

Session 15

Jim Mills

FL. Dept. of Transportation

Median Crossovers, Policy & Design

Topic Description

This presentation will cover a recent Design Bulletin addressing the installation of permanent crossovers used for emergency response and maintenance activities on Limited Access facilities. This will include a review of the restrictions that have been established for crossover location and spacing, FDOT and FHWA approval requirements, basic design requirements, and typical layouts.

Speaker Biography

James A. Mills, PE

Education:

Master of Engineering, University of Florida, 1975.

Bachelor of Science in Civil Engineering, University of Florida, 1971.

Summary of Work Experience:

Central Office Roadway Design - Section Leader for the Roadway Criteria and Standards Section (9 years). Section is responsible for the Plans Preparation Manual, Design Standards and the Florida Greenbook.

Overall work experience includes 30 years with the Florida Department of Transportation and 4 years in private consulting engineering.

Emergency and Maintenance Crossovers on Limited Access Facilities

James A. Mills, P.E.
Roadway Design Office
Criteria and Standards Section
850-414-4318/SC 994-4318
jim.mills@dot.state.fl.us

Page 1

Design Conference 2006

August 1, 2006



Page 2

Design Conference 2006

August 1, 2006



Page 3

Design Conference 2006

August 1, 2006



Page 4

Design Conference 2006

August 1, 2006



Page 5

Design Conference 2006

August 1, 2006



Page 6

Design Conference 2006

August 1, 2006

Inventory of Existing Crossovers

Facility	Centerline Miles	Total Number of Crossovers	Not Meeting Criteria	Avg. Spacing (Miles)
I-4	132.3	12	11	11.0
I-10	362.3	37	29	9.8
I-75	470.7	90	59	5.2
I-95	382.1	40	23	9.6
I-275	60.4	1	1	60.4
I-295	35.5	3	3	11.8
I-595	12.9	6	6	2.2
Total Interstate	1456.2	189	132	7.7
Turnpike	446.7	221	220	2.0
Total	1917.4	410	352	4.7

Crossovers Limited Access Facilities

- Roadway Design Bulletin 06-??
 - Location and Spacing Requirements
 - Approval Requirements
 - Design Guidance
- PPM Jan 2007



Crossovers Limited Access Facilities

- Design Bulletin will Apply to:
 - Emergency Vehicle Use
 - Law Enforcement
 - Maintenance Use
- Will Not Apply to:
 - Crossovers for Contra Flow
 - Temporary Construction Crossovers
 - Index 630 and 631.

Crossovers Limited Access Facilities

- Location and Spacing Criteria
 - Must be a Documented Need
 - Shall be Limited in Number
 - Shall be Carefully Located
 - Must be approved by the District Design Engineer

Crossovers Limited Access Facilities

- Location and Spacing Criteria
 - Must Conform to AASHTO
 - 2004 Green Book Chapter 8
(page 510)

Crossovers Limited Access Facilities

- Where Interchange Spacing ≥ 5.0 mi.
 - No closer than 3.0 miles apart.
 - Above-minimum Stopping Sight Distance
 - Not within Superelevated Curves.
 - Not within 1,500 ft of a speed-change taper
 - Not within 1,500 ft of any Structure
 - Bridge, Overpassing Facility or Overhead Sign
 - Not where Median Width < 25 ft

Crossovers Limited Access Facilities

- Where Interchange Spacing **< 5.0** mi.
 - Above-minimum Stopping Sight Distance
 - Not within Superelevated Curves.
 - Not within 1,500 ft of a speed-change taper
 - Not within 1,500 ft of any Structure
 - Bridge, Overpassing Facility or Overhead Sign
 - Not where Median Width < 25 ft

Crossovers Limited Access Facilities

- Exceptions to the preceding Criteria must be approved by:
 - State Roadway Design Engineer
 - FHWA (Interstates only)

Crossovers Limited Access Facilities

- Additional FDOT Requirements
 - Not Located within 1.5 miles of any Interchange
 - Not Located where Median Width < 40 ft.
- Variations may be approved by the District Design Engineer

