Design Update Training 2013
February 19th & 20th

The Office of Design
Florida’s Transportation Engineers
Plans Preparation Manual
January 1, 2013 Updates

Roadway Design Office
Criteria and Standards Section

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Overview of PPM Update Process

- Two Volumes
- English Units
- Electronic Version

http://www.dot.state.fl.us/rd/design/PPMManual/PPM.shtm
PPM Update Process

- Senior Design Engineers Team
  - Primary designer from each district
  - Monthly meetings

- Draft Submittals
  - Received throughout the year
  - Reviewed at SDE meetings

- District Design Engineers
  - Review Final PPM Draft
  - Provide Comments

- Adoption of PPM Updates
Updates

- Implementation Memo
- Complete Manual
- Updated Forms
- Contact Mailer - Notifications

[http://www.dot.state.fl.us/rd design/PPMManual/PPM.shtm](http://www.dot.state.fl.us/rd design/PPMManual/PPM.shtm)
Design Bulletins

- Contact Mailer Notifications
- Our website: [http://www.dot.state.fl.us/rddesign/](http://www.dot.state.fl.us/rddesign/)
Design Bulletins

- Contact Mailer Notifications
- Our website: http://www.dot.state.fl.us/rrdesign/Bulletin/default.shtm

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<th>File Name</th>
<th>Description</th>
<th>Effective Date</th>
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<tr>
<td>RDB13-01.pdf</td>
<td>Design Standards, Index 430 &quot;Crash Cushion Details&quot;</td>
<td>1/08/13</td>
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<td>RDB12-17.pdf</td>
<td>Removal of Chevrons in Interstate Gores Areas and at Raised Urban Islands - Design Standards Revision (R2013-02), Dated January 1, 2013</td>
<td>09/06/12</td>
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<td>RDB12-16.pdf</td>
<td>Use of Overhead Signs on Freeways and Expressways</td>
<td>08/30/12</td>
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<td>Developmental Design Standards Index D477, Thrie-Beam Panel Retrofit (Concrete Handrail)</td>
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<td>RDB12-12.pdf</td>
<td>Roadway Design Bulletin 12-12/DCE Memorandum 23-12</td>
<td>07/02/12</td>
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<td>Barrier and Traffic Railing Mounted Signs Design Standard Revision (R1302), dated July 1, 2012</td>
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<td>Roadway Design Bulletin 12-10/Structures Bulletin 12-07</td>
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As customers, your input is important to us!

We want to hear from you!
Cross Slope Correction & Typical Sections

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Typical Sections

- Typical Sections and Details
  - Milling and layering details shall be shown in plans
  - *Exhibits* in *PPM* Volume 2, Chapter 6
- Refer to FDOT *Flexible Pavement Design Manual*

http://www.dot.state.fl.us/rd/design/PM/pcs/FlexiblePavement
ManualMarch152008.pdf
Typical Sections

- Resurfacing
  - Match Existing
  - Cross Slope Correction
Match Existing

(PPM Vol.1, Introduction)

This term is used when the existing cross slopes are to remain. This is applicable to constant depth milling and resurfacing projects.
Typical Sections

- Resurfacing
  - Match Existing
    - Existing cross slope is to remain.
    - Allowable ranges
      - *Table 25.4.6* or *Table 25.4.7* in *PPM* Volume 1, Chapter 25.
Typical Sections

- Resurfacing

### Table 25.4.6 Roadway Cross Slopes

<table>
<thead>
<tr>
<th>Facility or Feature</th>
<th>Standard</th>
<th>Allowable Range</th>
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</thead>
<tbody>
<tr>
<td>Two-Lane Roads</td>
<td>0.02</td>
<td>0.015-0.030</td>
</tr>
<tr>
<td>Multiline Roads</td>
<td>0.02</td>
<td>0.015-0.040</td>
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<tr>
<td>Shoulders</td>
<td>0.06</td>
<td>Adjacent Lane Cross Slope-0.080</td>
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<tr>
<td>Parking Lanes</td>
<td>0.05</td>
<td>0.015-0.050</td>
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</tbody>
</table>

The multilane standard cross slope value shown is applicable for up to two lanes in one direction. See Section 2.1.5 for additional guidance.

Existing multilane curb and gutter sections may have outside lanes with a maximum cross slope of 0.05.

