

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

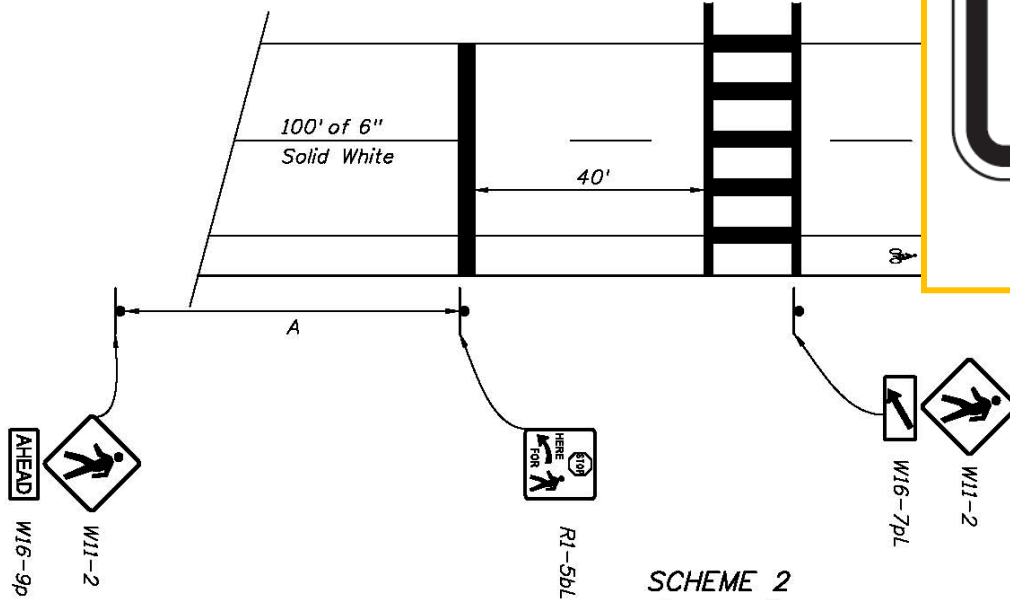


All side street pedestrian crosswalks shall be marked when there is a sidewalk.



Midblock Crosswalks

- Index 17346



SCHEME 2
Crosswalk
with Stop Signing

APPROACH SPEED MPH	A-SUGGESTED DISTANCE (Ft.)
25 Or Less	200
26 To 35	250
36 To 45	300

Plans Preparation Manual

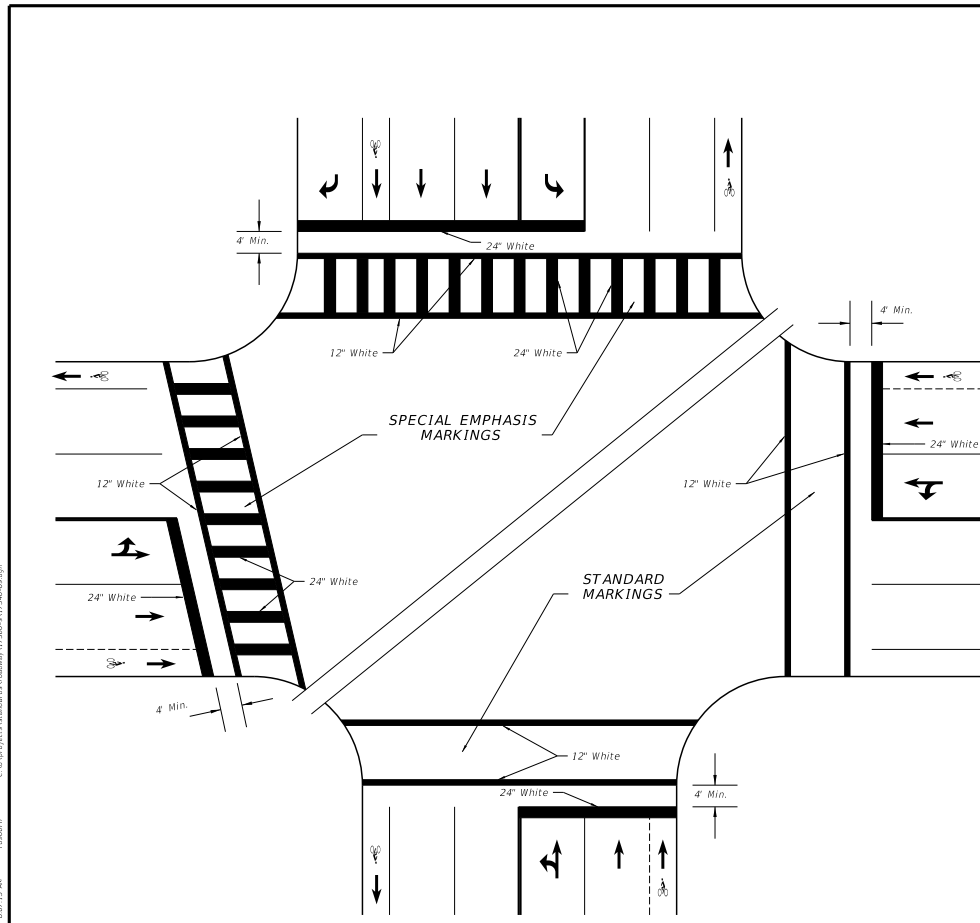
• 8.3.3 Crosswalks

- 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.

Plans Preparation Manual

- **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

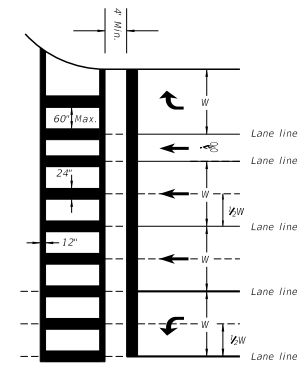
Crosswalks at Intersections



SPECIAL EMPHASIS AND STANDARD CROSSWALKS
SIGNALIZED OR STOP SIGN CONTROLLED INTERSECTION

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. 304.
3. For pavement marking and sign installation, refer to Indexes 11200 through 17356.
4. Crosswalk minimum widths: Intersection Crosswalk 6'. Midblock Crosswalk 10'.
5. All crosswalk marking shall be white.
6. Longitudinal lines in Special Emphasis Crosswalk shall be 24" wide and spaced to avoid the wheel path of vehicles as shown in detail. The maximum space between markings shall not exceed 60". A longitudinal marking shall be centered at each lane line. Additional longitudinal markings shall be placed at the center of each lane (1/2W).
Where the Crosswalk is skewed to the lane line, the Special Emphasis longitudinal lines should be parallel to the lane line.



