Improving Pedestrian Crossings

“Help me get there from here!”

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Objectives

• Provide training on how to improve pedestrian crossings
• Consistent with written design criteria
• Utilize PPM, Design Standards, MUTCD, best practices, crash data, local preferences
• Encourage the layering of treatments
Definitions

- **316.003, F.S. Definitions.**—

- (6) CROSSWALK—
  - (a) That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway, measured from the curbs or, in the absence of curbs, from the edges of the traversable roadway.
  - (b) Any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface.

- (47) SIDEWALK—
  - That portion of a street between the curb line, or the lateral line, of a roadway and the adjacent property lines, intended for use by pedestrians.
Where are crosswalks?

- At intersections
  - Marked and Unmarked
  - Controlled and Uncontrolled
- Midblock
  - Marked
  - Controlled and Uncontrolled
Confusing?
• Issue – Lack of consistent application on the marking of crosswalks on side streets at both stop controlled and signalized intersections

• Florida Legislature added option for a stop condition for mid-block crosswalks if signed

• Belief that marking of crosswalks:
  – Help drivers better identify intersection
  – Guide the pedestrian to the best crossing location
  – Provide guidance for people with low/no vision
All side street pedestrian crosswalks shall be marked when there is a sidewalk.
Midblock Crosswalks

- Index 17346

**Scheme 2**

**Crosswalk with Stop Signing**

<table>
<thead>
<tr>
<th>Approach Speed (MPH)</th>
<th>A - Suggested Distance (Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 or less</td>
<td>200</td>
</tr>
<tr>
<td>26 to 35</td>
<td>250</td>
</tr>
<tr>
<td>36 to 45</td>
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8.3.3 Crosswalks

Occur at all intersections, whether or not marked, and on any portion of a roadway distinctly indicated for pedestrian crossing by lines or other markings on the surface.

Reasonable accommodation should be made to make crossings both convenient and safe, and minimize the pedestrian’s exposure in the roadway.
8.3.3.1 Crosswalks at Intersections

- As volume, speed and number of travel lanes increase, marked crosswalks are best used in conjunction with other treatments:
  - Signals, signs, beacons, curb extensions, raised medians, refuge islands and enhanced overhead lighting
- Supplement marked crosswalks on an uncontrolled leg of an intersection:
  - Where posted speeds are greater than 40 mph
  - 4 or more lanes without a raised median or raised traffic island and an ADT of 12,000 or greater
  - 4 or more lanes with a raised median or raised traffic island and has or is projected to have (within 5 years) an ADT of 15,000 or greater
Crosswalks at Intersections

GENERAL NOTES
1. For traffic and pedestrian signal installation, refer to Index No. 17721 through 17890.
2. For public sidewalk curb ramps, refer to Index No. 204.
3. For pavement marking and sign installation, refer to Index No. 11280 through 11290.
4. Crosswalk minimum width: Intersection Crosswalk 8.5 ft; Midblock Crosswalk 5 ft.
5. All crosswalk marking shall be white.
6. Longitudinal lines in Special Emphasis Crosswalk shall be 24" wide and spaced to avoid the ideal path of vehicles as shown in detail. The minimum space between markings shall not exceed 60". A longitudinal marking shall be centered at each center line. Additional longitudinal markings shall be placed at the center of each lane (1/12/12).

Where the Crosswalk is aligned to the lane line, the Special Emphasis longitudinal lines should be parallel to the lane line.
Specifications and Materials

- **971-7 Preformed Thermoplastic Materials**
  - **971-7.5.1 Retroreflectivity:** All pedestrian crosswalks, bike lane symbols shall attain initial retroreflectivity of not less than 275 mcd/lx·m2.
  - **971-7.5.2 Skid Resistance:** The surface of the stripes and markings shall provide a minimum skid resistance value of 35 BPN (British Pendulum Number) when tested according to ASTM E-303. Bike lane symbols and pedestrian crosswalks shall provide a minimum skid resistance value of 55 BPN.
Standard Crosswalk Marking

- 12” parallel white lines
- Min. width of 6’, typical width is 8’-10’
- Curb ramp must be wholly within crosswalk
Standard Crosswalk Marking
Detectable Warnings

Pensacola Street, Tallahassee
Special Emphasis Marking
Special Emphasis Marking

- Index 17346
- Preferred use is for uncontrolled locations at
  - Intersections
  - Mid-block
Intersections with Separated Right Turn Lanes

Index 17346
Uncontrolled Crosswalk

Lake Hollingsworth, Lakeland
Uncontrolled Crosswalk

Naples
8.3.3.2 Midblock Crosswalks

- Can be used to supplement the pedestrian crossing needs between intersections
- Provides pedestrians with a more direct route to their destination
- Should be illuminated, marked and signed in accordance with the MUTCD, Traffic Engineering Manual (Section 3.8) and Index 17346, Design Standards
8.3.3.2 Midblock Crosswalks (con.)