Crossovers Limited Access Facilities

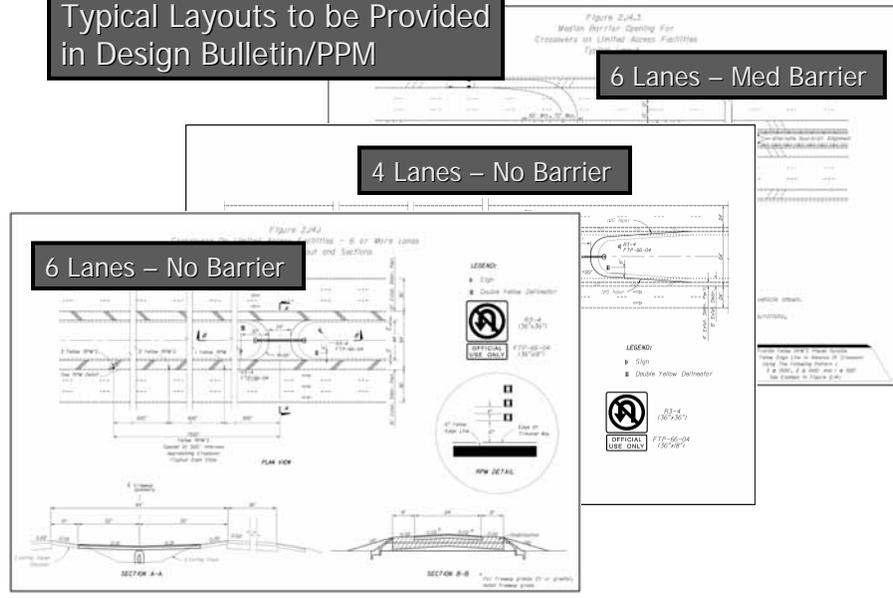
- Design Guidance
 - Typical Layouts in Design Bulletin
 - 6 Lane without Barrier
 - 4 Lane without Barrier
 - 4 Lane with Barrier
 - Design Vehicles to Consider
 - Fire Trucks
 - Ambulances
 - Maintenance Vehicles

Typical Layouts to be Provided
in Design Bulletin/PPM

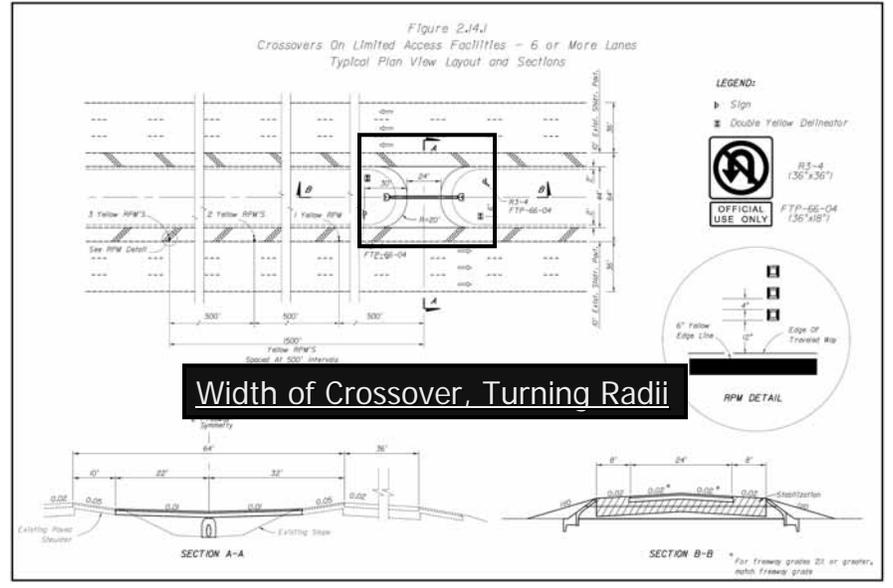
6 Lanes – Med Barrier

4 Lanes – No Barrier

6 Lanes – No Barrier



Width of Crossover, Turning Radii



Openings in Median Barriers

- Minimize Length of Opening
65' min, 70' max for 40' Median
- Crashworthy End Treatment for Angles < 30°
- Space openings not greater than 5 Miles Apart