SPECIAL EMPHASIS
CROSSWALK MARKING
DETAIL

5/24/2012 8:07:13 AM 108806 C:\Users\peters\desktop\crosswalks\17306-15\17346.dwg

LAST REVISION	DESCRIPTION
07/01/09	



FDOT DESIGN STANDARDS
2013

SPECIAL MARKING AREAS

INDEX NO.	SHEET NO.
17346	9

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

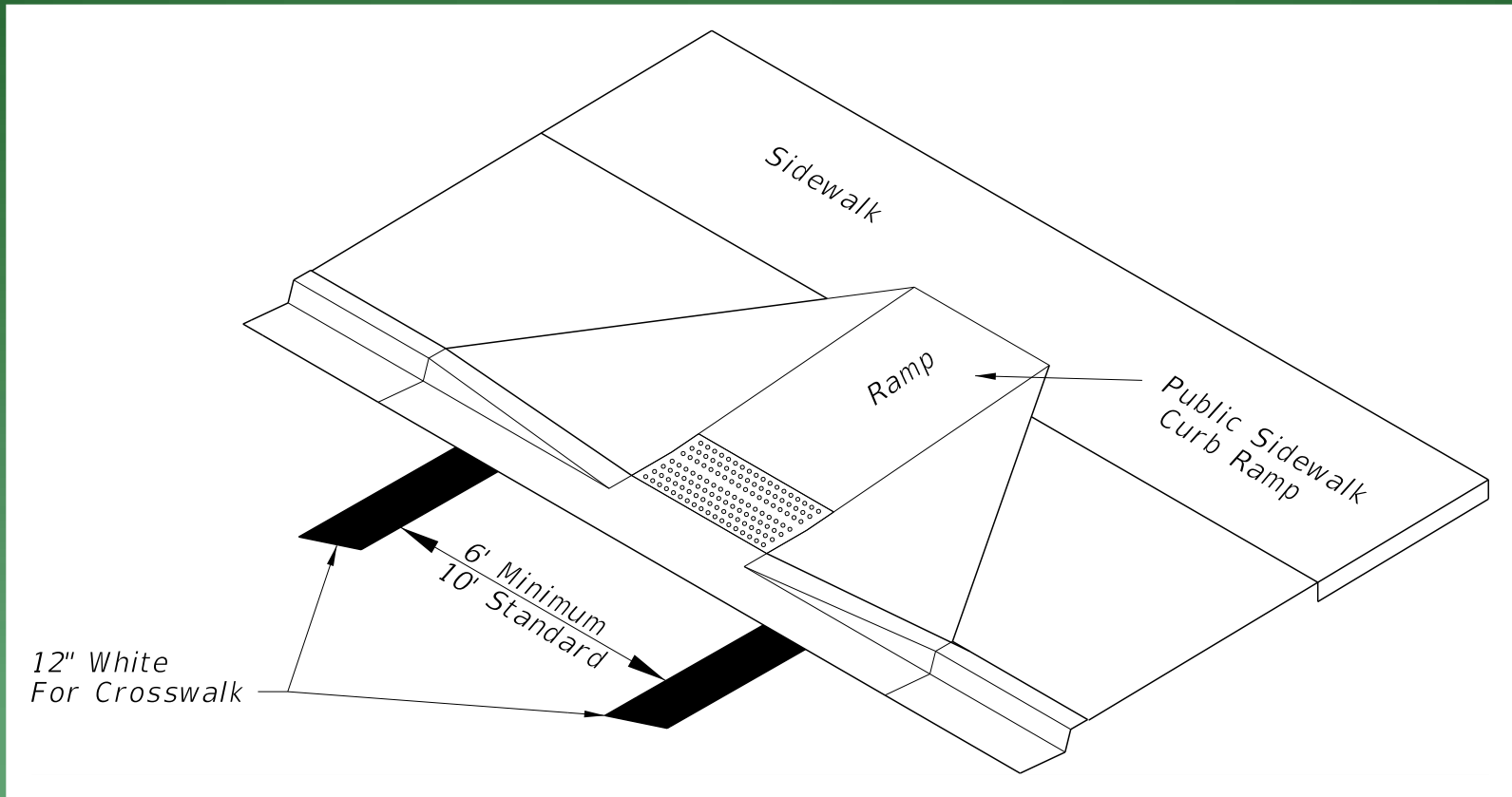
- 12" parallel white lines
- Min. width of 6', typical width is 8'-10'
- Curb ramp must be wholly within crosswalk



