graded and clear areas
  • Use of barriers to provide protection from drop offs, steep slopes, canals and water bodies
  • Separation from roadway criteria
  • Accessibility updates - curb ramps, detectable warnings, crossing and evaluation of existing driveways
  • Requirements for sign use, sizing and placement
Chapter 11 – Work Zone Safety

- Added requirements for clear zone in traffic control plans
- Guidance for the use of transverse rumble strips
- Requirements for barrier selection and placement
Chapter 14 – Design Exceptions & Variations

- Revised controlling criteria to be consistent with FHWA
- Required when not possible to meet the minimum standards
Design Exceptions and Variations

• Adopts FHWA new Controlling Design Elements
  • Will be included in 2018 Florida Greenbook
• Design Exceptions are required when proposed controlling design elements are below both AASHTO’s new construction criteria and the criteria in Florida Greenbook
• When proposed features other than the controlling design elements do not meet Florida Greenbook criteria, sufficient deviation must be documented as a Design Variation

Exhibit 14-A Sample Request Letter for Design Exception or Variation

TO: __________________________ DATE: ____________

SUBJECT: ☐ DESIGN EXCEPTION or ☐ DESIGN VARIATION

Local road number or street name __________________________
Project description (limits): __________________________
Type construction (new, rehabilitation, adding lanes, resurfacing, etc.) __________________________
Design Speed __________________________
State and/or Federal road number (if applicable): __________________________
FDOT Financial Project ID No. (if applicable): __________________________

DESIGN EXCEPTION OR VARIATION FOR THE FOLLOWING ELEMENT:

( ) Design speed
( ) Lane Width
( ) Shoulder Width
( ) Horizontal Curve Radius
( ) Superelevation Rate
( ) Stopping Sight Distance
( ) Maximum Grade
( ) Vertical Clearance
( ) Cross Slopes
( ) Design Loading Structural Capacity
( ) Other (explain): __________________________

Include a brief statement concerning the project and items of concern.

Attach all supporting documentation to this exhibit in accordance with Chapter 14.

Recommended by: __________________________
(Responsible Professional Engineer)

Approval: __________________________
(Maintaining authority’s designated Professional Engineer)

Concurrence: __________________________
FDOT (if applicable)

Concurrence: __________________________
FHWA (if applicable)
Chapter 17 – Bridges and Other Structures

• Updated references to AASHTO Manuals
  • Structures Manual, Volume 1 – Structures Design Guidelines, 2018 (SDG)

• Edited sections for:
  • Navigational aids and vessel collisions
  • Routine maintenance and inspection
Chapter 18 – Signing and Marking

• Added reference to the Manual on Speed Zoning for Highways, Roads, and Streets in Florida
  • http://www.fdot.gov/traffic/speedzone/Speed_Zone_Manual.shtm

• Established minimum levels of maintained reflectivity for overhead street name signs

• Expanded guidance on the use of audible and vibratory markings to improve effectiveness

• Added guidance on the use of transverse rumble strips (crash history, roadway geometry, land use)
Questions?

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