2017 Plans Preparation Manual (PPM) Revisions Overview

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### FDOT Design Manual

**RDB17-01 - 2018 FDM Implementation Letter**

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- Development and Processes
- Design Criteria
- Plans Production

### Development and Processes

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2017 PPM Updates
POLICY STATEMENT

Effective: January 29, 1993

Responsible Office: Roadway Design

Topic No.: 000-625-015-a

References: Sections 334.046, 336.045, Florida Statutes

MULTILANE FACILITY MEDIAN POLICY

All multilane facilities shall be designed with a raised or restrictive median except four-lane sections with design speeds of 65 km/h (40 mph) or less. Facilities having design speeds of 65 km/h (40 mph) or less are to include sections of raised or restrictive median for enhancing vehicular and pedestrian safety, improving traffic efficiency, and attainment of the standards of the Access Management Classification of that highway section.

Ben G. Watts, P.E.
Secretary
2.2.2 **Multilane Facilities Median Policy for Multilane Facilities**

Design **all multilane SIS facilities** with a design speed of **45 mph or greater** with a raised or restrictive median. **Design all other multilane facilities** with a raised or restrictive median except **four-lane sections** with design speeds of **40 mph or less** may be designed without a raised or restrictive median; however, **Facilities having design speeds of 40 mph or less are to include** sections of raised or restrictive medians or islands must be provided to:

- **for enhancing** Enhance vehicular and pedestrian safety,
- **improving** Improve traffic efficiency, and
- **attainment** Attain of the standards of the Access Management Classification of that highway system.
25.4.27 Median Policy for Multilane Facilities

It is recommended to provide raised or restrictive medians as discussed in Section 2.2.2 of this Volume.
Questions on Roundabouts?

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4.2.6.2 RRR Slope Criteria

Meet the Roadside Slope criteria provided in Table 4.2.4 on RRR projects, except for the following:

1. Front Slopes:
   a. For constrained conditions, new slopes at 1:4 may be constructed within the Clear Zone.
   a. b. Existing 1:3 or flatter slopes within the Clear Zone may remain.
   c. Flattening slopes of 1:3 or steeper at locations where run-off-the-road type crashes are likely to occur (e.g., on the outsides of horizontal curves) should be evaluated.
   b. c. Existing front slopes steeper than 1:3 within the Clear Zone should be evaluated for shielding.

2. Back Slopes:
   a. For constrained conditions, new slopes at 1:3 may be constructed within the Clear Zone.
   a. b. Existing 1:2 or flatter slopes may remain.
   b. c. Existing back slopes steeper than 1:3 within the clear zone should be evaluated for shielding.

When the above criteria are applied, RRR lateral offset and clear zone requirements must also be met.

**Modification for Non-Conventional Projects:**

Delete Section 4.2.6.2 and see RFP for requirements.
4.4.2.2 Rigid Barrier End Treatments

Rigid Barrier ends must be terminated by either transitioning into another barrier system (e.g. guardrail), or by shielding with a Crash Cushion. Details and requirements are provided in the Design Standards.

Sloped Concrete End Treatments (i.e., the 10’ long vertical height transitions detailed on Sheets 12 and 13 of Design Standards, Index 410) are not permitted within the clear zone of approaching traffic lanes unless site-specific justification is provided and approved by the District Design Engineer. When used, sloped end treatments are only permitted for Design Speeds < 40 mph and only when no other more crashworthy solution is available.

Treatment of the trailing end of rigid barriers is not required unless additional hazards exist beyond the rigid barrier or the barrier is within the clear zone of opposing traffic.
4.4.6.5 **Considerations for Placement of Temporary Barriers**

Installation instructions and flare rates are given in the *Design Standards, Indexes 412, 414, 415 and 600*.

A temporary or permanent pavement surface with a maximum cross slope of 1:10 is required when a Temporary Barrier is used. The paved surface must extend the full distance of the required deflection space behind the barrier.

Show or note the location of temporary barriers in the Temporary Traffic Control (TTC) Plans. Also provide a Work Area Access Plan for projects with work zones shielded with a barrier. For additional information regarding TTC Plans, refer to *Chapter 10* of this Volume.