Standard Crosswalk Marking



Florida Design Standards - Index 17346



Detectable Warnings



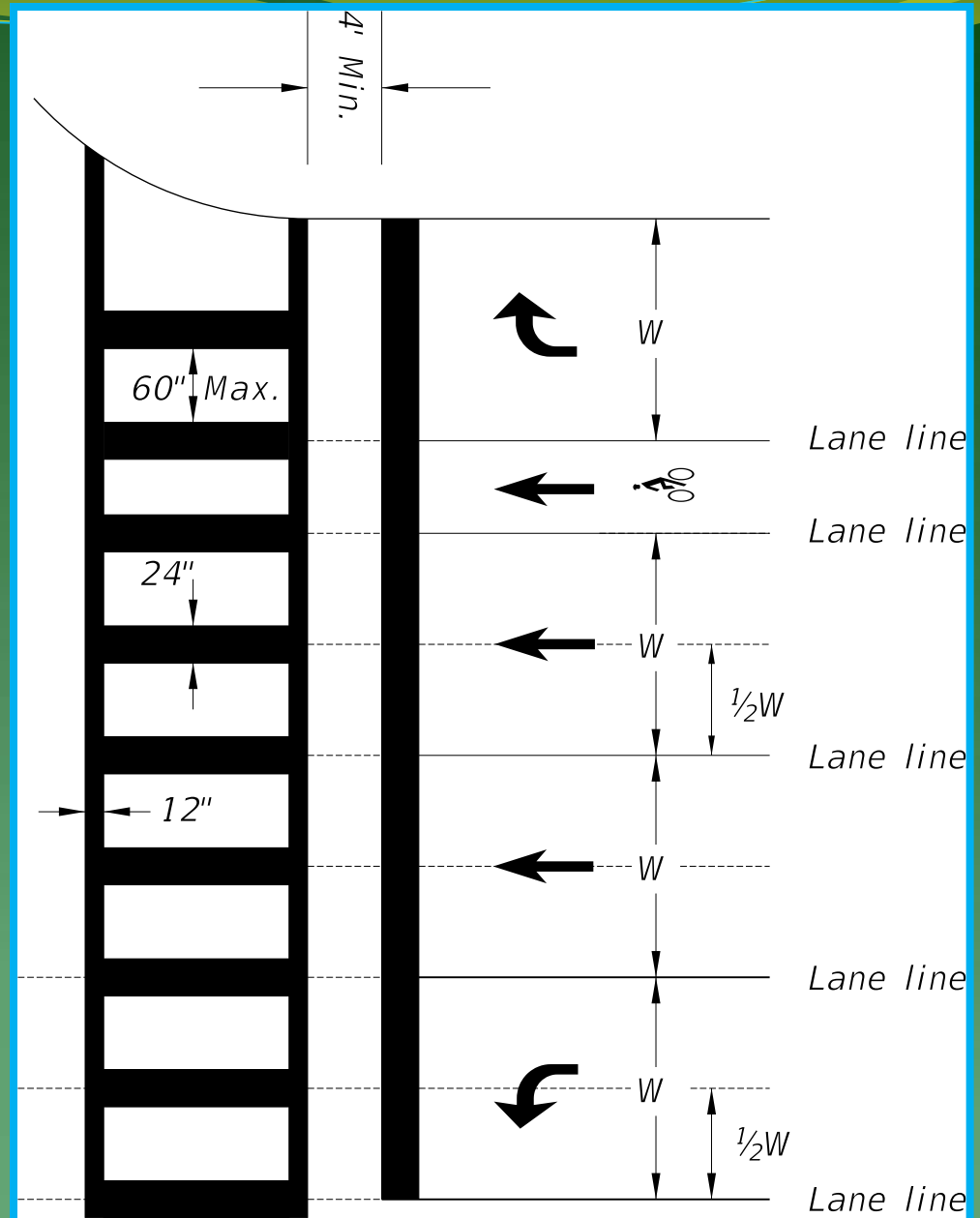
Pensacola Street,
Tallahassee

Special Emphasis Marking



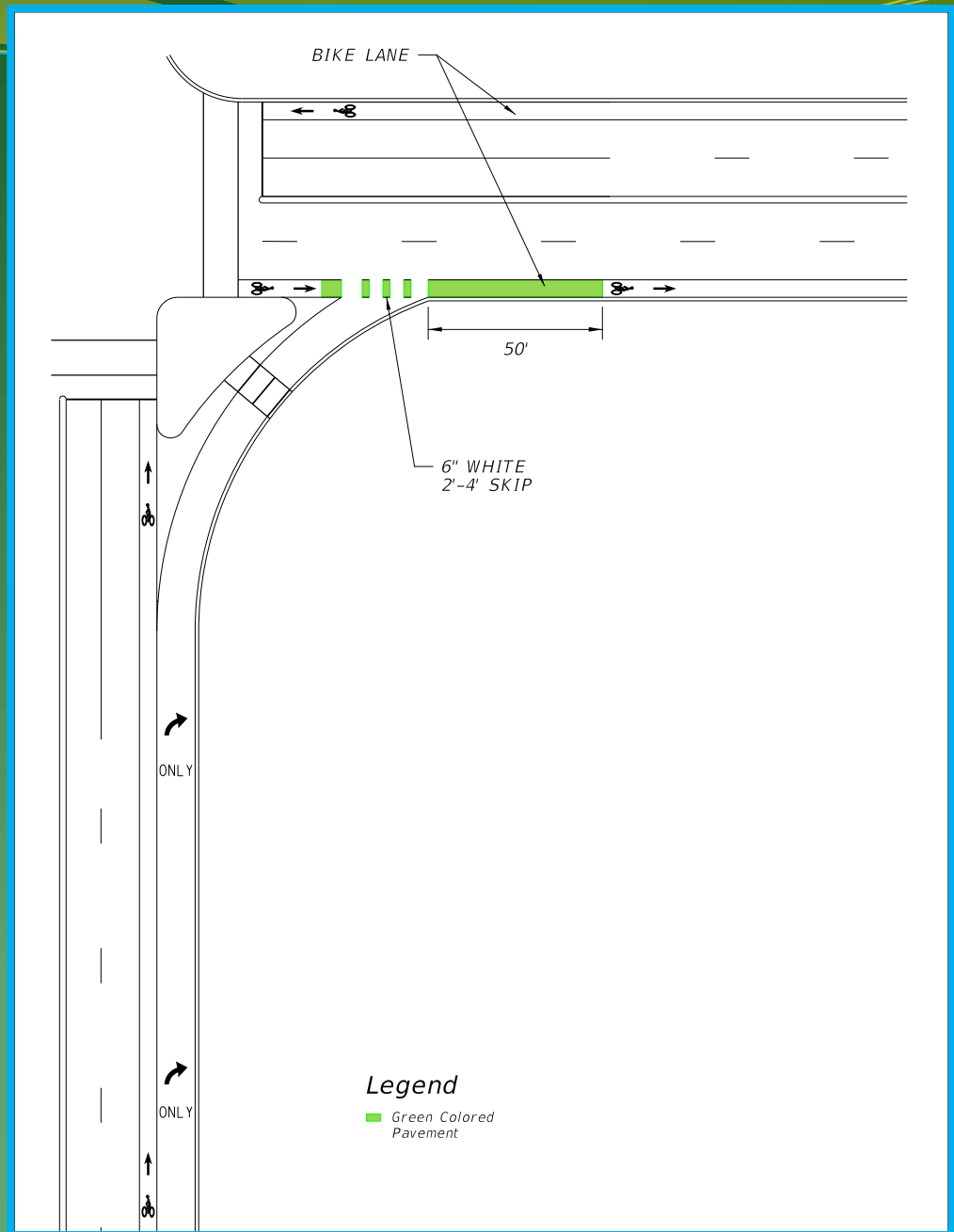
Special Emphasis Marking

- Index 17346
- Preferred use is for uncontrolled locations at
 - Intersections
 - Mid-block



Intersections with Separated Right Turn Lanes

Index 17346



Uncontrolled Crosswalk



Uncontrolled Crosswalk



Naples

Plans Preparation Manual

- **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*

Plans Preparation Manual

- **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.

Cherokee, NC



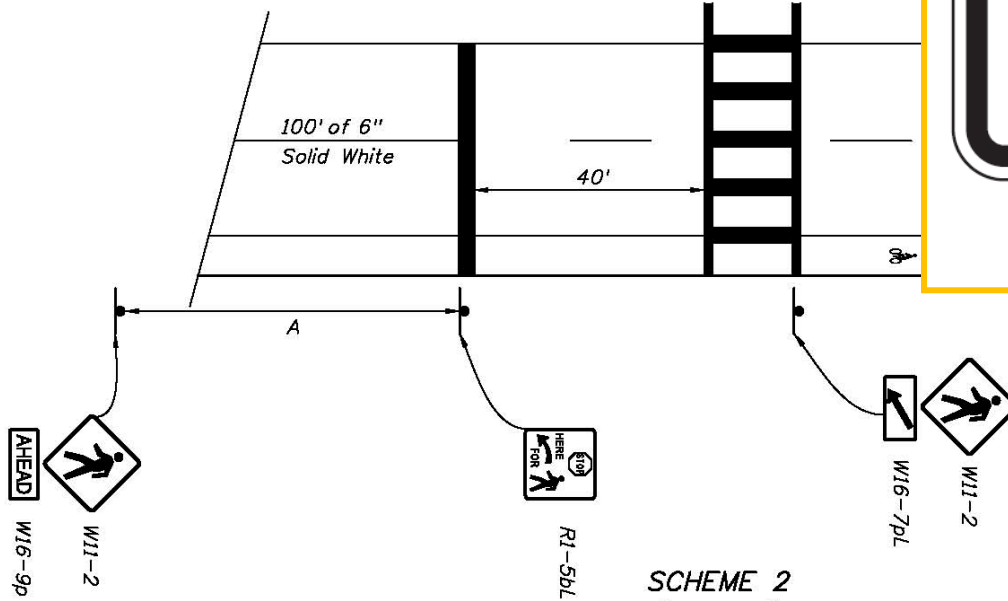
Midblock Yield Condition



Alys Beach, Walton County

Midblock Crosswalks

- Index 17346



SCHEME 2
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Shared Use Paths

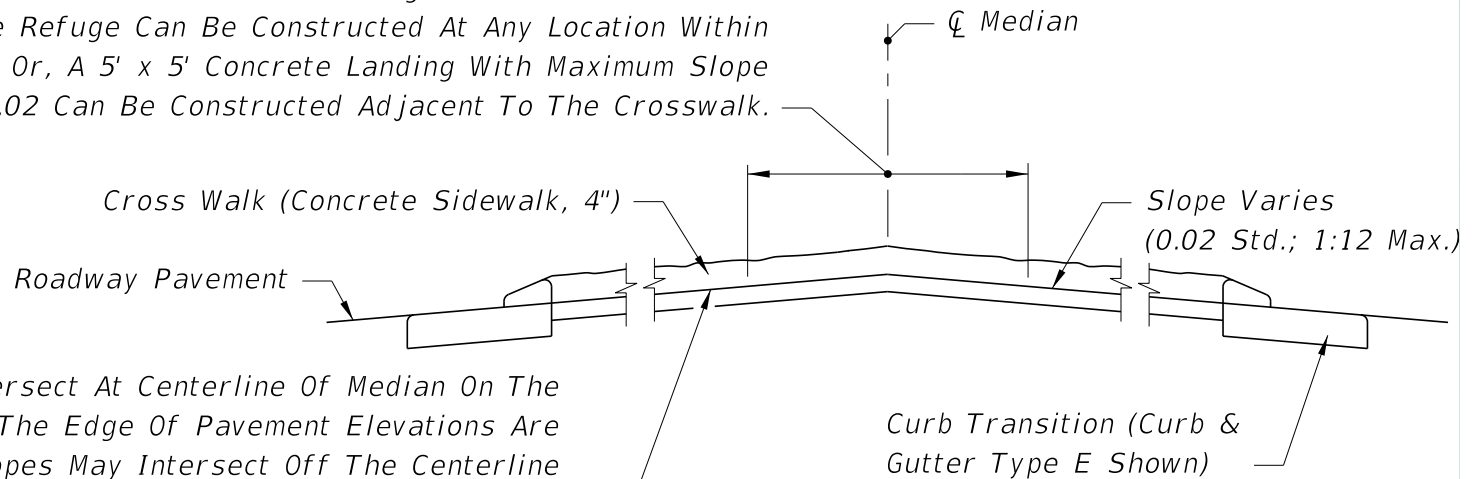


M Path, Miami



Florida Design Standards - Index 304

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.