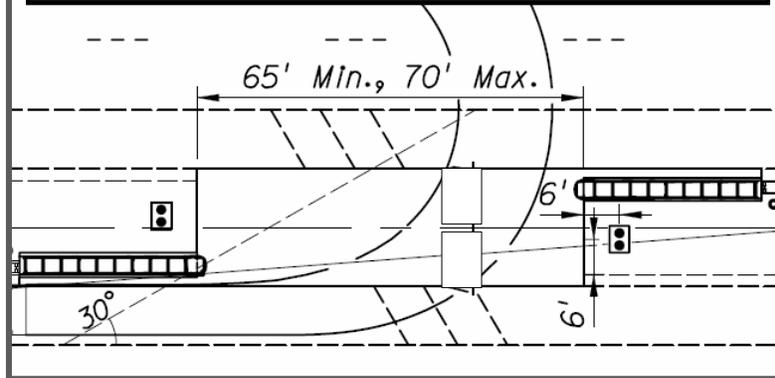
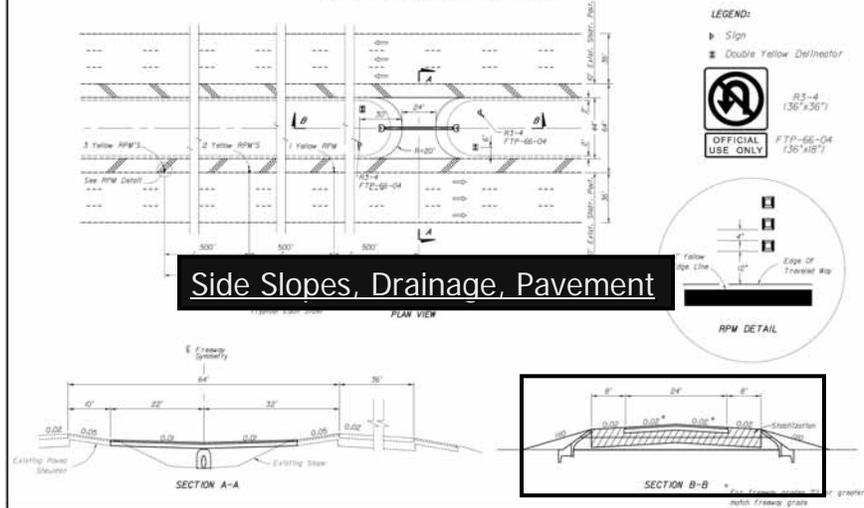


Figure 2.14.1
Crossovers On Limited Access Facilities - 6 or More Lanes
Typical Plan View Layout and Sections



Side Slopes, Drainage, Pavement

Provide Side Slopes 1:10 or Flatter

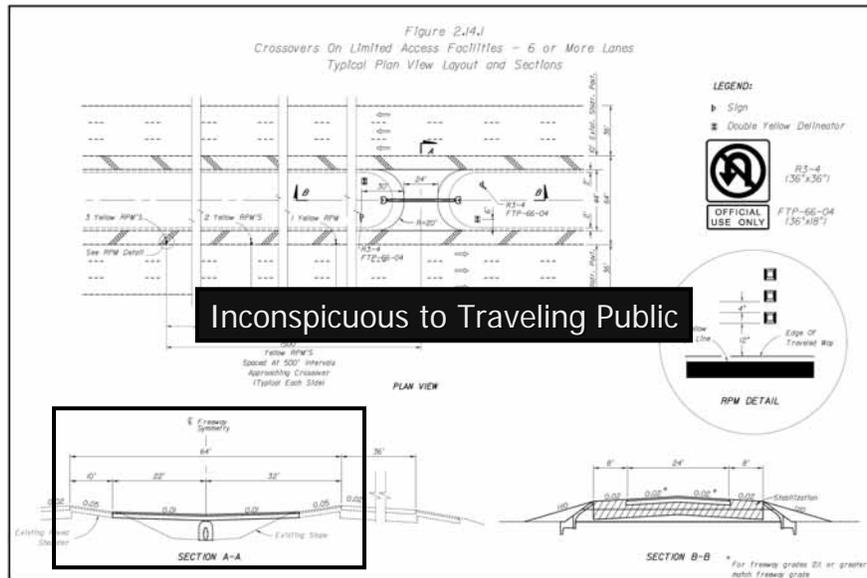
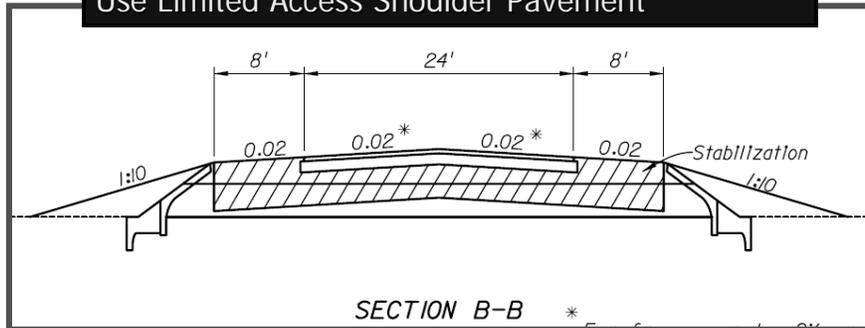
-May be transition to steeper slope to match pipe culvert end treatment (1:6 or 1:4)