In some situations, the installation presence of barriers on both shoulders may eliminate any practical effective shoulder width or refuge area. The effective shoulder width is required to ensure an area is available for both disabled vehicles during normal traffic conditions and access for emergency responders during stopped conditions. Therefore, on any interstate or freeway projects requiring barriers on both sides of the work zone traveled way, a minimum 10-foot lateral offset from the edge of the traveled way to the barrier is required on at least one side of the roadway. Bridge construction and associated roadway approaches are exempt from this requirement. Providing this 10-foot lateral offset on arterials and collectors should be considered. For all other applications, provide the minimum lateral offset required per *Design Standards, Index 415.*
4.7.2 Existing Longitudinal Roadway Barriers on RRR Projects

Existing longitudinal guardrail sections that do not conform to 31" Guardrail must be upgraded or replaced on RRR projects, with the following exceptions:

1. **27” Guardrail** – Existing W-Beam guardrail installations installed to a 1’-9" mounting height (27” top height), meeting the requirements of the 2013 Design Standards with regards to delineation, height, grading, mounting hardware, and consisting of crashworthy end treatments tested to at least NCHRP 350, is acceptable and allowed to remain in place.

2. **Thrie-Beam Guardrail** – Existing Thrie-Beam guardrail meeting the installation requirements of 2013 Design Standards, and consisting of crashworthy end treatments tested to at least NCHRP 350, is acceptable and allowed to remain in place.

3. **Steel Blocks** – Existing 27” Guardrail constructed with steel blocks, which is not being evaluated for upgrading according to the criteria above, may remain in place for projects with Design Speeds ≤ 45 mph.

*Replacing or resetting When an existing 27” Guardrail to meet the current 31” Guardrail mounting height requirement is at the discretion of the District. System is to be extended/upgraded, the decision of extending/upgrading the installation with 31” Guardrail or replacing/resetting the entire run is at the discretion of the District. In general, Typically, if 50% or more of the existing run of 27” Guardrail installation is affected or if the existing installation is extended by 50% or more, the entire run should be replaced or reset with 31” Guardrail.*

**Modification for Non-Conventional Projects:**

Delete the last paragraph and see RFP for requirements.
7.6.1.1 Standard and Refurbishment Thermoplastic

Use Standard Thermoplastic traffic stripes and markings unless Rumble Striping, Profiled Thermoplastic, Preformed Thermoplastic or Permanent Tape is required. Standard Thermoplastic is not used on bridge structures with concrete riding surfaces due to vibration and durability issues.

Refurbishment Thermoplastic is the placement of new thermoplastic material on existing pavement markings. Refurbishment Thermoplastic is not to be used on concrete riding surfaces; i.e. concrete pavement and bridge structures. Remove existing stripes and markings from concrete surfaces before placing new stripes and markings.

The performance of Refurbishment Thermoplastic has been evaluated by the Department for a period of 36 months. Coordinate with the District Maintenance Engineer to determine if Refurbishment Thermoplastic is appropriate. If Refurbishment Thermoplastic cannot be applied without exceeding the maximum thickness of 0.150 inch, remove the existing stripes and markings before placing new stripes and markings.

Coordinate with the District Maintenance Engineer to determine if black paint contrast is required for skip lines, messages and arrows.

Consider the use of Durable Paint for refurbishment markings on asphalt pavement where the longer service life of Refurbishment Thermoplastic is not required. The performance of Refurbishment Thermoplastic has been evaluated by the Department for a period of 36 months. Contact the District Maintenance Engineer to determine if Durable Paint is acceptable.

| Modification for Non-Conventional Projects: |
| Delete the last two paragraphs above and see the RFP. |
### V1 PPM Updates:

**Chapter 7, Section 7.6.1.2**

**Office of Design / Design Standards**

**GENERAL**

**Note**: Projects in **bold red text** have been approved after the release of *Roadway Design Bulletin 16-07* and may either be on open-graded or dense graded friction course.

**Rumble Striping**

**Summary-of-Rumble-Striping.pdf**

**Permitted Projects FPID No(s):**
- 208001-4-52-01, 208001-6-52-01, 209657-4-52-01, 249615-5-52-01, 256243-2-52-01, 408285-5, 408286-6, 414547-1-52-01, 419312-1-52-01, 421644-1-52-01, 421644-2-52-01, 425841-5-52-01, 427280-1-52-01, 427280-1-52-02, 430552-1-52-01, 430564-1-52-01, 430603-1-52-01, 432262-1-52-01, 432309-1-52-01, 432311-1-52-01, 432313-1-52-01, 432269-1-52-01, 432315-1-52-01, 432720-1-52-01, 434318-1-52-01, 434319-1-52-01, 435444-1-52-01

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**D519 Certification Statement**

**Gevin McDaniel**

**IDDS-D519**

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7.6.2  Work Zone Pavement Markings

Use Standard Paint for work zone markings on asphalt and concrete pavement. The performance of Standard Paint has been evaluated by the Department for a period of 6 months.

Use Removable Tape for transitions on the final asphalt surface.