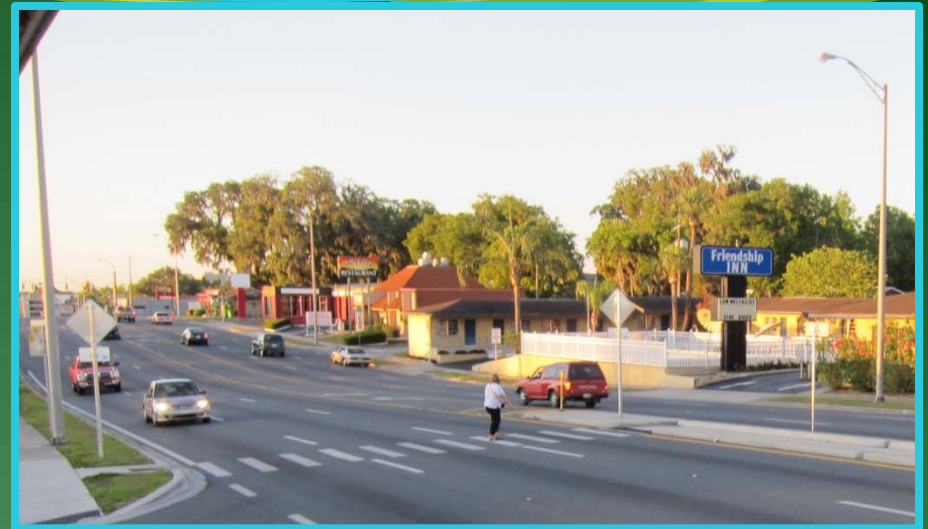
Slopes Shall Intersect At Centerline Of Median On The 0.02 Rate When The Edge Of Pavement Elevations Are Equal. The Slopes May Intersect Off The Centerline For Variable Edge Of Pavement Elevations Or To Accommodate Other Construction In The Median; However, Slopes Shall Not Be Steeper Than 1:12.