Drainage

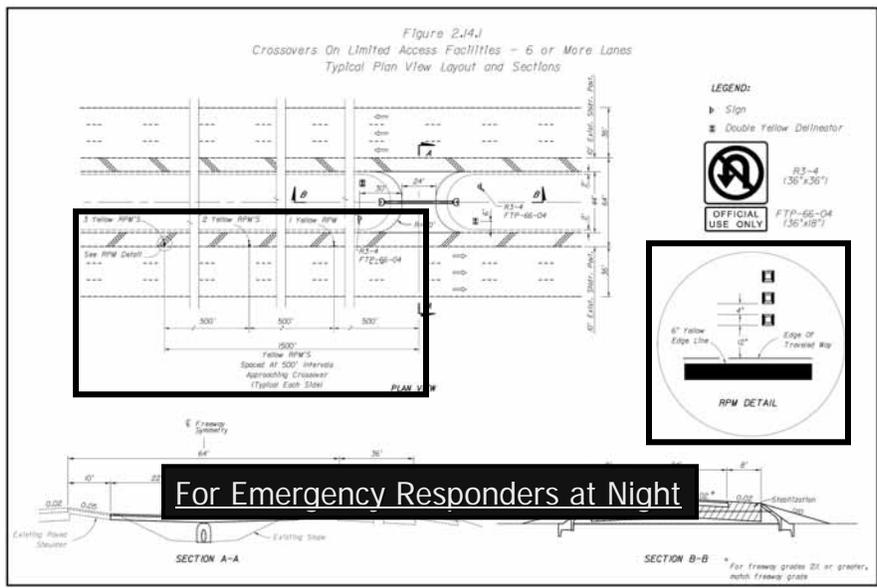
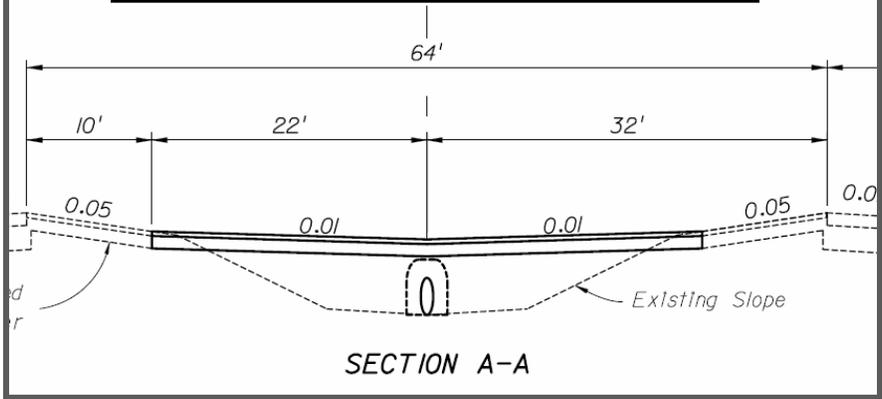
Shallow median ditches require special attention.