Existing curb and gutter sections originally constructed with a parabolic crown section may be resurfaced using a series of tangents with a cross slope range from 0.015 to 0.05.

The maximum algebraic difference between adjacent through lanes shall not exceed 0.06.

When existing shoulders are to remain, the algebraic difference between the shoulder slope and adjoining roadway pavement slope shall be ≤ 0.07.

Parking spaces and access aisles dedicated to serving persons with disabilities shall have cross slopes no steeper than 0.02 (1:50) in any direction.
## Typical Sections

- **Resurfacing**

#### Table 25.4.7  Freeway Cross Slopes

<table>
<thead>
<tr>
<th>Facility or Feature</th>
<th>Standard</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Lanes</td>
<td>0.02*</td>
<td>0.015-0.025</td>
</tr>
<tr>
<td>Travel Lanes</td>
<td>0.03*</td>
<td>0.025-0.035</td>
</tr>
</tbody>
</table>

* Applies to lanes as designated in Figure 2.1.1.

The algebraic difference in cross slope between adjacent travel lanes shall not exceed 0.04. The maximum algebraic difference in cross slope between a through lane and an auxiliary lane at a turning roadway terminal shall meet Table 2.1.4.

Paved shoulder cross slopes do not need to be corrected if they meet the values in Table 25.4.6 and the algebraic difference in cross slope between the shoulder and adjacent travel lane is 0.07 or less.
Match Existing

- Constant depth milling
- Resurface at constant thickness
Constant Depth Milling

Traffic Data

Traffic Data is required to be noted for current year, opening year, and design year.

Typical Section

SR 300B

Milling

Mill Existing Asphalt Pavement for Depth (2')

Resurfacing

Type SP Structural Course (Traffic B) (2') and Friction Course FC-9.5 (Traffic B) (1') (Rubber)

Shoulder Pavement Resurfacing

Friction Course FC-9.5 (Traffic B) (1') (Rubber)

Exhibit Typ-7

Date: 1/1/13

PPM Volume 2, Chapter 6 - Exhibits
Constant Depth Milling

Traffic Data
STA. 10+53.00 TO STA. 368+41.21

Current Year = 1998 AADT = 9570
Estimated Opening Year = 2000 AADT = 11900
Estimated Design Year = 2010 AADT = 2020
K = 10% D = 60% T = 7% (24 Hour)
Design Hour T = 3%
Design Speed = 55 MPH

Constant Depth Milling and Resurfacing
STA. 10+53.00 TO STA. 368+41.21

Milling
Mill Existing Asphalt Pavement for Depth (2")

Resurfacing
Type SP Structural Course (Traffic B) (2")
And Friction Course FC-9.5
(Traffic B) (1") (Rubber)

Shoulder Pavement Resurfacing
Friction Course FC-9.5
(Traffic B) (1") (Rubber)
Constant Depth Milling

PPM Volume 2, Chapter 6 - Exhibits
Resurfacing

- Match Existing
- Cross Slope Correction
  - Method
    - Variable depth milling
    - Constant depth milling & Overbuild
    - Variable depth milling & Overbuild
Variable Depth Milling

- Slope correction by:
  - Variable depth milling
- Resurface at constant thickness
Variable Depth Milling

Typical Section SR 400B

Traffic Data
STA. 130+47.00 to STA. 206+82.28
Current Year = 2018; AADT = 9670
Estimated Opening Year = 2028; AADT = 11900
C = 10%; D = 80%; T = 7% (24 Hour)
Design Hour T = 3%
Design Speed = 55 MPH

Cross Slope Correction
STA. 130+47.00 to STA. 157+00.00
Variable Milling
Mill Existing Asphalt Pavement for Slope (2% Avg. Depth)

Resurfacing
Type SP Structural Course (Traffic B) (2"
And Friction Course FC-9.5 (Traffic B) (1"
(Rubber)

Shoulder Milling
Mill Existing Asphalt Pavement (1" Avg. Depth)

Shoulder Pavement Resurfacing
Friction Course FC-9.5 (Traffic B) (1"
(Rubber)

Traffic Data is Required to be Noted for Current Year, Opening Year and Design Year