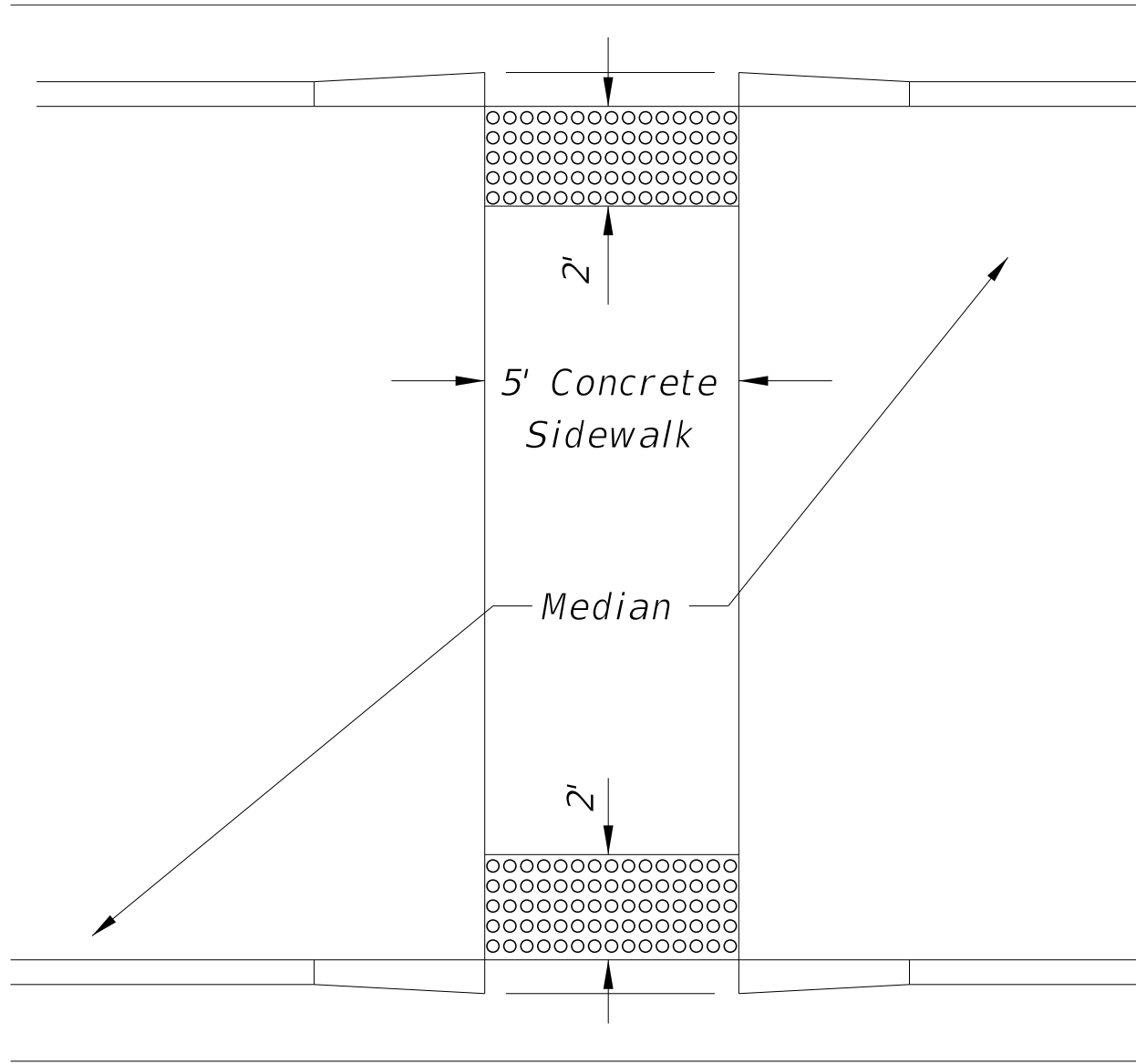
Median Refuge



US 441, Ocala

Median Refuge





PLAN

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

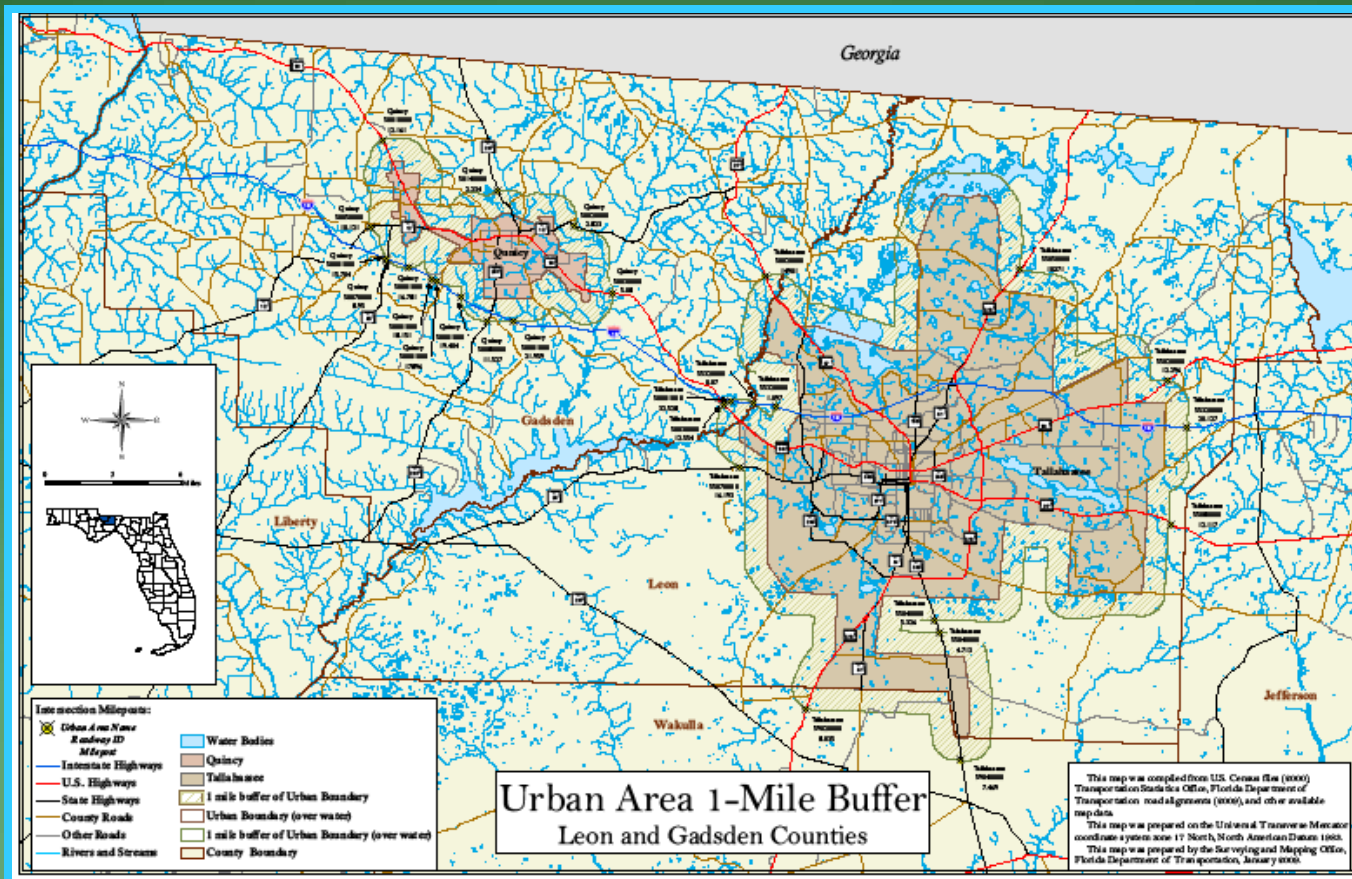


Sidewalk Location



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>

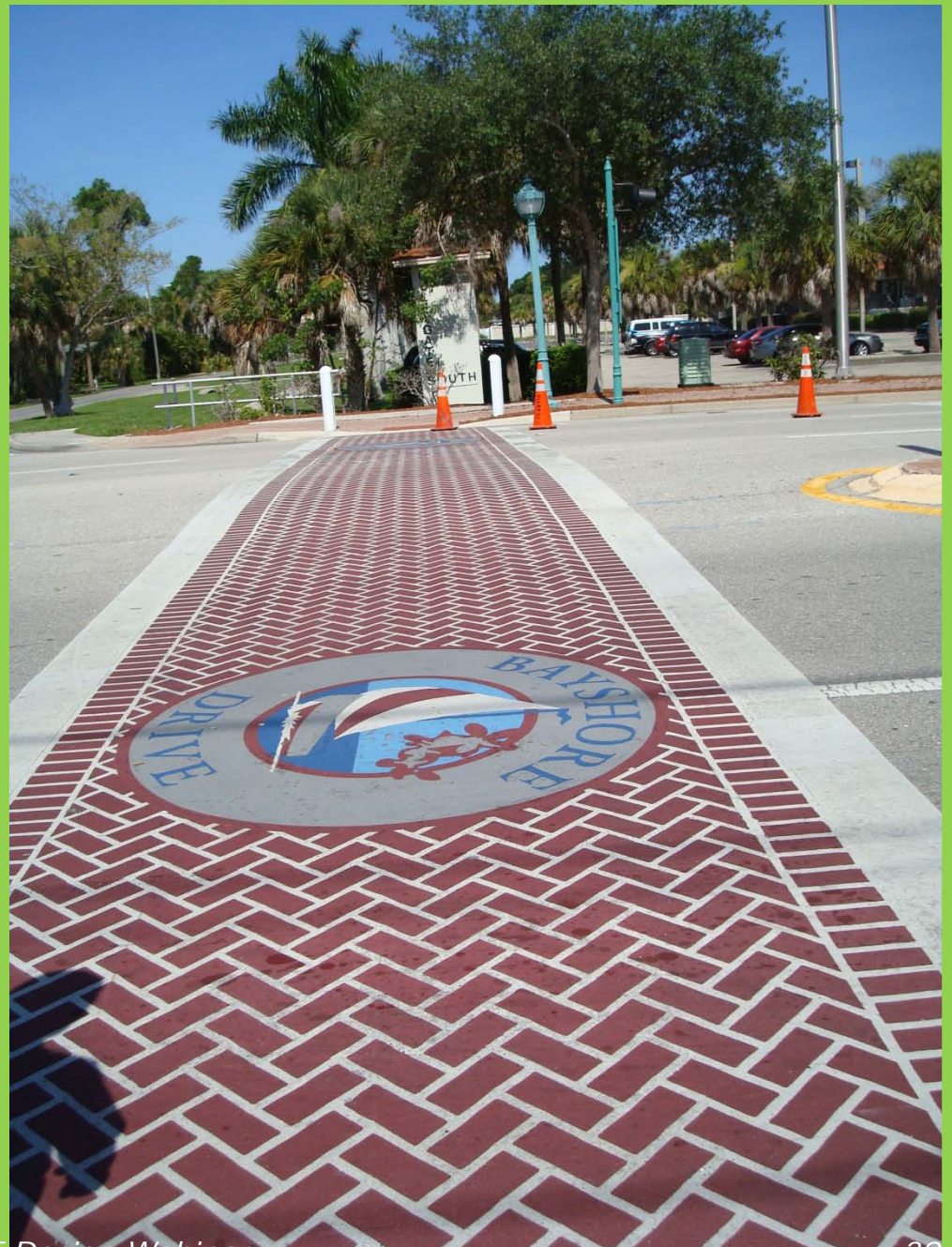


Brick Crosswalks



Patterned Pavement

- Alternative to brick crosswalks