Consider using Refurbishment Thermoplastic when a work zone phase is expected to last for more than a year under heavy traffic volumes.
A continuous accessible pedestrian route, including curb ramps, landings and transition areas (e.g., such as depressed corners, raised street crossings, or flush roadway

GENERAL NOTES

1. Sidewalk curb ramps shall be constructed at locations that will provide continuous unobstructed pedestrian circulation path to pedestrian areas, elements and facilities within the right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb ramps constructed for all intersections and turnouts with curbed returns. To accommodate curb ramps, partial curb returns are to extend to the limits prescribed in Index No. 515. Ramps constructed at locations without sidewalks are to have a landing constructed at the top of each ramp, see LANDINGS FOR CURB RAMPS WITHOUT SIDEWALKS.

Pull boxes, manholes (and other utility covers), and other types of existing surface features in the location of a proposed curb ramp or detectable warning should be relocated when feasible. When relocation is not feasible, adjust the feature to meet the ADA requirements for surfaces (including the provision of a nonslip top surface, and adjustment to be flush with and at the same slope as the adjacent surface).
2. When altering existing pedestrian facilities, where existing restricted conditions preclude the accommodation of a ramp slope of 1:12, a ramp slope between 1:12 and 1:10 is permitted for a rise of 6" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided. Ramp slopes are not required to exceed 15' in length.

3. If sidewalk curb ramps are located where pedestrians must walk across the ramp, then provide transition slopes to the ramp; otherwise a sidewalk curb may be required.

Project design must include an evaluation of existing driveways and turnouts for compliance to ADA requirements to determine if it is feasible to upgrade nonconforming driveway turnouts to meet the criteria in Design Standards, Indexes 304, 310 and 515. Nonconforming driveways are not required to be upgraded if it is not feasible within the scope of the project.

Provide transition slopes (flared sides) where a pedestrian circulation path crosses the curb ramp. The maximum slope of transition slopes is 1:10, measured parallel with and adjacent to the curb line.
8. Detectable warnings shall extend the full width of the ramp and to a depth of 2'. Detectable warnings shall be constructed in accordance with Specification Section 527. For the layout of detectable warnings, refer to the TYPICAL PLACEMENT OF DETECTABLE WARNINGS details. Detectable warnings shall not be provided on transition slopes.

9. When detectable warnings are placed on a slope greater than 5%, domes shall be aligned with the centerline of the ramp; otherwise domes are not required to be aligned.

10. Detectable warnings shall be required on sidewalks and shared use paths at:
    a. Intersecting roads,
    b. Median Crossings greater than or equal to 6' in width,
    c. Railroad Crossings,
    d. Signalized driveways.

11. Detectable Warnings – Acceptance Criteria:
    a. Color and texture shall be complete and uniform.
    b. 90% of individual truncated domes shall be in accordance with the Americans with Disabilities Act Standards for Transportation Facilities, Section 705.
    c. There shall be no more than 4 non-compliant domes in any one square foot.
    d. Non-compliant domes shall not be adjacent to other non-compliant domes.
    e. Surfaces shall not deviate more than 0.10" from a true plane.

12. Detectable warnings shall be installed no greater than 5' from the back of curb or edge of pavement.

13. Detectable warnings shall not be installed over grade breaks.

**short section of concrete that will accommodate any system.**
13.5.4 Wildlife Connectivity

Wildlife connectivity features include new or modified structures; e.g. bridges, bridges with shelves, specially designed culverts, enlarged culverts or drainage culverts. Exclusionary devices such as fencing, walls or other barriers may be included to funnel wildlife to a crossing. Disciplines that may be involved in this effort include Structures, Roadway, Drainage, Environmental Management, Permitting, Right of Way and Utilities.

Wildlife connectivity needs are usually identified during the PD&E study. However, coordinate with the District Environmental Management Office and District Permit Office early in the design phase for determination of the type, size and other parameters for the wildlife crossing feature. For further guidance on wildlife connectivity refer to the FDOT Wildlife Crossing Guidelines, commitments section of the Environmental Document, and any other documentation regarding the wildlife connectivity related to the project.

In the event that wildlife connectivity needs are not identified until after the design process has begun, immediately start the coordination process with the District Environmental Management Office and District Permit Office.
19.2.1 Manual **Signing and Sealing**

Digital Delivery is the standard practice for Signing and Sealing, and transmittal of contract documents. Manual Signing and Sealing must be coordinated with the District Plans, Specifications, and Estimates (PS&E) Office. The requirements for **manually Signing and Properly sealing a document** are covered in the Laws and Rules for each licensee’s profession.
Component plans may require insertion of sheets that were prepared early in, or prior to the design process. The following early plan sheets may be contained in a separate Signed and Sealed PDF that is to be included as part of the Contract Plans:

CTL-# Project Control Sheets
GR-# Soil Survey and Report of Core Borings
TR-# Tree Survey Sheets
UTV-# Verified Utility Locate Sheets

No other plans sheets than those listed above are to be submitted separate from the component plans.