PPM Volume 2, Chapter 6 - Exhibits
Variable Depth Milling

VARIABLE DEPTH MILLING DETAIL

RESURFACING DETAIL

STA. 130+77.00 TO STA. 157+00.00

EXISTING PAVEMENT CROSS SLOPES

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<th>STATION</th>
<th>ROADWAY</th>
<th>LT</th>
<th>RT</th>
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EXISTING PAVEMENT CROSS SLOPES

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EXHIBIT TYP-D8
Date: 1/1/13

SHEET 2 OF 2

PPM Volume 2, Chapter 6 - Exhibits
Constant Depth Milling and Overbuild

- Constant depth milling
- Slope Correction by Overbuild
- Resurface at constant thickness
Constant Depth Milling and Overbuild

PPM Volume 2, Chapter 6 - Exhibits
Constant Depth Milling and Overbuild

Exhibit 6.001:100.00 to 6.201:00.00

Existing Pavement Cross Slopes

<table>
<thead>
<tr>
<th>Station</th>
<th>Eastbound Lanes</th>
<th>Existing Pavement Cross Slopes</th>
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<tr>
<td>6000+00</td>
<td>INSIDE 0.035</td>
<td>OUTSIDE 0.035</td>
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<td>6020+00</td>
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<td>6100+00</td>
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Exhibit Type 13B

Date: 1/3/12

Sheet 3 of 4
Constant Depth Milling and Overbuild

**Traffic Data**
STA. 10+53.00 to STA. 130+37.00

- **Current Year:** 1995 AADT = 9670
- **Estimated Opening Year:** 2000 AADT = 11900
- **Estimated Design Year:** 2010 AADT = 20200
- **K = 10% D = 60% T = 7% (24 Hour)**
- **Design Hour T = 396**
- **Design Speed = 50 mph**

**Traffic Data is required to be noted for current year, opening year and design year.**

**Cross Slope Correction**
STA. 10+53.00 to STA. 130+37.00

- **Milling for Depth:**
  - Mill Existing Asphalt Pavement for Depth (2')

- **Overbuild for Slope:**
  - Type SP Overbuild (Traffic B)
  - Thickness Varies (3' to 10')

- **Resurfacing:**
  - Type SP Structural Course (Traffic B) (2')
  - Friction Course PC-9.3 (Traffic B) (1') (Rubber)

- **Shoulder Milling:**
  - Mill Existing Asphalt Pavement (1' Avg. Depth)

- **Shoulder Pavement Resurfacing:**
  - Friction Course PC-9.5 (Traffic B) (1') (Rubber)

**Exhibit TYP-9**
Date: 1/1/13
Sheet 1 of 2

**Typical Section SR 500B**

**PPM Volume 2, Chapter 6 - Exhibits**
Constant Depth Milling and Overbuild

EXHIBIT TYP-8A
Date: 1/1/13
 SHEET 2 OF 2

**EXAMPLE OF CROSS SLOPE CORRECTION BY CONSTANT DEPTH MILLING AND OVERBUILD.**

**WHEN CROSS SLOPE CORRECTION IS NECESSARY SPECIAL MILLING, OVERBUILD AND LAYETING DETAILS MUST BE PROVIDED TO SUPPLEMENT TYPICAL SECTION. THE NEED FOR AND LOCATION OF PROFILE GRADES POINTS WILL DEPEND ON SITE SPECIFIC CONDITIONS.**

**SUGGESTED CONSTRUCTION SEQUENCES SHOWN. OTHER SEQUENCES THAT MEET SPECIFICATIONS, THICKNESS AND CROSS SLOPE REQUIREMENTS MAY BE CONSIDERED BY THE ENGINEER.**

**FOR STANDARD TYPICAL SECTION NOTES REFER TO EXHIBIT 64, THIS CHAPTER.**

**OVERBUILD AND RESURFACING DETAIL**

* TYPE OF OVERBUILD THICKNESS
  (PER FOOT SPECIFICATION 334)*
Variable Depth Milling and Overbuild

- Slope correction by:
  - Variable depth milling
  - Overbuild

- Resurface at constant thickness
Variable Depth Milling and Overbuild
Summary

- Cross Slope Correction
  - Match Existing cross slope
  - Determine appropriate cross slope correction method
    - Variable depth milling
    - Constant depth milling & Overbuild
    - Variable depth milling & Overbuild
  - Correction method in milling and resurfacing details
    (PPM Vol.2, Chapter 6 – Exhibits)