- Maintenance agreement needed



Raised Crosswalks



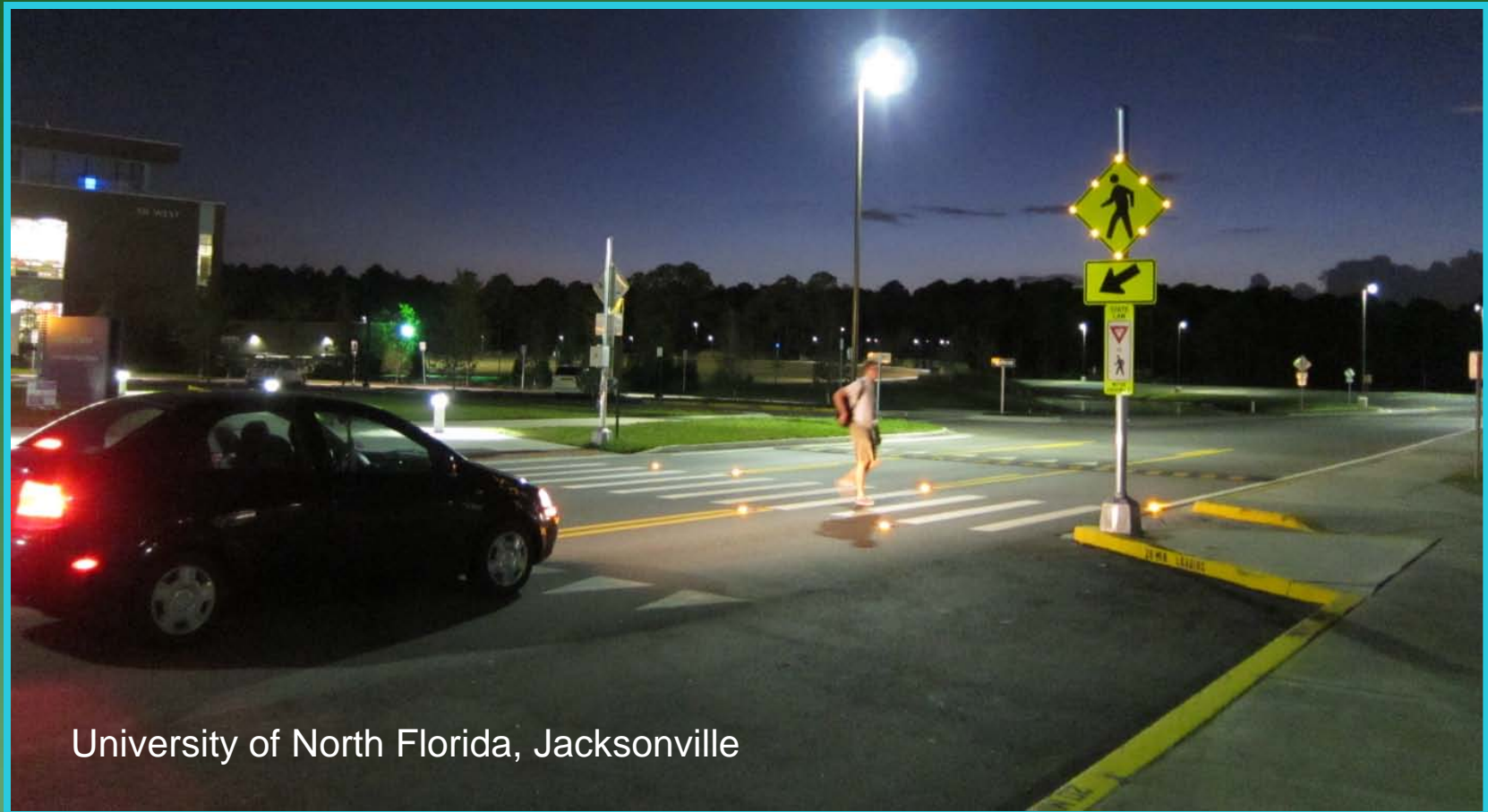
- Speed Table with Automatic Detection
- Best in areas with high pedestrian volumes and low speed!
- Florida State University
Tallahassee, FL

Yellow Flashing Beacon



Gainesville-Hawthorne Trail, Williston Road, Gainesville

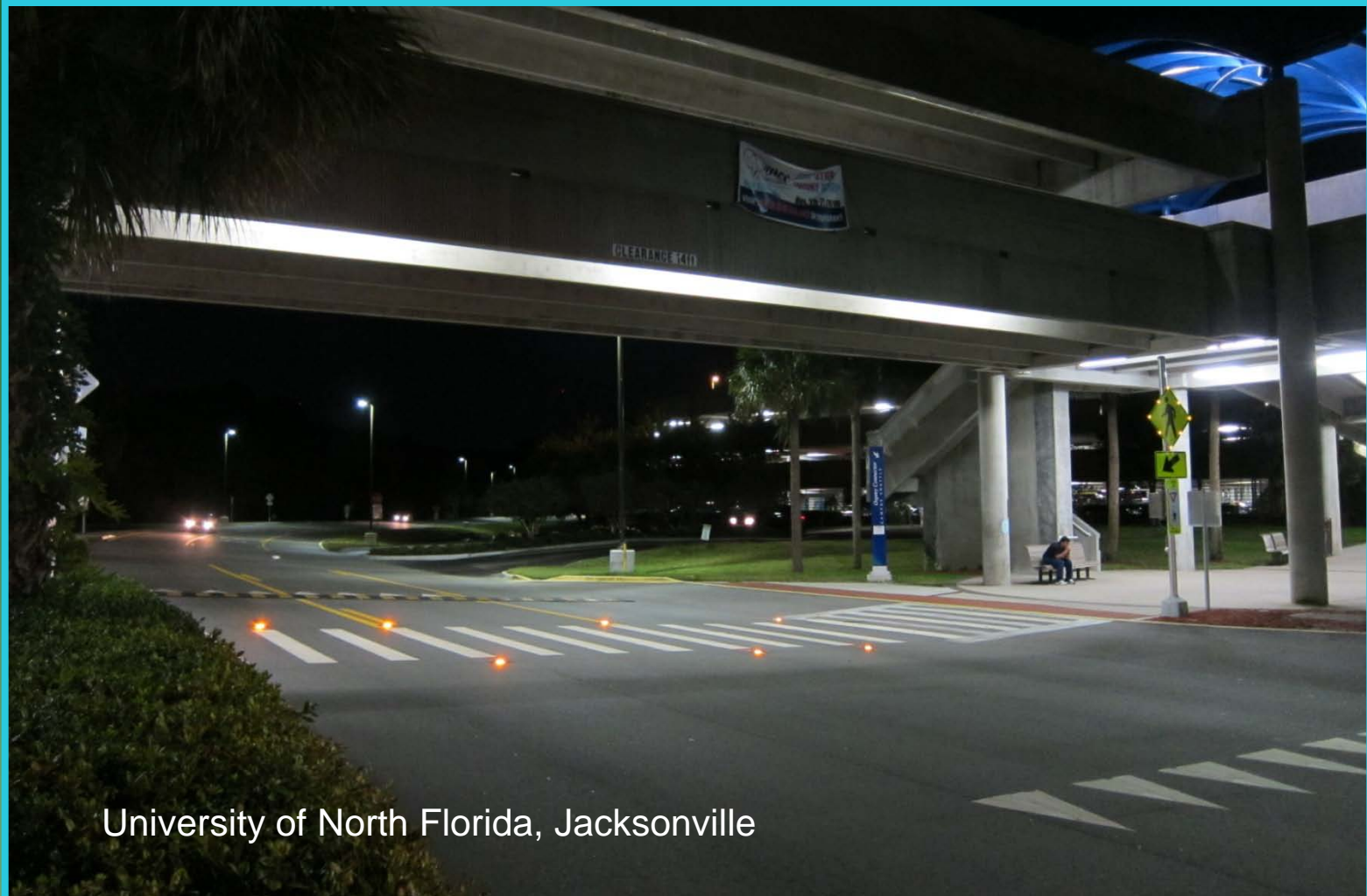
In-Roadway Lights Assembly w/ Highlighted Sign