- Should not be located where:
  - spacing between adjacent intersections is < than 660’
  - distance to the nearest intersection (or crossing location) is < than 300’
  - Where ADA cross slope and grade criteria cannot be met

- Shall not be provided where:
  - crossing distance exceeds 60’ (unless a raised median or crossing island is provided)
  - sight distance for the pedestrian and motorist is inadequate

- An engineering study is required.
Midblock Yield Condition

Alys Beach, Walton County
Midblock Crosswalks

- Index 17346

**Scheme 2**

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Shared Use Paths

M Path, Miami
5’ Refuge With Maximum Slope Of 0.02 Must Be Provided When Slopes Of 0.05 Or Flatter And 5’ In Length Are Not Available On Crosswalk; The Refuge Can Be Constructed At Any Location Within The Crosswalk; Or, A 5’ x 5’ Concrete Landing With Maximum Slope Of 0.02 Can Be Constructed Adjacent To The Crosswalk.

Slopes Shall Intersect At Centerline Of Median On The 0.02 Rate When The Edge Of Pavement Elevations Are Equal. The Slopes May Intersect Off The Centerline For Variable Edge Of Pavement Elevations Or To Accommodate Other Construction In The Median; However, Slopes Shall Not Be Steeper Than 1:12.
Median Refuge

US 441, Ocala
Median Refuge

US 441, Ocala
PLAN

5' Concrete Sidewalk

Median

2'

2'
Shared Use Paths

- Crosswalks should be at least full width of path
- Be accessible
- Include detectable warnings
Sidewalk Location (PPM, Section 8.3)

- Sequence of desirability for new sidewalks
  - As near the right of way line as possible
  - Outside of the clear zone
  - 5’ from the shoulder point
  - At the shoulder point

- Sidewalks shall not be contiguous to the roadway pavement

- Transition to provide functional crossing locations that meet driver expectation at intersections
Sidewalk Location
Sidewalk Location
Sidewalk Location
Urban Area Buffer Maps

- Priority maps for bike lanes and sidewalks
- Posted in conjunction with the PPM on Roadway Design’s web page
- http://www.dot.state.fl.us/rddesign/PPMManual/BM/BufferMaps.shtm
Brick Crosswalks
Patterned Pavement

- Alternative to brick crosswalks
- Maintenance agreement needed
Raised Crosswalks

- Speed Table with Automatic Detection
- Best in areas with high pedestrian volumes and low speed!
- Florida State University Tallahassee, FL
Yellow Flashing Beacon

Gainesville-Hawthorne Trail, Williston Road, Gainesville
In-Roadway Lights Assembly w/ Highlighted Sign

University of North Florida, Jacksonville

http://www3.dot.state.fl.us/trafficcontrolproducts/
In-Roadway Lights Assembly w/ Highlighted Sign

University of North Florida, Jacksonville
Rectangular Rapid Flashing Beacon (RRFB)

- Refer to FDOT’s Traffic Engineering Manual and MUTCD for guidance

http://www.dot.state.fl.us/trafficoperations/Operations/Studies/TEM/TEM.shtm
Pedestrian Hybrid Beacon (HAWK)

- Refer to FDOT’s Traffic Engineering Manual and MUTCD for guidance

Pinellas Trail at Rays Stadium, St. Pete
Research

- **FHWA’s Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines**

Nebraska Ave Road Diet

PROJECT LOCATION
TAMPA, FL
Before Conditions: 4 Lanes
After Conditions: 2 Lane Divided
After Condition: Signal Upgrades
After Condition: Midblock Crosswalk
Crash Reductions (Per year)

- Pedestrian crashes reduced from 7 to 2.5 crashes
- Bicycle crashes reduced from 5.0 to 1.7
- Sideswipe crash rate reduced from 0.76 to .15 crashes per MVMT
- Rear end crash rate has reduced from 1.18 to .82 crashes per MVMT

- Sidewalks, crosswalks, bicycle lanes, bus bays and a two way left turn lane were included in project.
Questions?