Pavement

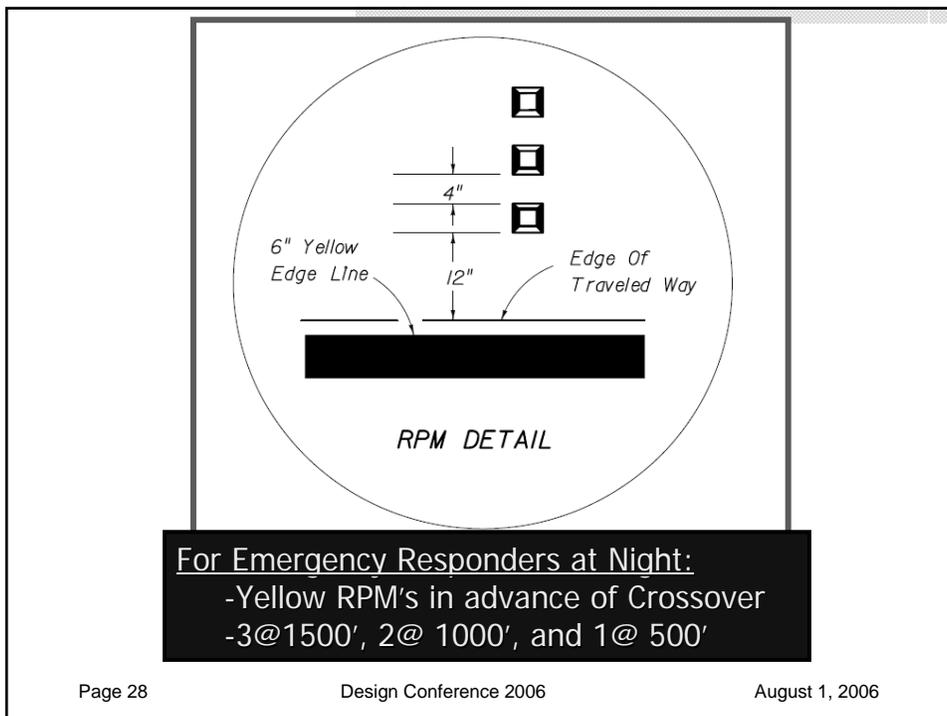
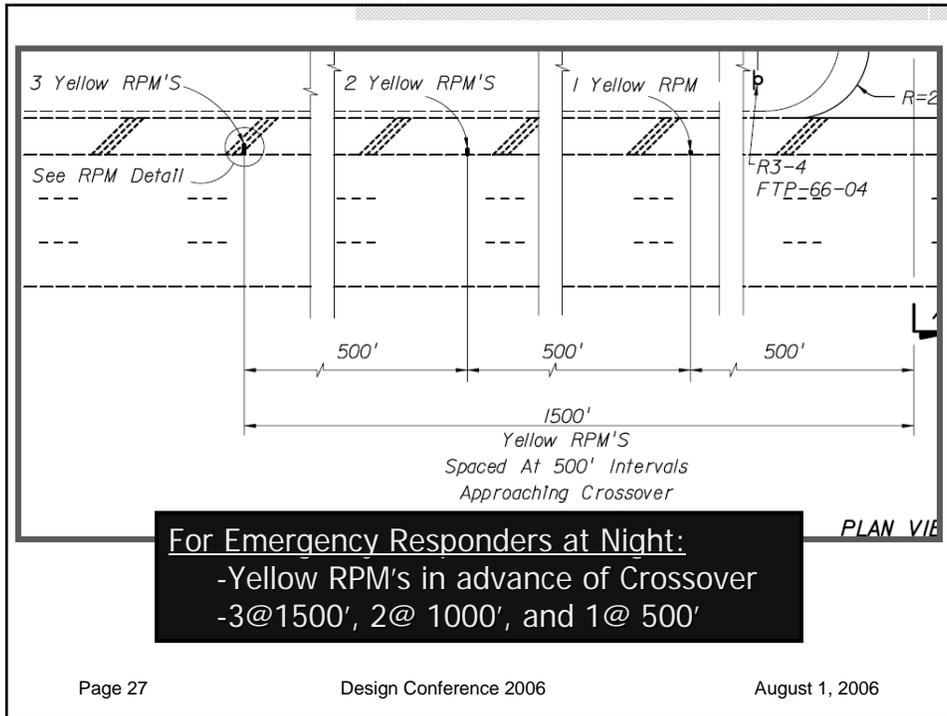
Use Limited Access Shoulder Pavement



Layout should be Inconspicuous as Practical
 -Profile should conform to Mainline
 Shoulder Slopes
 -Do not widen shoulder pavement to
 provide space for accel-decel (FHWA).



For Emergency Responders at Night



*R3-4
(36"x36")*

*FTP-66-04
(36"x18")*

Signing:
-"No U Turn" with "Official Use Only" Plaque

Page 29 Design Conference 2006 August 1, 2006

Crossovers Limited Access Facilities

THE END

James A. Mills, P.E.
Roadway Design Office
Criteria and Standards Section
850-414-4318/SC 994-4318
jim.mills@dot.state.fl.us

Page 30 Design Conference 2006 August 1, 2006