University of North Florida, Jacksonville

- <http://www3.dot.state.fl.us/trafficcontrolproducts/>

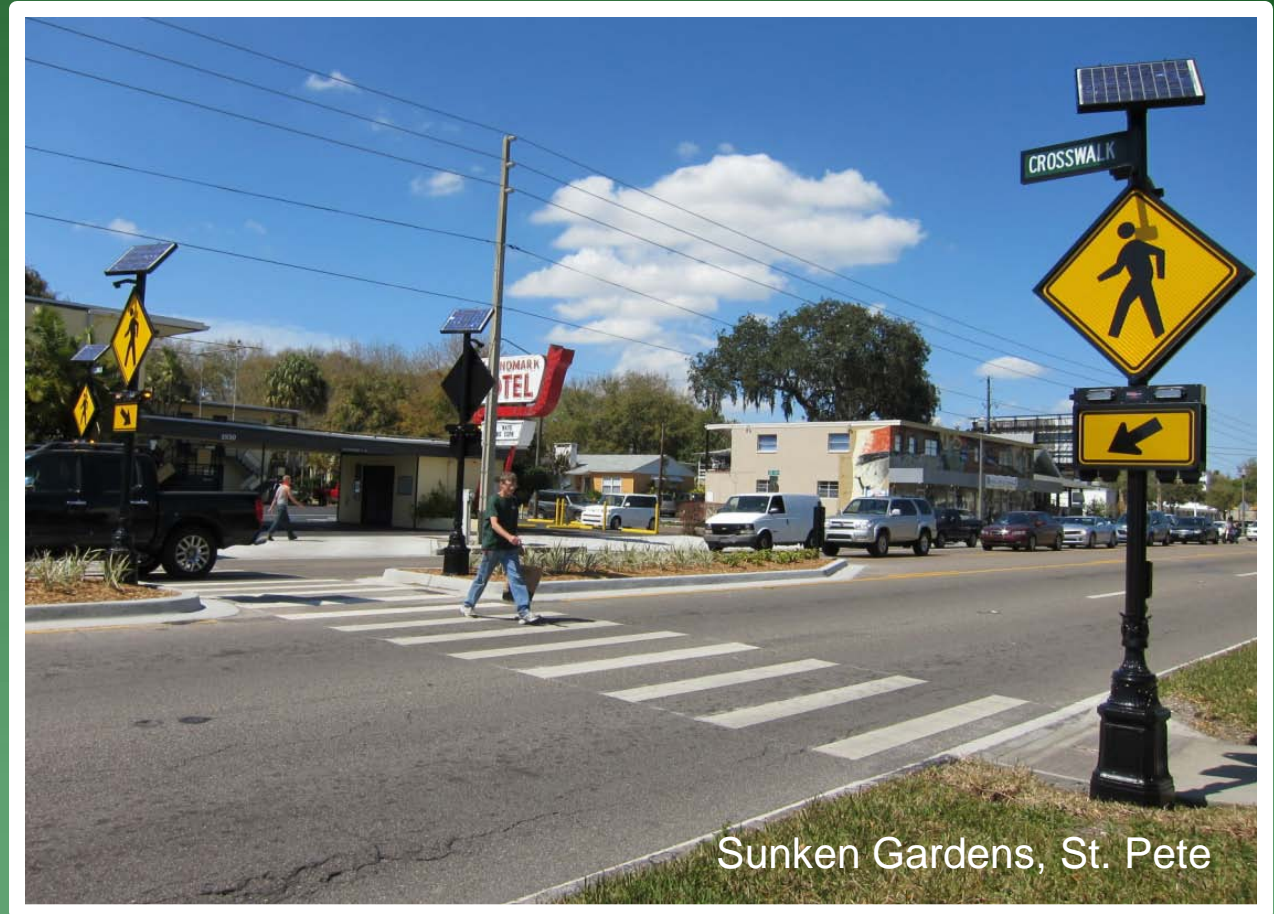
In-Roadway Lights Assembly w/ Highlighted Sign



University of North Florida, Jacksonville

Rectangular Rapid Flashing Beacon (RRFB)

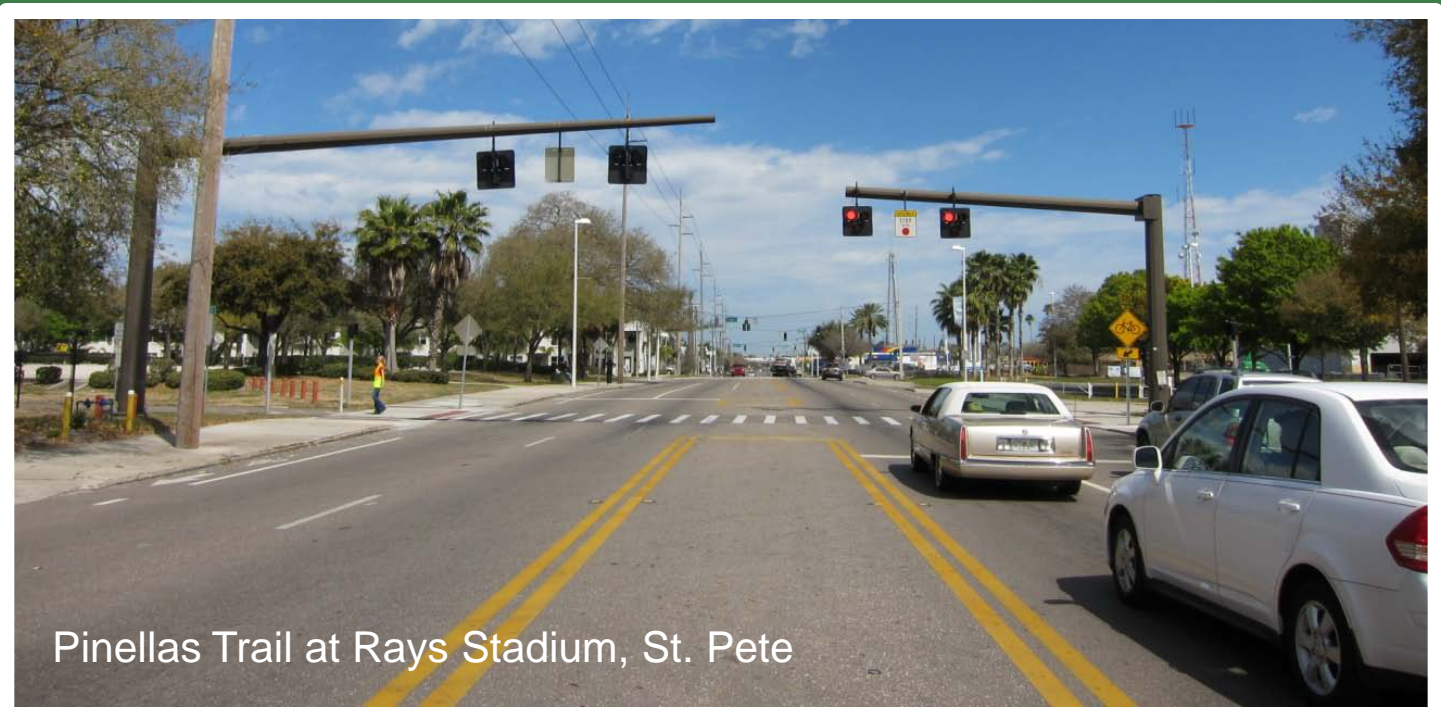
- Refer to FDOT's Traffic Engineering Manual and MUTCD for guidance



Sunken Gardens, St. Pete

Pedestrian Hybrid Beacon (HAWK)

- Refer to FDOT's Traffic Engineering Manual and MUTCD for guidance
- <http://www.dot.state.fl.us/trafficoperations/Operations/Studies/TEM/TEM.shtm>



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](http://safety.fhwa.dot.gov/v/ped_bike/docs/cros.pdf)

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Safety Effects of Marked vs Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines

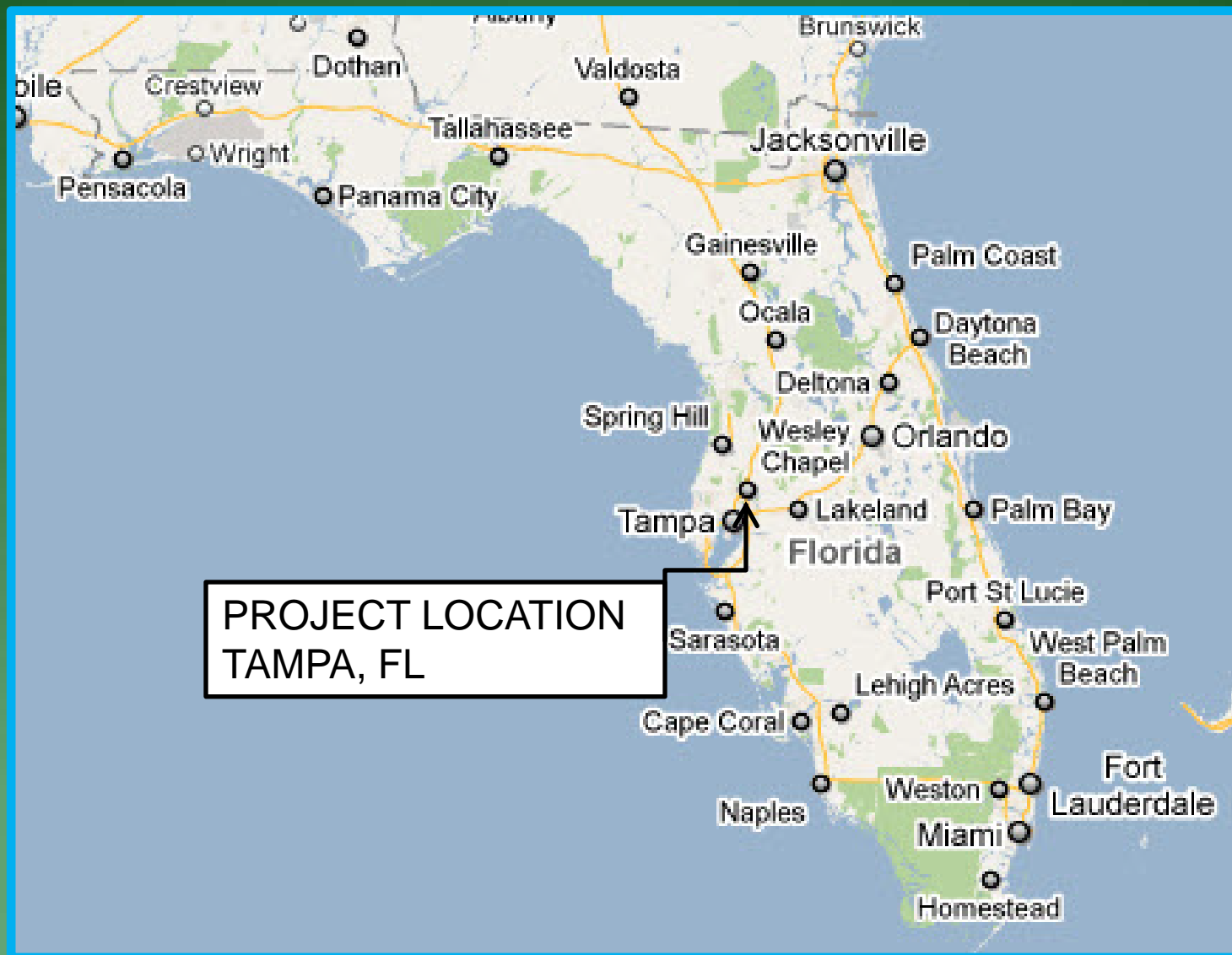


U.S. Department of Transportation
Federal Highway Administration
Research and Development
Turner-Fairbank Highway Research Center
6300 Georgetown Pike
McLean, VA 22101-2296

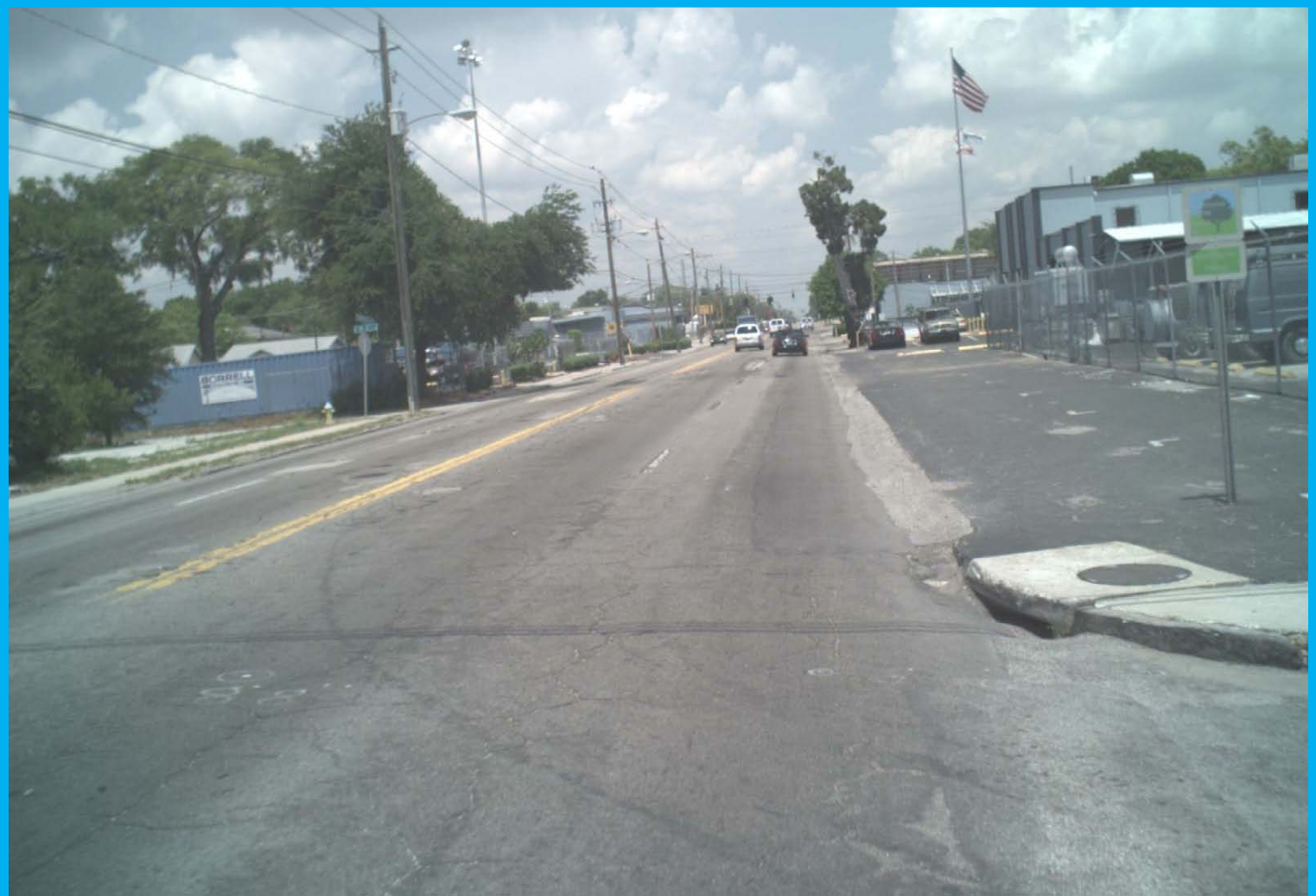
November, 2000



Nebraska Ave Road Diet



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?