See Chapter 3 of Volume 2 for instruction on how to show early plan sheets on the Key Sheet.
19.2.2.1 Single Digital Signature

Component plans that will be Signed and Sealed by a single professional (signatory) may place a signature block, as shown in Figure 19.1, on the component Key Sheet in lieu of using a Signature Sheet. Listing the sheets contained in the PDF to be Signed and Sealed is not required. See Chapter 3 of Volume 2 for Signature Sheet requirements.

Figure 19.1 Signature Block

19.2.2.2 Multiple Digital Signatures

A Signature Sheet is required for component plans that will be Signed and Sealed by more than one professional. See Chapter 3 of Volume 2 for Signature Sheet requirements.
26.10 Bridge Development Report (BDR) Submittal Checklist

The Bridge Development Report (BDR) Submittal Checklist (Exhibit 26-A) contains a list of the key supporting elements that are required for the preparation, submittal and review of a BDR. Include this Checklist must be included with the BDR when submitted for review and consists of the following items:

9. Wildlife Connectivity:

Describe the decision to include or exclude wildlife connectivity features into the design. The discussion for excluding a wildlife connectivity feature should summarize coordination with the Environmental Management or Permit office (or may be an attached summary memo from one of these offices). The discussion for including wildlife connectivity should refer to the FDOT Wildlife Crossing Guidelines, commitments made during PD&E and any other documentation regarding the wildlife connectivity related to the bridge (or may be an attached summary memo from the Environmental Management or Permit office).
V1 PPM Updates: Chapter 23

• 13 Controlling Elements:
  – Design Speed
  – Lane Width
  – Shoulder Width
  – Bridge Width
  – Structural Capacity
  – Vertical Clearance
  – Grades
  – Cross Slope
  – Superelevation
  – Horizontal Alignment
  – Vertical Alignment
  – Stopping Sight Distance
  – Lateral Offset
Controlling Elements for Design Speed ≥ 50 mph:

- Design Speed
- Lane Width
- Shoulder Width
- Bridge Width
- Design Loading Structural Capacity
- Vertical Clearance
- Maximum Grade
- Cross Slope
- Superelevation Rate
- Horizontal Alignment Curve Radius
- Vertical Alignment
- Stopping Sight Distance
- Lateral Offset
• 2 Controlling Elements for Design Speed < 50 mph:
  – Design Speed
  – Design Loading Structural Capacity
V2 PPM Updates:
Chapter 3, Section 3.2

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

FINANCIAL PROJECT ID 123456-1-52-01
(FEDERAL FUNDS)
BAY COUNTY (46080)
STATE ROAD NO. 22 (NEWA HWY)

CONTRACT PLANS

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70. HIGH-TENSION CABLE BARRIER

*This sheet is included in the Index of Roadway Plans only to indicate that it is part of the Roadway Plans. This sheet is not contained in a separate, digitally signed and sealed document.

GOVERNING DESIGN STANDARDS:
Florida Department of Transportation, FDOT (2017) Design standards sheet (Pkwid) and applicable Design Standards Revisions (DSRs) at the following website:

APPLICABLE DSRS: 2017F04-01, 2018G05-01, 2019H09-01

GOVERNING STANDARD SPECIFICATIONS:
Florida Department of Transportation, July 2016 Standard Specifications for Road and Bridge Construction at the following website:

CONSTRUCTION CONTRACT NO. FINAL YEAR SHEET NO.
T0000 17 1

LOCATION OF PROJECT:
https://geospatialdata.fdot.gov/planview/44120

FDO PROJECT MANAGER:
Darin K. Yawitz, P.E.

RLOADWAY PLANS
ENGINEER OF RECORD:
Mike J. Walker, P.E. NO. 00099999
ROADWAY ENGINEERS, INC.
103 MAIN STREET
CALHOUN, FL 32511
850.473.1239
CONTRACT NO.: C00099
OWNER ID: 09999999
CERTIFICATE OF PATERNOMIZATION NO.: 23580

*THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY STAMPED AND SIGNED UNDER THE SEAL OF THE ENGINEER OF RECORD.*
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Project Control

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Selective Clearing and Grubbing

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